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THE ESSENTIAL INADEQUACIES OF SPEECH ACT MODELS
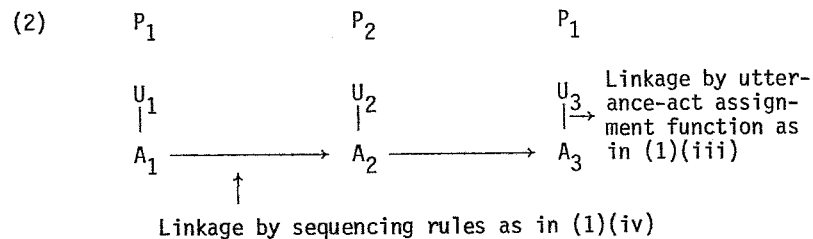## OF DIALOGUE

Stephen C. Levinson

1.0 *Speech act models of dialogue*[1]

There is a simple and attractive model of dialogue that is widely
if often implicitly subscribed to, which goes roughly as follows: con-
versations cohere or are held together not at the level of what is said,
but at the level of what is *done* by what is said, by virtue of rules
governing the sequencing of speech acts. Now there are many different
versions of such a theory, as in Labov (1972), Sinclair and Coulthard
(1975), Clarke (1978), Labov and Fanshel (1977), Power (1977), and many
other works,[2] but we can isolate one whole class of such models that
share the following criterial properties:

(1)　(i)　There are unit acts, *speech acts*, that are performed in
speaking.

(ii)　Utterances are segmentable into unit parts - *utterance
units* - each of which corresponds to a unit act.

(iii)　There is a *speciable procedure that will assign unit
acts to utterance units*, or at least there is a function
whose domain is the set of possible utterance units and
whose range is the set of possible speech acts.

(iv)　Conversational sequences are primarily regulated by *a*

set of sequencing rules stated over speech act types.

The kernel idea behind such models is this: since sequential constraints are clearly not easily stated on the form or meaning of what is said, we should translate utterances into the underlying acts they perform, because on this deeper level rules of sequencing will be straightforwardly describable. The idea is appealing because it promises to capture some of the obvious regularities of the sort that questions tend to be followed by answers, greetings by greetings, offers by acceptances or refusals, apologies by forgivings and so on. A very first approximation, then, to a model of dialogue along these lines can be represented as (2):

(2) P_1 P_2 P_1

             U_1 U_2 U_3 Linkage by utter-
             | | →   ance-act assign-
             | | | ment function as
             $A_1 \longrightarrow A_2 \longrightarrow A_3$ in (1)(iii)
                        ↑

          Linkage by sequencing rules as in (1)(iv)

where P_1 and P_2 are the participants, U_n is an utterance unit, A_n the unit act achieved by that utterance unit.

Although as a model (2) can only be described as crude, notice that closer approximations to reality can be achieved without essentially changing its nature.[3] For example we could define the notion of a *turn* at speaking and allow each turn to contain more than one utterance unit each achieving one unit act, as in the response in (3):

(3) A: Well, how are you?

     B: Oh very well thanks. And you?

In addition we could allow for embedded sequences of a sort we shall describe in a moment (see example (4) below); and to accomodate indirect speech acts we could provide an additional 'layer' distinguishing the 'literal' speech act from the 'conveyed' or indirect one. But all these frills[4] would not change the basic features of such a model, out-

lined in (1) above.

Now if this view is correct we can treat conversational structure as a formal language, whose terminal vocabulary consists of utterance units, and whose non-terminal or auxiliary alphabet consists of speech act categories. We can then rapidly arrive at various important theorems about the nature of conversational structure.[5] For example, due to the existence of examples like (4), where one question-answer sequence is embedded within another, we can state the fundamental theorem 1 in (5):

(4) A: Excuse me can you tell me where Woolworths is? Q1
     B: Ah, do you know Penney's? Q2
     A: Sure.   A2
     B: Well it's just around the corner from there.   A1

(5) Theorem 1: the syntax of dialogue is essentially self-embedind and requires an infinity of substitution classes; it cannot therefore be generated by a finite state device.

