

## Then in conditional constructions\*

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### *Abstract*

*In if-then conditionals, the different parts of the construction and of the context make differing contributions to interpretation. It is here argued that if sets up a mental space wherein the apodosis's content (or speech act, or conclusion) is taken as existing. Then refers uniquely and anaphorically to the mental space set up in the protasis, and may contextually have a contrastive deictic function which requires some other mental space to be postulated as the contrasted entity. The relationship between clause order and the use of then falls out of this anaphoric interpretation of then, which is not interpretable without preceding establishment of a referent mental space. The demands of relevance allow a hearer to conventionally give a predictive interpretation to a conditional construction marked by appropriate verb forms; this interpretation in turn requires the setting up of alternative spaces for the purpose of prediction (and thus gives rise to an iff implicature). The restrictions on the use of then with even if conditionals, generic conditionals, and only if conditionals, also fall out of semantic and pragmatic aspects of these particular classes of constructions. In general, conditional constructions in English are more compositional in meaning than has previously been observed; this compositionality emerges when the analyst is willing to map meaning onto syntactic constructions, and not solely onto morphemes.*

### 1. Introduction

Despite much debate, the standard analysis of conditional meaning still remains one which parallels unidirectional logical implication, sufficient but not necessary conditionality in the logical world. However, various analysts have brought up ways in which the interpretation of conditional structures is not strictly unidirectional. Geis and Zwicky (1971) have remarked that the actual interpretation of many conditional sentences is

a biconditional ("if and only if") interpretation. For example, a speaker who says *If you mow my lawn, I'll pay you ten dollars* is normally understood to mean that the ten dollars will not be paid unless the addressee mows the lawn. Iatridou (1991, 1994) and others have argued that *then* also has some added bidirectionality to its interpretation: the use of *then* at least suggests that an *iff* reading is not false. Comrie (1986) has discussed "bicausal" conditional examples, (*If it'll amuse you, I'll tell you a joke*), where P causes Q and the pragmatic assumption that Q is also taken as causally related to the saying of P. The question in these cases is to what extent the bidirectionality of the interpretation depends on context, and to what extent it is related to specific formal components of the conditional constructions in question.

Another major question is precisely what motivates or licenses the use of *then* in an English conditional construction. This is an issue interrelated with the first, since some analysts (Iatridou 1991, 1994, von Stechow 1994) have suggested that *then* alters the implicatures of the conditional in ways which make a biconditional reading more likely. We will be arguing that, in different ways, *if* and *then* have meanings which are amenable to bidirectional interpretation, in the right pragmatic contexts. Although these interpretations do not arise from exactly the same sources for *if* and *then*, nor are necessarily associated with *if* and *then* in every context, they are nonetheless regularly motivated. The implicatures arise precisely from the conventional semantics of *if*, and from the semantics of *then* as it fits into the semantics of the conditional construction. In particular, we claim that English *if* conditionals turn out to be more compositional and regular than might have been supposed, if the contribution of *then* to conditional constructions is understood to be related to the basic temporal deictic sense of *then*.

We begin by setting out the pragmatics whereby conditional constructions are used for the purposes of *prediction*. This function is linked to the inferential structures which result in *iff* implicatures. It is also compatible with the use of a deictically referential *then*, which may refer not only to temporal settings but also to *mental spaces* set up in the preceding *if* clause. We then contrast this use of conditional constructions with other uses, where *prediction* is not at stake, or where there is no single situation contrasted with another to allow an *iff* implicature. We note that *then* is incompatible with discourse structures and pragmatic uses of conditionals which would clash with its referential semantics. It is thus possible to give a motivated account of a broad range of conditional constructions, by combining a deictic semantics for *then* with an appropriate analysis of conditionality.

## 2. *If* and conventional inferences: Semantics or pragmatics?

We would like to avoid the pitfall of making a choice between an analysis which claims that *if*, or some conditional construction as a whole, is "semantically" biconditional, and one which says the biconditionality is "purely pragmatic". Not only is the boundary between semantics and pragmatics a fuzzy one, but all added implicature (more or less conventional) has its base in the most conventional aspects of meaning, the ones we most comfortably label "semantic".

In his classic "Further notes on logic and conversation", Grice (1978) succeeded in accounting for significant aspects of the usage of natural-language AND and OR in terms of a semantics based on logical intersection and union, combined with some standard inferential patterns which are followed in interpreting such utterances. Essentially, Gricean maxims evoke the actual interpretations: the hearer thinks, and is expected to think, *Why would someone say "P or Q" if she knew that Q were true, and was following the maxims of quantity and relevance?* In many circumstances the answer might be "There's no likely reason, so probably the speaker does not know that P, and does not know that Q". Similarly, a speaker who knows that P and Q are both true might be expected, by Gricean maxims, to say "P and Q", and therefore the choice of "P or Q" allows the hearer to infer that "P and Q" is not true.<sup>1</sup>

Since natural language shows both inclusive and exclusive uses of *or*, there is certainly some elegance to the idea of accounting for the former based on semantics alone, and for the latter based on inference from the semantics. Conditionals might well be treated similarly: that is to say, they could be seen as semantically unidirectional, and pragmatically bidirectional by added inference (cf. Smith and Smith 1988). On this account, when a speaker says "I'll give you ten dollars if you mow my lawn", the hearer correctly concludes that the speaker would not have mentioned the unidirectional relationship if she had intended to give him the money regardless of whether the work is done.

Geis and Zwicky are correct that for many conditional utterances, there is a natural inferential pattern from an utterance *If P, Q* to an added conclusion that *If not P, not Q*. We will argue that such an inference follows almost inevitably, not from conditionality per se, but from one central function of conditional constructions, namely conditional *prediction* (Dancygier 1993, Dancygier and Sweetser 1996, Dancygier [in press]).<sup>2</sup> Setting up a conditional relationship between P and Q, as in *If it rains, they'll cancel the tennis game*, may be done for the purpose of conditionally predicting cancellation, stating that the speaker believes cancellation can be predicted on the basis of knowledge about rain. A

conditional used to predict the cancellation of a tennis game, on the basis of the presence or absence of rain, does so (as we have argued) by setting up alternative *mental spaces*, in the sense of Fauconnier (1985).<sup>3</sup> In this particular case, the mental spaces involved are partial mental constructions of future states of affairs concerning the weather and the tennis game. Specifically, such a conditional sentence sets up one space in which there is no rain and there is a game, and another space in which there is rain and no game. Although the alternatives may already be set up in the context (in which case the conditional essentially makes explicit, or makes use of, extant alternative spaces), they need not be present: the predictive conditional construction suffices to set them up and make them accessible for future exploitation. Without the alternatives, there would be no predictive value to this conditional: how can it be helpful, or (in the technical sense of Sperber and Wilson [1986]) *relevant* to mention that the game will be cancelled if it rains, unless we know that the rain is a valid predictor of the game's cancellation? And that validity is ensured in particular by the assumption that rain is not merely a sufficient condition for cancellation, but the only likely reason.