To those who subscribe to any model of dialogue that has the properties outlined in (1) this would be an important result, establishing where on the familiar hierarchy of formal languages or automata the 'syntax' of dialogue must lie. We could look forward confidently to further such results.

However I believe that this apparently attractive approach is in fact quite inappropriate as a model of natural conversation. Indeed I would like to state a counter-hypothesis:

(6) dialogue has no syntax, speech act types are not the relevant categories over which to define the regularities of conversation; there exists no other finite alphabet over which to define the regularities; and there are no concatenation rules of general application even if there were such an alphabet.[6]

To see why I maintain the counter-hypothesis let us review the properties of speech act models of dialogue outlined in (1).

2.0 *Problems for each of the cardinal properties of speech act models of dialogue*

If we examine the four basic assumptions, stated in (1) above, that underlie speech act models of dialogue, it soon becomes clear that there are overwhelming problems with each of them. Let us take them one by one.

2.1 *The existence and identifiability of unit acts corresponding to specific utterance units*

The first problem that arises here is that utterance units often seem to involve more than one speech act in a number of different ways. Simple examples are indirect speech acts like (7), which is both a question and an offer, as shown by the possible response 'yes I would thank you' where the 'yes' answers the question and the 'thank you' acknowledges the offer:

(7) Would you like another drink?

Less obviously perhaps the first utterance in (8) is not just a question:

(8) A: What are you doing tonight?
     B: Nothing, why?
     A: I was thinking of going to a movie, wanna come?

It is also as Sacks, Schegloff and associates have pointed out, a *pre-offer*. If we were to characterize A's first utterance as just a question, we would have to consider B's 'nothing' palpably false, which it isn't of course under the interpretation that it is a response to a question that is a pre-offer and that it therefore means essentially 'nothing that would make the offer of an evenings entertainment irrelevant'.

Now utterances doing more than one speech act at a time are not in and of themselves overwhelmingly problematic for speech act models of dialogue, but they are recurring difficulties. It can be shown that multiple functions arise in many different ways, that the set of speech

act categories that thus arise (pre-pre-offers etc.) may be indefinitely large, and that the source of such multiple assignments of force actually lies not in the utterance taken singly, but in the slot it occupies in a conversational sequence (see Sacks and Schegloff 1974, Schegloff 1976). Thus the first utterance in (8) is a pre-offer by virtue of its placement in a recognizable offer-sequence. Finally, if a unitary utterance may achieve more than one 'act' simultaneously, shouldn't we change the terminology? For an action is a composite formed from a chunk of behaviour and a set of intentions. The multiplicity of simultaneous functions is really an assignment of more than one intention to the utterance, a chunk of behaviour. The change of terminology is apposite because it reminds us that intentions are not units in the way that behaviour chunks can be; intentions can have hierarchical organization (one being the raison-d'etre for another) and linear relations (one being a precondition to another), and for an interactant another interactant's intentions are only likely to be determinable up to a certain point, which raises the second major problem for speech act unitization.

Related to multiple-duty utterances, but ultimately more problematic is that on occasions speakers seem to have great chains of motives or perlocutionary intents that issue forth in a single utterance. Take this simple case: I'm not enjoying the party that I have gone to with my companion Mildred, so I wish to leave, so I want to suggest that we both leave, so I say to her,

(9) It's getting late, Mildred

To which Mildred may felicitously reply with any of the following utterances;

(10) a. It's only 11.15 darling
      b. But I'm having such a good time
      c. Do you want to go?
      d. Aren't you enjoying yourself dear?

where only the first one seems to respond directly to what is said. The

others seem to respond to higher levels in the hierarchical chain of
motives that led me to say (9); thus (10b) is addressed to my desire
that we both go, (10c) to my wish that I go, (10d) to my ultimate mo-
tive in saying what I did.