At this point, standard objections arise to our argument: surely the speaker of *If it rains, they'll cancel the tennis game* cannot be understood as barring all other disasters from possibility. An earthquake, an epidemic sending the two players to the hospital, all sorts of things might result in cancellation. We agree that this is so; but crucially, none of those other possible reasons for cancellation can be under any serious consideration if the utterance *If it rains, they'll cancel the tennis game* is to be a useful and relevant piece of conditional prediction. It is not that these other disasters are consciously barred from consideration, but simply that they are not present in the limited mental space structures set up by this utterance.<sup>4</sup> The purpose of a predictive conditional utterance of this kind is precisely to express conditional prediction of game cancellation, based on a (causal) correlation between rain and cancellation, and *not* based on other factors which might arise. The assumption has to be made that this correlation, rather than other ones, is the most important one for predicting this event. So under circumstances where a conditional is taken as being used for prediction, the importance of the P/Q correlation will motivate the hearer to set up an alternative space where  $\sim P$  and  $\sim Q$  hold. Geis and Zwicky's added inference consists precisely of the construction of a "no rain, no cancellation" alternative space, as a complement to the expressed "rain, cancelled game" space which is actually mentioned in the sentence.

It should follow from this explanation that there is no *iff* inference normally drawn from conditionals which are not used predictively, and/or

do not involve the setting up of alternative mental spaces in this way. Indeed, this seems to be the case. For example, a speech-act conditional such as (1) does not naturally carry an *iff* inference.<sup>5</sup>

(1) Oh, if you're busy, I can come back later.

Said in a context where the addressee is visibly busy, this utterance does not really place alternatives before the hearer: it does not explicitly bring up the hearer's busy state in contrast with a possible non-busy state, or restrict the offer of returning to the case where the hearer is occupied at present. Rather, it sets up a single mental space as the background for the offer to return: the sole purpose of stating the content of the *if*-clause is to establish as shared ground the reason for the speaker's offer to leave and return. Many speech-act conditionals are salient examples of this kind of mental-space construction: and they do not seem to carry invited inferences such as "If you're not busy, I don't offer to return". Perhaps an even clearer example is Austin's *If you are hungry, there are biscuits on the sideboard*, where the offer is evidently made and not exclusively made if P is true: there is no particular inference that the biscuits are unavailable for other hungry guests, or would be refused even if the addressee turned out to be more greedy than hungry. Or in common usages such as *If I don't see you before you leave, have a great Thanksgiving*, the speaker certainly does not intend to retract the wish in the event of another meeting before the departure. Rather, she is justifying her utterance (early though it may seem) by placing it in the shared mental-space context of the risk that she may not see the hearer before he leaves for the holiday weekend (cf. Dancygier and Sweetser 1996).

The inference of "P *iff* Q", then, follows from a predictive conditional. It follows because the predictive relationship involves a correlation between P and Q, normally a two-way correlation which can be used in predicting. What kind of correlation it is, or what the reason for the correlation is, is not specified. Pragmatics will intervene here: speakers will construct appropriate causal connections to account for the correlations in question (e.g., the tennis club rules say that rain is a reason for cancelling a game).

Does this mean that the fact of "connection" between P and Q is itself a pragmatic inference? Akatsuka (1986) has argued that the *kind* of connection is inferred, but the connection itself is a necessary aspect of the interpretation of a conditional construction. We agree with her, in that *if* conjunction demands an interpretation involving some construed link between the two clauses. Of course, as is often the case with con-structional meaning, the combination of clausal conjunction (which in itself conventionally carries a meaning of relevance) with the specific

conjunction *if* (marking nonassertion of the *if* clause, and backgrounding it to the main clause) strongly motivate the "connection" interpretation of the construction as a whole, and even specify the direction of that connection (P is background, and possibly cause, of Q, rather than the other way around).<sup>6</sup> It is a further conventional fact about grammar that a central sense of the conditional construction is prediction: and in this central predictive use of the construction, the kinds of connection postulated between the contents of the two clauses are more constrained than in (for example) speech-act uses of conditionals. Causal connection in particular (whether P is taken to cause Q, or P and Q to stem from common causal sources) is high on the list of construals for conditionals involving prediction of one event conditionally on the occurrence of another event.

We are thus postulating that Geis and Zwicky's "invited inference" falls out of the apparatus needed to interpret predictive conditionals. In predictives, given the need to understand the prediction as based on the most relevant correlation, the setting up of a conditional mental space is understood as a simultaneous setting up of an alternative mental space in which P does not hold, and therefore  $\sim Q$  is expected to hold as a result. Although other situations might also evoke parallel inferences, it seems almost inevitable that predictives should get an *if* interpretation by this route.

But, one might ask, if some conditionals are predictive and some are not, how can we talk about predictive conditionals as a formal class of constructions? The answer is that the general *if*-conditional construction (the two clauses, with *if* marking the clause which builds the background mental space) has many uses, but that it co-occurs with other constructions which may distinctively mark it for a predictive function. We have discussed the formal differences between predictive and non-predictive conditionals elsewhere (Dancygier 1993, in press, Dancygier and Sweetser 1996), but two central characteristics require mention here. First, only in predictive conditionals do we find tense "backshifting" (the use of present tense as the only option for future reference) in the conditional protasis. We say *If Sandy arrives in time, we'll go out for dinner* when we conditionally predict the occurrence of dining out based on hypothesized occurrence of the arrival. In English, we could also say *If Sandy will arrive in time, we'll go out for dinner*, but this would not be a predictive conditional; indeed, it seems to be about the conditional drawing of a conclusion based on the hypothesized acceptance of a premise. It is about the speaker's reasoning processes (these are the conditions under which the conclusion is drawn), and not about the

relationship between the events mentioned (i.e., not about the conditions under which the event of going out for dinner occurs).

Secondly, only predictive conditionals in English show the kind of contrast between verb forms which is manifested in pairs of sentences such as *If it rains, they'll cancel the tennis game* and *If it rained, they'd cancel the tennis game*. The apparently past-tense (sometimes called *subjunctive*) forms here, *rained* and *would* (rather than *will*), may still refer to a future tennis game and future rain. Thus used, they convey what Fillmore (1990a, 1990b) refers to as *negative epistemic stance*: the speaker allies herself with the mental space where it will not rain, rather than with the one where it will rain. The use of the merely "backshifted" *rains* with future reference and the future *will*, on the other hand, takes a neutral epistemic stance: the speaker has no expressed alliance with either alternative outcome.<sup>7</sup>

When we refer to predictive conditional constructions, therefore, we mean the class of constructions which are *if*-conditionals and also show the formal characteristics of verb-form selection which we have just described. These constructions, as opposed to other conditionals, are the ones whose conventional interpretation includes predictive usage and alternative space structure, and which conventionally give rise to *if* implicatures. As we shall see, this makes them particularly suitable to use in the same utterance with conditional *then*.

### 3. *Then*: Deictic semantics and inference

*Then* in conditionals has also been argued to (at least partially) invite inferences of relationship between  $\sim P$  and  $\sim Q$ , as well as between P and Q. For example, Iatridou (1991, 1994) has observed that the presence of *then* in a conditional presupposes that " $\sim P$  is compatible with  $\sim Q$ ", that is, that it cannot be asserted that "if  $\sim P$ ,  $\sim Q$ " is false. Thus what Iatridou claims to be the contribution of *then* overlaps with what Geis and Zwicky have described as an invited inference of conditionals in general. We will argue, however, that Iatridou's presupposition in fact stems from a different source, and applies in practice to a different subset of conditionals.