There's no difficulty in showing that this is a very general phe-
nomenon and underlies in fact many of the cases where one utterance
does many speech acts, as in (7) above. It follows that speech act
models of dialogue have serious problems: first, we have shown that
responses can be based on perlocutionary intents, often quite remote;
yet speech act theory is founded on a basic distinction between illo-
cutionary and perlocutionary acts, and has nothing interesting to say
about the latter. Secondly the speech act theorist is not in a posi-
tion to simply extend his theory to cover perlocutions: due to the in-
finity of possible perlocutions his model does not and cannot have any-
thing to say about them. So already the original idea of reducing the
immense variety of surface utterances to a limited set of speech act
types over which sequencing rules can be stated, is beginning to lose
some of its charm.

2.2 *The existence and identifiability of utterance units corresponding
to unit acts*

If we are to map unit acts onto utterance units, as the speech act
model requires, the utterance units must be identifiable independently
of the functions (the act units) they perform. This proves to be a
problematic assumption. A first guess at the relevant utterance unit
would be the sentence. But (11) seems to be both an order and a threat,
and (12) both a statement and a question (see Lakoff 1974 for dicus-
sion):

(11) Shut up or I'll beat you

(12) Fillipino Lippi's are delightful aren't they?

Besides we have already seen that a single unitary clause (as in (7)
and (8)) can perform more than one act at once. Furthermore just about
any sentence part above a bound morpheme can operate as a full conver-

sational contribution (see discussion in Morgan 1973):

(13) A: How do you want your coffee?
      B: Light, with sugar, to go.

In addition what are we to say of (14), which was said by way of intro-
ducing:[7]

(14) Bill, Marry; Mary, Bill

Here the relevant utterance units are either one, two or four and it's
hard to say which; we are also at a loss as to whether one, two or four
acts took place. Our decision about utterance units though will deter-
mine our decision about act units, and vice-versa, clearly indicating
that we do not independently identify act-units and utterance-units.

The functional (or act-based) identification of the relevant ut-
terance units is made most clear, though, by facts like attributable
silence (see Sacks n.d.). For example if a teacher presents a child
with an utterance like (15), and the child remains mute, this can be
'heard' as an affirmative reply:

(15) Johnny, did *you* smear Susie's face with paint?

So the relevant utterance units that can function as conversational
contributions can be just about anything, including nothing.

One should note too that responses may be non-verbal, requests be-
ing complied with by actions for example, the ramifications of which
are nicely dealt with by Goffman (1976). Further, there are some ut-
terances that, although formally identical to others that carry func-
tional loads, do not perform full blown speech acts, for example *okay*
said in pre-closing position before a final *bye-bye* sequence (see Sacks
& Schegloff 1974). To distinguish this *okay* from one that signals com-
pliance with an order, or answers the question 'how are you', we will
once again have to appeal to the functions it performs.

Utterance units then are very variable, ranging from sets of sen-
tences through sentence fragments to single lexemes, non-verbal actions
or even silence. Which unit is the relevant unit for speech act assign-

ment cannot be determined in advance, for utterance units seem to be identified on functional grounds. How then is speech act assignment to be achieved?

2.3 *The existence of a specifiable function or procedure that will assign utterance units to unit acts (speech acts)*

We have discussed two of the basic properties of speech act models and have concluded that a) the relevant unit acts are not unitary assignments from a well-defined set of speech act types, but rather an n-ary assignment of intents, where these are linked in specific ways, from an indefinitely large set of possible perlocutionary intents; and that b) utterance units are very varied in kind and must be functionally defined, partly in terms of the acts to be assigned to them.

We now turn to the third basic property of such models, namely the assumption that there is at least a specifiable function, and more ambitiously a specifiable procedure or algorithm, that maps utterance units into speech act units.

Given conclusions a) and b) we see immediately that we are faced with problems. First the domain of the function is defined in part in relation to the range - significant utterance parts are not identifiable without reference to the speech acts that will be assigned to them. Secondly, and crucially, since neither the domain nor the range of the speech act assignment function are well-defined, and indeed seem likely to resist attempts at precise specification, there is every reason to doubt the possibility of properly specifying such a function.

Let us suppose that, somehow, these difficulties can be overcome, and that speech act theory can be purged of its present incoherencies along the lines suggested in Gazdar (1979b). Then we would still be faced with overhelming problems concerning the adequate specification of an actual procedure that would adequately implement the abstract function that maps utterance units into speech act units. Perhaps the major problem here is the fundamental prevalence of *indirection* in human communication.[8]

Attempts to solve the speech act assignment problem fall prey, more or less swiftly, to the facts of indirection. The simplest solution, which loosely following Gazdar (1979b) we may call the 'literal meaning hypothesis', would simply be to assign a unique illocutionary force to a sentence on the basis of its performative prefix (if overt) or its sentence type (often held to be a reflex of a covert performative prefix). This of course fails because of the phenomenon of indirect speech acts (see e.g. Gordon & Lakoff 1975): sentences like (16) indicate that there is no such simple relation between sentences and the speech acts they perform:

(16) Can you please pass the salt.

Searle (1975) would like to maintain that sentences like (16) continue to perform questions, but happen in addition to serve as (perlocutionary?) acts of requesting. However, sentences like (17) are counterexamples to the claim that 'literal' illocutinary force is always retained:

(17) May I remind you that your account is overdue

since it cannot possibly function as a request for permission to remind, since reminding is done in uttering the sentence without such permission being granted (see also Gazdar 1979).

Abandoning the literal meaning hypothesis one could still hope to handle indirect speech acts by means of a limited set of illocutionary force conversion rules ('conversational postulates'), along the lines pioneered by Gordon & Lakoff (1975), Labov (1972) and developed by Labov & Fanshel (1977), Sinclair & Coulthard (1975) and others. The problem here is that such an approach can only be partial.[9] In (18) for example, B (correctly) interprets A's remark as a compliment on the cake she had baked, but not by virtue of any general rule of the sort 'saying that you can eat the whole of X counts as a compliment on X':

(18) A: I could eat the whole of that cake.

B: Thanks. It's quite easy to make actually.

The understanding of such utterances is not based on some huge set of

ad hoc conventional rules for constructing and interpreting indirect speech acts, but some small but powerful set of general principles of inference to interlocutors' communicative intentions in specific contexts. In the long run then the conversion rule hypothesis fails for just the same reason that the literal meaning hypothesis fails: it attempts again to minimize the role of context in determining the acts or intents that are assigned to utterances (for many examples see Levinson 1979).[10]

Many further difficulties could be adduced here, for example one can easily show the main import of utterances is often presupposed, implicated or even more remotely implied (see Levinson 1978), but we have come far enough to present the speech act theorist with a fundamental dilema. Either he retreats to his original position in which illocutionary force is assigned on the basis of surface sentence type, in which case assignment is a relatively simple affair but largely irrelevant to how conversation proceeds; or he is faced with accounting for speech act force and content that are often only tenuously linked to what is actually said by mechanisms that are not simply a set of conventional rules, but rather a powerful set of little-understood inference principles that take many aspects of context into account.

2.4 *The assumption that sequences of utterances are regulated by conventional sequencing rules stated over speech act types*

We come now to the final, and indeed the motivating, property of speech act models of dialogue. For the point of modelling a translation procedure from utterances to acts was to reduce the problems of sequencing in dialogue to a statement of regularities in sequences of acts.

The initial attraction of the program probably stems from observation of adjacency-pair organization (see Sacks & Schegloff 1974:238-41), the way in which, for example, questions set up expectations for answers, greetings for greetings, offers for uptakes or declinings and so on. But the bulk of conversation is not constructed from adjacency

pairs, and it is easy to conceptually overemphasize the constraints on tying between consecutive utterances. Compare for example what can follow an assertion: another assertion, a question, a bet, a promise, a back-channel cue (*huhuh, hmm* etc), an offer, and so on indefinitely and without clear preference for one of these types of response over another.