How is the conditional use of *then* related to other temporal referential uses and discourse uses of *then*? Dancygier (in press) argues that the function of *then* is to reintroduce the protasis in the structure of the apodosis, but without the tentativeness which *if* imposes on the statement P, and, perhaps more importantly, as necessarily prior to Q in some sequence. Schiffrin (1992), analyzing discourse functions of *then* in spoken English, claims that *then* has genuine anaphoric and/or deictic

reference in all her attested examples of *if-then* conditionals. That is, *then* in conditional apodoses is anaphoric, referring to a time or a set of circumstances identified with respect to the event or state expressed in the *if* clause. These facts about the use of conditional *then* are strongly motivated by the use of temporal *then*. In its more basic temporal reading, *then* may refer to a time which either follows or is cotemporal with the event or state expressed in the *if* clause. This temporal use is anaphoric (referring to some contextually established time), and is also (within an abstract temporal domain) actually deictic. It points to a particular time, and identifies that time to the exclusion of other possible times that it might be confused with; and the time in question is located with respect to the present of the speaker.

More generally, *then* points deictically to a particular (temporally or circumstantially defined) mental space, and locates the event or state described in the apodosis in that mental space. This may be a literal temporal space (an understanding of a postulated state of affairs at some moment in time), or a particular set of circumstances, or even a particular abstract discourse context. (For example, a speaker who feels that all the addressee's arguments have really been supporting conclusion C may say *Then why don't you agree that C?*, meaning that she questions the addressee's stance specifically in the discourse context at hand.) By insisting on location within a particular mental space, the conditional use of *then* brings on a natural inference that the content of the apodosis does not hold in other alternative mental spaces (why else be so insistent that it holds in *this* one?). Schiffrin (1992) notes that in nearly all of her attested examples of conditional apodoses containing *then*, not only was there some explicit indication of a time frame (usually indicating a *temporally* framed mental space), but frequently there was also indication of a global contrast within the discourse: the time frame wherein P held and Q followed was more generally contrasted with one wherein P did not hold and Q did not follow.<sup>8</sup>

If I say *The linguistics books are over there*, and point to a particular physical location, my hearer will assume that I mean they are *there* and not *here*, or at an alternative *there*. Deixis is frequently allied to identification of one option among alternative candidates, *this* and not *that*. However, deixis need not necessarily evoke contrastive alternatives, in uniquely pointing out one particular entity. There is a difference between pointing and saying "Here!" to a confused hearer, or to one who is looking in the wrong direction, and the same act performed towards a hearer who is already focused on the object in question, or who has no alternatives in mind and is ready to focus as directed. Although deictic

reference is readily compatible with a frame involving choice between alternative referents, it need not involve such a choice.

We will be arguing that the deictic semantics of *then*, combined with the space-building semantics of *if*, fit smoothly into a constructional interpretation involving identification of one alternative among competing mental-space frameworks. The deictic character of concrete spatial terms transfers here to an abstract domain (perhaps metaphorically seen in terms of space). As we conceive of physical locations as mutually exclusive (hence something which is *there* is not *here*), similarly we know that our experience of times is mutually exclusive (*then* is not *now*). This mutual exclusivity is retained in the use of *then* to mark "location" in some particular abstract mental space as opposed to others. However, section 6 of this paper will discuss some examples where *then* appears to fit with conditional interpretations that do not explicitly evoke alternative spaces.

At the risk of belaboring the obvious, we wish to stress the difference between this analysis and a view which relates a logical semantics of *then* to a logical implicature of *iff*. The referential semantics of *then* are here interpreted as unique within a particular pragmatically established pool of possible referents, not in some absolute logical sense of uniqueness. However, we acknowledge that a logical analysis accompanied by relevance-based limitations on interpretation would probably yield similar results in this area. Another important difference between our account and logically-based Gricean accounts of "biconditionality" is that we see the conditional linguistic construction (given the right verb forms) as conventionally involved in setting up the predictive interpretation. That is to say, it is part of the meaning (in the broad sense of meaning) of this class of conditional constructions that they are being used to predict one event or state of affairs based on hypothesized occurrence of another event or state. They are thus also conventionally linked to the *iff* reading, although not in a way which is unmodifiable by context.

It follows naturally from the above description that *then* can mark sequentiality: temporal location after another event is one of its temporal senses. In a conditional sentence, it indicates that the occurrence of Q follows conditionally on the prior occurrence of the event or state expressed in P. The sequentiality of conditional constructions with *then* can be further interpreted as causality, as is often the case with constructions which are iconic of the actual sequence of events.<sup>9</sup> The type of connection introduced into the interpretation by *then* can be seen in the contrast between sentences like (2) and (3) (quoted from Davis 1983 and von Stechow 1994):

- (2) If it is humid, then the TV will work.  
 (3) If it is humid, the TV will work.

As Davis states, sentence (2) calls up the notion of some strange causal connection between humidity and the TV's functioning: a listener might wonder what kind of TV is rendered functional by humidity. Example (3), which does not oblige us to construct such a causal connection (although of course it is open to causal construal), may simply mean that the humidity has no effect on the TV's functioning. Sentence (3) is thus open to a concessive interpretation, which is less pragmatically odd than that of (2).

Iatridou argues that *then* simply explicitly allows for the possibility of " $\sim P, \sim Q$ ". We are suggesting here that the reason *then* allows for such an inference is that it is a deictic referent for a mental space, as well as a sequential temporal conjunction. It consequently both brings up the idea that P is the unique mental space in which Q is "located", and explicitly marks the relevant connection between P and Q as causal and/or sequential. *Then* is thus interpreted to mean that Q necessarily follows P. In our everyday understanding of cause and effect, we assume that if X "causes" Y, then not only will Y occur when X causes it, but it will not occur spontaneously and randomly without the prior presence of the cause, X. A sequential and causal interpretation of an *if-then* conditional, particularly with a deictically interpreted *then*, is thus readily extended to the conclusion that Q will not happen without prior occurrence or existence of P. This interpretation of *then* emphasizes and feeds the building of alternative mental spaces which we have argued is a standard feature of predictive conditional semantics—the bifurcation of relevant mental models into a "P and Q" world and a " $\sim P, \sim Q$ " world.

Such an analysis of *then* considerably simplifies the task of explaining its general distribution in conditionals. Iatridou comments that it does not occur with disjunctions like example (4), although it is acceptable with disjunctions like example (5), because the presupposition of the form "in some cases in which not P, not Q" is false for (4) but not for (5).

- (4) ?If John is alive or dead, then Bill will find him.  
 (5) If it rains or is dry, then the football game will happen.

These acceptability judgements follow naturally from the difficulty of constructing a natural causal link between certain pairs of mutually exclusive disjunctive Ps and a single Q. In sentence (4), for example, if the hearer constructs a scenario in which John's being alive will have a direct, natural causal effect contributing to the result of Bill finding John,

then it is hard to simultaneously construct a scenario wherein John's being dead also has such a direct, natural causal effect. And the disjunction makes it very hard for us to construct a unique mental space P where Q is seen as taking place. In sentence (5), a good reading is readily available, but is constructed precisely by construing the two disjunct options as part of a larger set of options: rain or dry weather, for example, are all right for football matches, but snow or sleet would not be acceptable and might lead to cancellation. Rain and dry weather are thus construed as examples of the larger single class of "acceptable weather options", and the true contrast is between them and the unacceptable options. Resolving a disjunction in this way allows the use of *then*, as we would predict, since it allows us to construct a single mental space P ("acceptable weather") within which Q will occur.

An even more readily construed example is *If John is rich or handsome, (then) Mary will marry him*; here, of course, *rich* and *handsome* are not at all mutually exclusive, but are part of a coherent set of sufficient conditions, and opposed to another set of conditions such as *ugly* and *poor*. Wealth and good looks are assumed to have parallel causal effects, resulting in sufficient conditions for marriage. In this case, there is no real disjunction to be resolved; unsurprisingly, *then* is possible in such an example.

#### 4. Concessive conditionals: Prediction without specific alternatives

Concessive constructions provide a convenient testing ground for the two claims made above, namely (1) that predictive interpretation is a licenser of *if* inference, and (2) that *then* marks deictic reference to a mental space as the (unique) "location" of Q. (This uniqueness, in conditional *if-then* constructions, is normally interpreted as due to natural temporal [and usually causal] sequence.) As König (1986) states, concessives do not invite Geis and Zwicky's negative inference, because of the scalar interpretation contributed by *even*, and because the assumption in the scope of *even if* is presented as an extreme of that scale of conditions, where P holds for the entire scale.<sup>10</sup>

- (6) Even if it rains, the football game will happen.

Thus, if the football game is asserted to be happening even in the case of the "extreme" antecedent ("it rains"), this can be assumed to hold for the whole range of less extreme cases, such as a muddy field from earlier rain (cf. Kay 1990 on scalar *even*). What this amounts to is precisely the denial of our proposed normal "alternative" scenario for prediction: an *even if* concessive says "you might have thought that there

were two scenarios, one where it is sunny and the football game happens, and another where it rains and the game is cancelled—but that's not true; in fact, the most extreme case of the range of alternative values under consideration for P is still not extreme enough to set up an alternative scenario". Given this reading, where prediction results not from positive setup of alternative spaces, but from the negation of such a setup, it is natural that the *iff* inference should not be licensed. After all, the whole purport of *even if* is that P is *not* the only circumstance wherein Q will be true.

Iatridou also observes that concessive conditionals (whether with *even if* or *if* alone) are not acceptable with *then*, and offers an explanation based on the assumed negative presupposition of *then*, similar to the analysis proposed by König. However, our account offers an equally strong motivation for the inappropriateness of *then* with concessives. Concessive conditionals like example (7) indeed suggest that the voters will not change their mind in the extreme case of the candidate having committed a crime:

- (7) Even if he commits a crime, they will vote for him.

But there is more to the interpretation of (7) than "they will vote for him if he commits a crime and also if he doesn't". First of all, there is an implication of a "normal" causal chain, such that P ("his having committed a crime") will be expected to bring about "not Q" ("they will not vote for him"). The "normal" predictive conditional might thus be set up (in this context) as something like "If someone commits a crime, people won't vote for him". On the basis of such a belief, concessives explicitly set up an abnormal, surprising relationship between P and Q. If P is portrayed as the high end of some pragmatic scale of contexts in which Q would not be expected, P cannot be claimed to normally precede events such as Q. It is not said (or implied) that both P and  $\sim$ P cause Q; indeed, the speaker probably still believes that the "normal" causation holds between P and  $\sim$ Q. What example (7) suggests is that the predicted vote follows from *other* causes, not mentioned in the sentence, and that therefore "normal" causal chains do not hold. So we cannot say that in sentence (7) Q naturally follows from P, nor that Q follows uniquely in P (from among the mental spaces being considered); *then* is consequently inappropriate.

Concessive predictive conditionals are thus different from other predictive conditionals in that they allow for predictions "in spite of" rather than on the basis of plausible causal connections. Nevertheless, the type of unexpected connection between P and Q that they provide is still sufficient for making predictions possible: the function of sentence (7),

for example, might well be to help the hearer predict voting behavior. And concessives refer directly to the setting up of alternative scenarios: their function is to deny the validity of such scenarios, and to make predictions independent of them. This, we suggest, explains why concessive conditionals like (7) are similar to other predictive conditionals. The similarity extends, in fact, to other grammatical constraints, such as the use of so-called "subjunctive" or *distanced* verb forms. As mentioned above, English (like many other languages) manifests special verb forms in conditional constructions towards which the speaker takes a negative epistemic stance (Fillmore 1990a, 1990b). For example, in English, a speaker taking a negative epistemic stance towards the idea of rain on the tennis-match date, might say *If it rained, they would cancel the tennis game (tomorrow)*, using the verb forms *rained* and *would cancel* for reference to this imagined future scenario, rather than using the neutral *If it rains, they'll cancel the tennis game*.<sup>11</sup>

These distanced verb forms are noticeably absent from conditionals which lack a predictive interpretation, such as speech act conditionals: example (9) seems most likely to be interpreted as meaning that the hearer's hunger has the power to causally reshape the world, and therefore the presence of biscuits is indeed predictable depending on the hearer's state. It does not readily receive the nonpredictive speech-act interpretation of example (8), where the biscuits are assumed to be present and accessible independent of the hearer's state, and the *if* clause is simply background to the essentially unconditional offer.

- (8) If you are hungry, there are biscuits on the sideboard. [Example from Austin 1961.]

- (9) If you were hungry, there'd be biscuits on the sideboard.

But distanced verb forms *do* occur in concessive forms, which is yet another argument that the concessives are essentially part of the predictive conditional category. *Even if he committed a crime, they would vote for him* is perfectly acceptable.

Concessive conditionals are thus not only structuring mental spaces, but doing so predictively: the use of *if* and of distanced verb forms are appropriate to the function of concessivity. However, in denying the "alternative scenario" schema, and insisting that in fact all the scenarios are identical in allowing Q as an outcome, a concessive precisely also denies the possibility of constructing a unique referent mental space P wherein Q holds. The deictic semantics of *then* are inappropriate to such a meaning.<sup>12</sup>

We should note that the "unnaturalness" of some causal link between a P and a Q is essentially pragmatic, because whether the particular

causal chain is natural or not is a matter of speaker's beliefs (cf. Haiman 1986, Sweetser 1990). Hence the possibility of concessive interpretation in conditionals which do not use *even*. This seems to be the case for example (3), but also for example (7), if only *if* is used instead of *even if*. Under the "natural" interpretation voting for criminals is unlikely, and a sentence like *If he commits a crime, they will vote for him*, with appropriate intonation, will be interpreted concessively. But if the vote is taking place in a criminal organization in which you can only be elected if you have committed a crime yourself, the sentence is a straightforward prediction (and allows *then*).