In any case, responses to first parts of adjacency pairs are a lot freer than the question-answer stereotype would suggest. Questions can be happily followed by questions, partial answers, statements of ignorance, denials of the relevance of the question, denials of its presuppositions and so on, as illustrated in (19):

(19)   A: What does Joe do for a living?
       B: i.   Do you need to know?
              ii.   Oh this and that
             iii.   I've no idea
              iv.   What's that got to do with it
               v.   He doesn't.

To some extent, as I have shown elsewhere (Levinson 1979), what a question is, and hence the nature of the set of relevant responses, is dependent on the peculiarities of the particular language game (social activity) it is embedded within. Thus one cannot expect to find context-invariant sequencing rules even within the highly constrained adjacency pair organizations. Further, some apparently tightly organized adjacency pairs, like compliment and response, turn out to be something other than adjacency pairs on close examination (see Pomerantz 1978).

An entirely different problem for the idea that sequencing constraints in dialogue can be largely captured by rules stating possible concatenations of speech act types, is the problem of topic. In order for sequencing rules to have generality they will have to be stated over illocutionary force types, ignoring the variety of propositional contents. Besides, apart from general constraints that particular

forces put on propositional contents, speech act theory has nothing in-
teresting to say about content. But then how can topical coherency be
guaranteed, even between questions and their particular answers, not to
mention bets and their particular uptakes, assertions and agreements
with those particular assertions, and so on? Obviously we would need
an additional and independent theory of topical dependencies across
propositional contents, and this of course is not provided by the theo-
ry in question; and there are in fact reasons to doubt that such an in-
dependent theory could be provided.

Apart from these general difficulties for rule-based approaches to
sequencing constraints, there are a range of examples that seem to me
to indicate that conversational coherence is not essentially rule-based
at all. These are exchanges in dialogue where responses are aimed not
at what has been said, but at the broader motive, or higher level goal,
that is seen to lie behind what has been said. A simple example is
(20)

(20) A: Is John there?

      B: You can reach him at extension thirty four sixty two

where B's response is not an answer, and yet constitutes an eminently
co-operative response on the understanding that the motive behind A's
question is A's wanting to get in touch with John. Similar examples
are raised by Robinson and Hobbs (1978), who discuss examples like (21)

(21) A: What's the metric torque wrench nipple extractor look
          like?

      B: It's on the bench in front of you

where B's response is only co-operative on the assumption that the
reason for A's question is that he wishes to identify and find the
wrench and that B reckons that a statement of its location will serve
A's purpose better than a description of the instrument itself.

Take a slightly more involved example:

(22) A: Can you give me Mr X's phone number?

      B: Hmm. Have you a number where I can ring you back?

      A: Thanks, but I'll be seeing him later anyway so it's
          alright.

Now note that this might equally have gone a slightly different way, as
in (23):

(23) A: Can you give me Mr X's phone number?
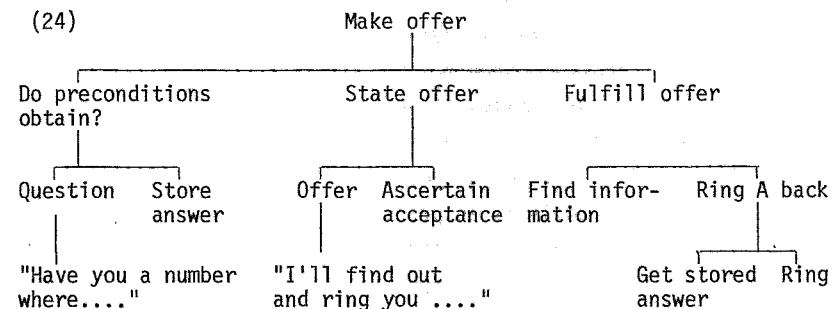
      B: Hmm. Have you a number where I can ring you back?

      A: Yes, it's 60185.

      B: Good I'll find out and ring you back this afternoon.

      A: Thanks a lot.

We can think of B's responses in (23) as being directed by a hierar-
chical plan organizing a set of sub-goals as in (24):

(24)   Make offer

Do preconditions   State offer   Fulfill offer
obtain?