We can thus claim that in a concessive conditional, whether with *even if* or just *if*, the mental-space construction involves not just one alternative space, but a pragmatic scale of spaces, from spaces most likely to be a causal background for Q, to spaces which are much less likely to give rise to Q. How is this accomplished? The protasis of such a conditional sets up a space in which the apodosis is true, thereby licensing the possibility of predicting Q from P. But there is no natural causal relation that would license that prediction; indeed, the prediction is licensed despite the lack of such a connection. This gives rise to an inference that Q will occur in any space *more* likely to result in Q than P is: items close to the end of a pragmatic scale allow stronger inferences than ones in the middle of the scale, so we can assume that any voter whose loyalty is unaffected by the candidate's crime will surely vote for the candidate under more auspicious circumstances. So the range of spaces yielding a prediction of Q has to be extended to cover all the possibilities along the scale from the ones most readily causally linked to Q, to the unlikely P. Concessive meaning consists (cf. Kay 1990) in the construction of such a scale of mental spaces, in all of which the prediction of Q is taken as valid. Unique reference for *then*, as the particular space P within which Q holds, is not available in such a context; and natural causal sequence (one important aspect of the interpretation of *then*) is explicitly denied.

### 5. *Then* and generic conditionals

So far, we have seen that certain restrictions on the use of *then* can be explained in terms of its deictic meaning and its "sequentializing" function. Other restrictions on the use of *then* can be noted in generic conditional examples. Iatridou notes some of these cases:

- (10) If he smiles at her, (\*then) Mary likes it.  
 (11) If Mary bakes a cake, (\*then) she gives some slices of it to John.  
 The use of *then* in examples such as (10) or (11) seems at least unusual, if not unacceptable. (The acceptability in fact seems more variable across

speakers than Iatridou indicates: but we have not yet encountered a speaker who prefers the versions of [10] and [11] with *then*.) Iatridou's explanation of this restriction is not genericity but rather that in such sentences the protasis is a presupposition of the apodosis. We agree that sentences (10) and (11) are very possibly examples of anomalous anaphoric usage; *then* refers to the entire preceding clause, and the pronoun *it* also refers to that clause or to some part of it. However, even when Iatridou's presuppositional and anaphoric issues are removed, generic conditionals still show restrictions on the use of *then*. Why is example (14) distinctly odd, while (12) is possibly more acceptable?

- (12) If Mary bakes a cake, then she gives a party.  
 (13) If Mary bakes a cake, she gives a party.  
 (14) ??If Mary bakes a cake, then she always gives a party.<sup>13</sup>  
 (15) If Mary bakes a cake, she always gives a party.

Perhaps the function of *then* itself can once again offer an explanation for this restriction. If *then* is basically deictic in meaning, pointing to a previously mentioned temporal or circumstantial space, there must be some particular space for it to refer to. In cases like *Then Chris arrived*, the time is identified as the time immediately following the events just previously mentioned. In cases like *if* conditionals, the time or circumstances are identified by the (normally preceding) *if* clause. Generic conditionals, however, do not involve specific time reference at all: there is no "at that particular time" or "in those particular circumstances" mentioned.<sup>14</sup>

In examples (14) and (15), *always* forces a fully generic reading of the construction. But "generic" conditionals like (12) seem susceptible to both this more generic reading (meaning something like example [17]), and also a more specific reading, something more like "at any random particular time" (something like example [18]) rather than "every time". The more specific reading should be potentially more compatible with *then* than the completely nonspecific generic reading. And indeed, in our judgment, example (12) is at least more acceptable than (14), while (16), with pure anaphoric *then* and no conjunction, is quite acceptable (and only in this more specific sense). Similarly, in example (19), *then* appears incompatible with *every time*, while in (20), *then* is more acceptable with the more specific *any time*.

- (16) If Mary bakes a cake, she gives a party then.  
 (17) Every time Mary bakes a cake, she gives a party.  
 (18) Any time Mary bakes a cake, she gives a party.  
 (19) \*Every time Mary bakes a cake, then she gives a party.  
 (20) ?Any time Mary bakes a cake, then she gives a party.



In considering the hypothesis that *then* demands specific temporal reference (or mental-space reference), it is interesting to examine the contrast between the two senses of *whenever*, which is ambiguous in much the same way as generic conditionals. *Whenever* can mean either "every time" or "at some specific, but as yet unidentified time". Only the latter sense coexists comfortably with *then*, as seen in example (21).

- (21) Whenever you come, we'll go to the store.  
 a. "At whatever time you come this afternoon—we don't know yet what time it will be—we'll go to the store at that particular time."  
 b. "Every time you come, we'll go to the store."  
 (22) Whenever you come, (then) we'll go to the store (then).  
 (*Then* forces a reading involving a specific time.)

*When*, unlike *if* and *whenever*, seems to resist nonemphatic use with *then* in modern English: it seems acceptable when there is strong pragmatic emphasis on the time, and correspondingly strong stress on *then* and *when*. (This is of course precisely when reiteration of information might be expected without sounding redundant.) Far more than *if* or *whenever*, *when* refers to a particular time and set of circumstances, pointing them out as extant—in short, it does the deictic work done by *then*, making the resumptive *then* unnecessary in the following clause.<sup>15</sup>

#### 6. Only if: Semantic compatibility versus pragmatic compatibility

The final type of restriction on *then* mentioned by Iatridou has to do with *only if* sentences, such as (23):

- (23) \*Only if it's sunny, then I'll visit you.

Iatridou considers various reasons for the restriction, including syntactic factors, quantificational representation, and the fact that *only if* duplicates what *then* says. As Dancygier (in press) has noted, however, the discourse function and sentential position of *only if* clauses should also be considered. In natural discourse, unlike standard predictive protases, they normally follow their apodotes: it is usually more appropriate to say *I'll visit you only if it's sunny* rather than *Only if it's sunny I'll visit you*. When an *only if* clause is sentence-initial, it calls for main-clause inversion (*Only if it's sunny will I visit you*). Iatridou considers the syntactic properties of inversion; however, inversion in English declarative clauses generally indicates a marked discourse function. The function of *only if* seems to be something like the emphatic insistence on one (alternative) space P, as background to a "Q" clause which is already present in the

discourse context. Even the inverted form seems to call up previous mention of the apodosis material (e.g., preceding discussion of S visiting H). The inverted form's marked discourse function may be to reconcile the continuing-topic status of Q with the initial and topical position of P in the clause. So perhaps *only if* and *then* clash because they both signal that P will make Q happen but ~P will not, but they do so in entirely different discourse frames. *Then* is anaphoric to the preceding protasis; *only if* normally limits a previously stated apodosis. It would thus be surprising if they could both be used in the same sentence.

#### 7. Nonpredictives

Under the interpretation offered by Iatridou, *then* has a possible negative presupposition "if ~P, ~Q". We have claimed, however, that the restrictions on the use of *then* can be explained in terms of its deictic meaning and its sequentializing function. These aspects of its semantics, by pointing to one mental space against a presumed background of other alternative options, will predict Iatridou's presuppositional facts. The question now is which of the interpretations will be more accurate in extending our account to the use of *then* in nonpredictive conditional constructions. Classes of conditionals which frequently show non-predictive interpretation include (a) so-called *speech-act conditionals* (e.g., examples [1] or [27]), where the speech act represented in the apodosis is put forward as conditional on the contents of the protasis, (b) *epistemic conditionals*, where the conditional presents the act of concluding or reasoning to belief in the apodosis as contingent on the knowledge of the protasis (e.g., examples [24] or [25]),<sup>16</sup> and (c) *metalinguistic conditionals*, wherein the speaker purports to use a particular linguistic form conditionally (e.g., example [26a]).<sup>17</sup>

- (24) If he typed her thesis, (then) he loves her.  
 (My belief that he typed her thesis is the sufficient condition for the conclusion that he loves her.)<sup>18</sup>  
 (25) If she took a three-hour MA exam, (then) she entered in 1983.  
 (My knowledge that she took the exam is the sufficient condition for my conclusion that she entered the program in 1983.)  
 (26) a. OK, if we're gonna be picky, I'll just put another *trout* on the grill.  
 b. ?If we're gonna be picky, then I'll just put another *trout* on the grill.  
 (You previously criticized my incorrect use of the word *salmon* [the folk and Linnean uses of *trout* and *salmon* do not coincide]; that picky behavior is the sufficient condition for this use of the "correct" word *trout*.)