Question   Store   Offer   Ascertain   Find infor-   Ring A back
            answer   acceptance   mation

"Have you a number   "I'll find out   Get stored   Ring
where...."   and ring you ...."   answer

This structure of goals is implemented, up till 'Fulfill offer', in (23)
but not fully in (22). But the interesting thing about (22) is that
A's response in the last line is not to the immediately preceding ques-
tion by B, but rather to B's unstated higher level goal ('Make offer'
in (24)) of offering to ring A back. We know this because A responds
to B's question with 'thanks', even though no offer ever took place.
This is not simply capturable in a speech acts model of sequencing, say
in terms of an embedded structure like (Request (Question-Answer) Offer
to comply with Request) because the offer in question never actually
took place.

This in fact appears to be a very general phenomenon: given an utterance which is merely the first in a sequence predicted by a hierarchical structure of goals, one is free to respond to any of those higher level goals.[11] In doing so there is no appreciable sense of violation, although a sequencing rules model would predict that in examples like (20), (21) and (22) violations of rules would have occurred, with the consequent expectations of repair mechanisms, sanctions and so on.[12] Examples such as these seem to me to be knock-down counter-examples to rule-based analyses of conversational sequencing.[13]

2.5 *Conclusions re speech act models of dialogue*

My strategy has been to raise the possibility of treating the structure of dialogue in terms of some formal language, with all the obvious advantages that would thereby accrue. I then set up what I take to be the most plausible sub-class of such models, namely those based on a non-terminal vocabulary of speech act categories, and outlined the criterial properties of such models. A great deal of recent work on conversation can be directly equated with some model in this class. Finally I have devoted the bulk of the paper to showing that the whole class of models is in principle incapable of modelling the actual properties of natural dialogue.[14]

Despite their inadequacies speech act models of dialogue may capture a number of observable regularities like those for example to be found in adjacency pair organization or ritualized sequences like greetings (see e.g. Irvine 1974). In limited domains, then, like question-answering systems, such models may appear to be quite successful, and we should not be misled thereby into the belief that they will offer a general account of how conversation proceeds.[15]

3.0 *Where now? Some implications of the failure of speech act models of dialogue*

The failure of speech act models of dialogue leaves us in something of a theoretical vacuum. If cohesion in discourse is not founded on

rules governing sequences of acts, what is it founded on? The answers must no doubt await future research. But which directions should we look in?

There seem to me to be just two promising avenues for future research. The first is this: instead of rushing in to fill the theoretical vacuum, we should turn back resolutely to the data, for we need to have a lot more systematic information about the basic nature of conversation before abstract theorizing is likely to be profitable. Intuitions are simply not reliable in this area, as Schegloff nicely illustrated at the conference from which this volume emanates. And we may turn to the work by Sacks, Schegloff, Jefferson and associates not only for some basic findings but also for some methodological tools that have amply proved their worth (see the representative collection in Schenkein 1978).

Another quite distinct potential avenue of research has been opened up by Artificial Intelligence, namely the possibility of analysis by synthesis. The discipline of producing programs with the appropriate output puts the kind of constraints on theory that will tend to make theory construction in this area more than mere *post hoc* rationalization of how dialogue is achieved.

But the approach *via* synthesis faces the theoretical vacuum noted above, and in this context it is worth speculating in what general area adequate models of dialogue are to be found. My own hunch is that the correct approach is to be found within some general theory about the nature of inter-personal interaction. For interaction, verbal and otherwise, is based on an interlocking of goals or objectives in a way that generates sequences of highly co-ordinated inter-dependent acts. Such a theory, which I have sketched elsewhere (Levinson 1978), does not fall prey to the many objections that I have raised against speech act models of dialogue. Crucial to such a theory would be the ability of interactants to reconstruct the hierarchical plans or goals of other interactants, and thus the ability to respond to goal-structures like those in (24) above. The multiplicity of acts (or perlocutionary in-

tents) that can be achieved by a single utterance, the indefinite na-
ture of utterance units, the context-sensitivity of act (or goal) as-
signment, and the *strategy*-based rather than rule-based nature of se-
quencing constraints, the nature of topic, can all be given some na-
tural characterization along these lines (again, see Levinson 1978).