- (27) If you are so smart, (then) why aren't you rich?  
 (Our shared, or "on the conversational floor" belief in your smartness—together with some general background inference that smart people tend to get rich—is the condition which licenses the question why aren't you rich?)

A speaker's goals in presenting a speech act or a reasoning pattern conditionally do not necessarily involve alternatives; indeed, for speech acts especially, the motives are more likely to involve situating the speech act than genuine comparison with alternative circumstances and an alternative speech act. Speech-act conditionals are thus normally non-predictive, and epistemic and metalinguistic conditionals are also frequently nonpredictive. Sentence (24), for example, sets up the speaker's belief about typing as a condition for a further inference; the typing event may well be familiar conversational material, mentioned just to situate the reasoning pattern for the hearer, rather than to suggest that other conclusions would be drawn from other data. In these cases, although no alternative space is set up, a successful interpretation must still set up links between P and Q, involving sequence and causal structure.

*Then* is very commonly found in epistemic conditionals, as in examples (24) and (25), but rarely used in speech act constructions such as example (1) and in metalinguistic conditionals like (26) (although speech-act conditional sentences like [27] are not unusual). The use of *then* in epistemic conditionals is not only acceptable, but in a number of cases preferred. At the same time, clause order of conditionals like sentences (24) and (25) is not iconic for a sequence of events, but rather for a sequence of steps in the inferential chain. In (24), the claim is that the speaker's *belief* about the thesis typing is the cause of her *conclusion* about the loving (*not*, in the most plausible interpretation, that the thesis-typing event caused the loving). The sequentiality which presents the premise as necessarily having to be known or verified before the conclusion can legitimately be drawn is an inseparable part of our understanding of inferential structure, and is very naturally represented by a conjunction such as *then*. Crucially (and unlike the case of nongeneric content conditionals), speakers may find explicit reference to the epistemic "ground" of premises useful even in cases where the ground is non-contrastive (Sweetser 1990). Identifying premises may simply be done to ensure that the hearer notices, or continues to notice, the shared nature of the basis for the reasoning process. Yet if the premises are explicitly identified, even noncontrastively, they are pointed to as the unique background mental space relative to which reasoning is conducted; such a

mental-space construction makes anaphoric *then* a possible marker of the apodosis.

Alternative space building and prediction are involved in only some epistemic conditionals (as is further indicated by their ability to appear with distanced verb forms). Thus, the "if  $\sim$ P,  $\sim$ Q" inference seems to hold for example (25), where we still have to discover what exam she took, but not for example (24), which implies that speaker and hearer share knowledge that the subject did in fact type the thesis. The emphasis in (24) is not on the contrast between P and some alternative P', which might allow a different reasoning sequence, but simply on the necessary way in which Q follows from this specific P. *Then* marks, first of all, deictic identification of a mental space P ("I know he typed her thesis") as *the* relevant mental space within which Q can be concluded, without necessarily evoking any contrastive alternatives in that identification. *Then* also marks P's sequential or causal relation to the space in Q, without specifying whether the causality or sequentiality is to be set up in the "real" world or in the domain of reasoning (as here). However, as we have stated above, even noncontrastive identification is useful to the speaker in many contexts. What we would expect is that the *iff* implicature fails to be drawn in these noncontrastive *then* examples, since they fail to make reference to alternative  $\sim$ P spaces. This seems to be correct: sentence (24) does not necessarily claim that typing her thesis is the necessary and sufficient proof that he loves her.

For speech-act conditionals, as for epistemic conditionals, *then* is used in ways that do not seem to evoke choice between explicit and contrasting alternatives (cf. Dancygier and Sweetser 1996). The speaker of (27) is not really offering an alternative space where it is not on the floor that the hearer is "so smart", but pointing to a background which she claims as shared (even if the hearer might not in fact quite agree, or even if S's ultimate point is to establish the opposite as true). We would therefore need to treat many of these speech-act uses of *then* as noncontrastive, but uniquely referential, cases of anaphoric reference. As such, they should allow *then*, but should not evoke an *iff* inference, which seems to be correct.

Even noncontrastive reference to a unique entity, made explicitly, is more salient than simple evocation of the entity, or assumption that it exists. We are arguing that explicit use of *then* in conditional apodoses, even noncontrastively, is sometimes too explicit to fill the function of speech-act conditionals. For example, although there is considerable variation, speakers seem quite reluctant to accept *then* in speech-act conditionals such as examples (28) and (29). Why should this be the case?

(28) ?If you'll pardon my saying so, then that was a rude question.  
 (29) ?If it's not rude to ask, then what got you interested in linguistics?

In (28) and (29), the speaker is trying to co-opt the hearer's agreement to a precondition: *If you don't mind my asking* is really an attempt to presume permission by making the hearer's "not minding" a common ground. It would be inept, given the speaker's goals, to emphasize that the addressee has other options than agreement, and that the speech act Q is "located" only in the space where the addressee agrees to P. S's goal is to look as if she is offering options (hence the reference to H's preferences), while not actually doing so (hence the presupposed status of the protasis). Notice that such a speech act is noticeably better with *then* if the protasis is genuinely overtly accepted by the addressee. So if an interviewer says, "Would it be too personal to ask you about how you got into linguistics?", and the interviewee responds "Oh, no, that would be fine", the interviewer might be licensed to use *then* as in (28). Under these circumstances, the speaker has every reason to emphasize that P is the particular (and referentially unique) location of Q: she is happy to hammer in the point that this is officially an acceptable question.

Deixis and referential uniqueness thus interact with the pragmatics of speech-act conditionals. To use a deictic form, even if noncontrastively, is to focus on the identification of the entity pointed to—to insist on that identity, and to ask the addressee to focus on it as well. When the precise identity of the mental space P, and its sequential relationship to Q, are intended to be brought up tactfully as implicit background, such focus and emphasis are not appropriate.

For some of the same reasons, example (30) seems generally unacceptable to speakers we have consulted, although the version without *then* is entirely acceptable.

(30) #If you need any help, then my name is Sophie.

Not only does the restaurant (or department-store) employee leave it up to the addressee to decide whether or when he needs help, but the name is being offered regardless, for general use as needed in the restaurant scenario. Although the speaker is indeed justifying her self-introduction as part of business interaction, she would be churlish to insist on the exclusiveness of such purposes. Presumably she can leave it to the customer's good manners not to assume, for example, that the introduction entails general social contact beyond the restricted commercial frame's structure. Here two pragmatic factors are evidently involved: first, the inappropriateness of uniquely identifying P as the (sole) space

wherein Q holds, since in fact Q is being performed regardless; and second, the impoliteness of emphasizing such exclusiveness.

Given these interactions between deixis and pragmatics, we can now see why speakers vary in their response to example (31) (Austin's classic [example (8)] with *then* added).

(31) If you're hungry, then there are biscuits on the sideboard.

It seems to us that part of this variation may be due to the fact that they are interpreting the background differently. If the speaker has no idea whether the addressee is hungry or not, and indeed is making the offer of biscuits in a general way, independent of hunger, it seems rude to insist on the specific circumstances under which the biscuits are offered: better to leave the *if* clause as general possible background than to overtly mark it as *the* mental space where the offer holds, among relevant options. However, if the addressee has just mentioned being hungry, *then* becomes a somewhat more reasonable option, since the offer is addressed precisely to remedy this specific circumstance.

Finally, speakers seem very ready to allow *then* in speech-act conditional examples such as *If you're so smart, why aren't you rich?* (example [27]). It seems probable that the causal and sequential relationship between the *content* of the two clauses (smartness is likely to cause riches, and must preexist in order to do so) is part of what makes *then* so acceptable in these cases. They parallel epistemic cases such as *If he's so smart, (then) he's probably already rich*, or content cases such as *If Josie (your newborn daughter) is smart, (then) she'll get rich*. And of course they also fit the general model above: emphasis on the uniqueness of P as a setting for Q here constitutes some reassurance that the speaker wouldn't normally ask a question such as "Why aren't you rich?", even if alternative circumstances are not directly evoked.<sup>19</sup> Since the speaker of (27) cannot hope to be indirect about the (perhaps disputed) claim to put "hearer is so smart" into the category of shared conversational ground, she has no reason to back off from explicit pointing to this claim with overt pronominal reference, either.

Metalinguistic conditionals also allow *then* under some circumstances: example (32) is fairly acceptable to some speakers, (26b) much less so, but (33) is quite acceptable.

(32) If we were in Louisiana, then you'd be eating "green trout".

(That is, the fish that you are eating is called *green trout* in Louisiana.)

(33) If we were speaking Spanish, then he'd be your uncle.

(That is, the speaker thinks that the Spanish word for "uncle",

*tio*, is also used to refer to this person's relationship to the hearer, perhaps father's cousin.)

- (26) b. ?If we're gonna be picky, then I'll just put another *trout* on the grill.

(The hearer is taken to have previously objected to the speaker's incorrect use of the word *salmon* instead of the word *trout*.)

We have argued in detail (Dancygier and Sweetser 1996) that certain classes of metalinguistic conditionals do involve alternative spaces. The "distanced" verb forms in (32) and (33) are evidence that these examples are predictive, setting up alternative spaces wherein the relevant linguistic forms are and are not used. The fish in example (32) is called *green trout* precisely when one is in Louisiana, and not under other circumstances. Predictively used alternative spaces are, as ever, prime candidates for deictic semantics, so there is every reason why these particular metalinguistic conditionals should be possible candidates for marking with *then*.

## 8. Conclusions

We have presented a picture of *if-then* conditionals wherein the different parts of the construction and of the context make differing contributions to interpretation. *If* sets up a mental space wherein the apodosis' content (or speech act, or conclusion) is taken as existing. *Then* refers uniquely and anaphorically to the mental space set up in the protasis, and may contextually have a contrastive deictic function which requires some other mental space to be postulated as the contrasted entity. Verb forms are equally relevant: the use of the simple present tense in apodosis as well as protasis (as in examples [10] to [20]) clues the hearer in to the generic rather than specific nature of the space constructed, and thus removes the possibility of unique anaphoric reference to that space; "distanced" or "subjunctive" verb forms mark, instead, a space with which the speaker does not identify ("counterfactual", for example). And the demands of relevance allow a hearer to conventionally give a predictive interpretation to a conditional construction, which in turn requires the setting up of alternative spaces for the purpose of prediction. This in turn gives rise to the Geis and Zwicky *iff* implicature.

Classic issues such as order of P and Q are related to the presence or absence of *then*: it has long been noticed that *then* occurs on Q only in the default (iconic) P Q order, not in Q P order.<sup>20</sup> The same is true in temporal clauses: *When P, then Q* is acceptable, but not *Then Q, when*

P. This falls out of the anaphoric nature of *then*, which is not interpretable without preceding establishment of a referent mental space.

The *even* of concessive conditionals adds yet another functional component: it sets up a scale, involving a whole range of mental spaces which are set up by the *if*. *Only if* conditionals, which we have examined only very briefly, have at least some unique conversational structure to them, and combine with other constructions as appropriate for that functional structure.

To some extent, there is overlap between generalizations about some of these formal and functional aspects of conditionals. For many salient cases, such as the (predictive) central textbook examples of conditionality, the same alternative-space structure which licenses the *iff* inference also licenses the use of contrastively referential *then* to refer to the space actually mentioned (as opposed to the alternative one). But since *then* is not solely contrastive in reference, its use extends to a wider class of conditionals than those where we draw an *iff* implicature. Since it is, however, *unique* in reference, it fails to apply in generic or concessive conditionals, where there is no unique space set up, and is inappropriately direct in certain speech-act conditionals. And since generic conditionals may evoke alternative structures (albeit not unique ones), they are consistent with predictive-alternative structures such as distanced verb forms, and may even give rise to generically structured *iff* inferences, although they do not co-occur with *then*.

It is not by chance that *then* frequently correlates with *iff* and related inferences; it is simply the case that its referential semantics mesh well (though not inevitably) with certain other structures which almost demand such inferences. Nor is it by chance that nonconcessive content-level conditionals give rise to *iff* implicatures; their salient predictive function normally requires such implicatures to ensure relevance of the prediction. Both of the conflicting logical analyses of conditionals are thus motivated: the general conditional construction *per se* does not conventionally carry an *iff* implicature, but the more specific predictive conditional construction does. Looking at a broader range of conditional constructions allows us to pick out the specific contributions of individual components to the interpretations of larger conditional constructions. It thus allows us also to differentiate between a form's compatibility with some functional aspect of conditionals, and its conventional ability to signify that function.

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## Notes

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1. We follow Sperber and Wilson (1986 and elsewhere) in referring to the Speaker as *she* and to the Hearer as *he*, for clarity.
  2. Prediction set up against a background of a *when* clause: *When it rains, they'll cancel the tennis game* suggests that the speaker has grounds for unconditional prediction. We will, however, be using the term *prediction* in this article largely as a shorthand for *conditional prediction*, and it should be so read throughout our discussion of conditionals.
  3. Fauconnier (1985, 1996, in press) regularly treats conditionals as *space builders*.
  4. Mental spaces, unlike possible worlds, are not necessarily complete world portrayals. In the theory of mental spaces, we are not required to suppose that a speaker who says "Things would be perfect if John had come to the meeting" is saying that "things would be perfect" in a world just like the present one (AIDS, famines, and wars included) except for John's attendance of the meeting. Instead, this is a local observation about a partially structured mental space, involving perhaps the office activities which would have been improved by John's attendance (see Dancygier and Sweetser 1996). Interpretation of all utterances is relativized to context, and mental-space theory reflects this in an appropriate way.
  5. Sweetser (1990: 124): a speech-act conditional is one where "the protasis is a supposed condition for the performance of the speech act in the apodosis". This is in contrast with *content-level* predictive conditionals such as *If it rains, they'll cancel the tennis game*, where the events referred to in the contents of the two clauses are in a conditional relationship with each other. A gloss of the relevant ("speech-act conditional") contextual interpretation of *If you're busy, I can come back later* would be something like "If (as I think from the evidence before me), you're busy, then I offer to return later." See also Van der Auwera (1986) and Sweetser (1996) for discussion of this class of conditionals.
  6. Of course, new information, or crucial information, can be introduced in an *if* clause. This need not invalidate the statement that *if* clauses are backgrounded with respect to the main clause. In fact, introducing new and salient information in a "backgrounded" syntactic slot performs particular functions, such as allowing the speaker to pretend it was given all along—this may in turn have some effect on the hearer, such as making him feel as if he is not well informed. But that effect is achieved precisely by the backgrounding function of the syntactic slot, not by the absence or negation of that function.
  7. We prefer the terms *negative epistemic stance* and *distant verb form* to the traditional "counterfactual" label, particularly since Comrie (1986) has made it clear that such conditional usages are not actually counterfactual, however "dubious" or "unaccepting" they may be. Under the right contextual circumstances, such negative epistemic stance is often interpreted in a counterfactual manner. James (1982) cites crosslinguistic usages of past-tense forms with "hypothetical" meanings; Fleischman (1989) has further discussed the crosslinguistic connection between past-tense forms

8. For *content* conditionals, the event or state of affairs referred to in Q is situated in a mental space structured by the events or states described in P; for other kinds of conditionals, such as epistemic or speech-act conditionals, the connection may not be between the states of affairs described in the two clauses, but between premises and conclusions or contexts and speech acts expressed by those clauses. In these cases, which we will discuss later in this article, the space constructed by the protasis is a discourse space, and the use of *then* will refer to that discourse-constructed space. Perhaps the most obvious case of this phenomenon is the pervasiveness of causal interpretations of *and* conjuncts and also of unmarked sequences of clauses (*Chris insulted Sue and she got mad*, or *Chris insulted Sue. Sue got mad*). (cf. Lakoff 1971, Haiman 1980, 1986, Blakemore 1987).
9. See Kay (1990) for a general treatment of *even* as scalar. Note that in saying that the construction *presents* P as an extreme on some scale, we are not claiming (nor do other scalar analysts) that no more extreme items could be imagined by some hearer, but only that an "extreme" construal is imposed in this context. For the purposes of relevance to the current discourse, scalar constructions set up more extreme items on a pragmatic scale as more relevant, since information about items in less extreme locations on the scale can be inferred from information about items in more extreme locations (cf. Fauconnier [1975], Horn [1969, 1984] for treatments of scalar implicature; Fillmore, Kay, and O'Connor [1988] examine another grammatical construction whose interpretation involves pragmatic scales).
10. cf. note 7.
11. Fauconnier (1996) argues that *analogical counterfactuals* serve the specific function, not of actively building spaces, but of preventing certain kinds of mental spaces from being built in discourse. For example, he cites a line from film, where a character saying *I don't have a sister, but if I did, she wouldn't be a hooker* is using the counterfactual to forestall another character's attempt to build a mental space wherein he is forced to sympathize with a murdered prostitute because *What if it were your sister?*
12. In viewing these sentences, readers are advised to attempt to avoid epistemic readings, which might be glossed as "If I know that Mary has baked a cake, then I conclude (or I'm certain) that she has given a party." These epistemic readings are not generic, but represent some hypothesized specific (although perhaps not unrepresentative) reasoning sequence.
13. Langacker (to appear) separates what he labels the *structural plane* (a framework for the structure of a mental space, but located in no particular unique space) from the *actual plane*, to which unique reference could be made. In this model, *then* would require specific unique reference, and thus could not refer to the structural plane, where generic material is construed as residing. It is important, here, to keep our understanding of *abstractness* distinct from the idea of *genericity*; we are claiming that *then* refers quite specifically, within a highly abstract domain of mental spaces.
14. This is simply an observation about Modern English, not a broader claim about the impossibility of such resumptive deictic usage. Earlier forms of English welcomed coherent anaphoric and cataphoric use of deictic conjunction (see Traugott [1982] for some discussion of the process of differentiation between antecedent and consequent clause markings).
15. cf. Sweetser (1990), Dancygier (1993).
16. cf. Sweetser (1992), Sweetser (1990).
17. cf. Dancygier (1990), Dancygier (1990).

18. Note that the normal reading of (24) specifically does *not* involve a conditional relation between the *contents* of the two clauses; if anything, it might be assumed that at the level of the events described, the loving was a condition for the typing rather than the other way around. We have observed elsewhere (Dancygier and Mioduszewska 1984, Sweetser 1990, Dancygier 1993) that reasoning often proceeds from effect to likely cause, so that epistemic conditionals often reverse the content-conditional sequence.
19. Paul Kay has pointed out to us that many speech-act conditionals are susceptible to contrasting interpretations: (27), for example, could imply that the addressee is not smart, or it could be a genuine query about the reasons for an intelligent person remaining poor. In general, speech-act and epistemic conditionals serve a varied range of pragmatic purposes, including (1) the speaker's desire to show up the poor logic involved in the related epistemic chains, and (2) the speaker's desire to ask a real question, which is justified or given background by the presence of those expected causal chains. Interestingly, in this case, these variations in intention do not appear to be relevant to the use of *then*, but all fall within its acceptable range of contexts.
20. It is acceptable to say *Then I'll do it, if you come to my office* only if there is some already established reference to your coming to my office, and *then* is being used to refer to that, not to the following clause.

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## Context-sensitive verb learning: Children's ability to associate contextual information with the argument of a verb\*

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### Abstract

Common linguistic phenomena such as selectional restrictions (e.g., the verb *assassinate* applies only to prominent people) and verb polysemy (e.g., one meaning of *roll* applies only to round objects, as in John rolled the ball, another only to flat flexible objects, as in John rolled up the flag) suggest that verb learning is context sensitive, where context may be characterized in terms of the conceptual categories (e.g., basic-level kinds) or grammatically relevant properties (e.g., shape/dimensionality) that apply to the arguments of a verb. Two experiments test the prediction that verb learners are predisposed to associate conceptual and/or grammatically relevant information with the arguments of a verb. Children and adults were taught two different verb meanings, for the same made-up verb stem, in the context of two different objects; they were then tested on their ability to act out the meaning of the verb. It was found that subjects were able to learn that different verb meanings applied to different objects when those objects differed only in dimensionality or only in basic-level categories, but not when those objects differed only in the linguistically less-relevant dimension of size, or only in subordinate- or superordinate-level categories. The results are taken to support the hypothesis that verb learning is context sensitive, and are interpreted with respect to two possible functions of context sensitivity: how children acquire selectional restrictions on the use of a verb, and how they individuate the different versions of a polysemous verb.

... by analyzing carefully the conditions under which people are able (or unable) to resolve polysemy, it may be possible to learn more about the kinds of contextual information that are involved and how those contexts interact with stored lexical information. Polysemy offers a window on the association of form and meaning.

George Miller, *The science of words*