But any theory of this kind takes us into novel and uncharted a-
reas of theory about human behaviour. To appreciate this it is impor-
tant to see that there is a fundamental difference between a speech act
and rule-governed model of dialogue and one based on a goal-driven the-
ory of co-ordinated interanction (a difference of a sort that makes
inappropriate, I think, the theoretical amalgams in e.g. Morgan 1978a,
Perrault, Allen & Cohen 1978). As Chomsky (1976) has emphasized,[16]
all the recent successes in the understanding of human behaviour have
come about essentially by divorcing the study of the structural proper-
ties of behaviour from the motivational system that drives it (thus for
example, perlocutionary intents can be claimed to be irrelevant to se-
mantic analysis). But in the case of conversation, although there are
important structural constraints of a sort exemplified by turn-taking
systematics (see Sacks, Schegloff & Jefferson 1974), it does not look
as if we can make this basic methodological banishment of motives,
goals and intents - not at least if we are in the business of analysis
by synthesis. For goals or plans are actually required to *drive* an
A.I. system of the appropriate kind, as the only existant program that
generates both sides of a dialogue clearly demonstrates (see Power
1977). We thus find ourselves in quite unfamiliar theoretical ground.

To fill this theoretical vacuum what we seem to need is both a
sophisticated theory of how humans construct goals and co-operatively
implement them, and a metalanguage for talking about plans, goals, sub-
goals and the like. Some help here can be gleaned from the philosophy
of action and the growing literature on 'practical reasoning' (see
Brown & Levinson 1978 for an application to aspects of language usage).
Another important potential source for theory and formalism here is the
mathematical theory of games.[17] But by far the most promising line of

approach seems to be in the development of programing languages like
PLANNER (see Power 1977 for an application to models of dialogue).

But all this is speculation. In the meantime the interesting work
on the nature of conversation is being conducted within the first line
of approach - the careful analysis of natural occuring talk using the
methods pioneered by Sacks and Schegloff.

FOOTNOTES:

1.   This paper is an abbreviation of the first part of Levinson (1978) which was written in response to a confrontation with Bill Woods and David Clarke in a special session of the Semantics Conference held in Cambridge in April 1978. I am very grateful to Jay Atlas, Penelope Brown, Gerald Gazdar, David Good and Marion Owen for useful comments.

2.   See also e.g. Allwood (1976: chapter 15.4). Note that the well known paper by Goffman (1976) also seems to espouse this view, while simultaneously raising many difficulties for it.

3.   See Labov (1972) for the most explicit version of this model. The later work in Labov & Fanshel (1977), although obscured by sheer complexity and internal inconsistency, retains a basic model of exactly the same sort, as the following quotes and references should make clear: "obligatory sequencing is not found between utterances but between the actions that are being performed" (1977:70); "The rules of discourse that we present here are like the rules of syntax in their unconscious, *invariant* character" (1977:75, italics added); "The rules of production and interpretation that we have been disussing [...] are quite complex; the sequencing rules are relatively simple' (1977:110).

4.   Another important refinement would be to use the limited set of speech act types suggested by Searle (1976), in the hope that sequencing rules could be reduced by stating them over *classes* of speech acts. A certain indeterminacy clearly enters here: see the entirely different kinds of categories used by e.g. Sinclair & Coulthard (1975) and Labov & Fanshel (1977).

5.   The idea of doing this occurred independently to myself, Jens Allwood, Gerald Gazdar and no doubt many others; it seems to have been most extensively explored by David Clarke (1977, 1978).

6.   This position suggests the following argument. Everything that's computable can be treated as a formal language; human processing capacities can be equated with some (as yet unknown) finite machine, which is capable of computing whatever it is that goes into constructing a dialogue; *ergo* dialogue-producing capacities must in principle be treatable as formal languages. The argument collapses because of the failure to distinguish between the structure of a domain under investigation and the structure of the language best used to describe it. One can for example *describe* the structure of a steam-engine in a formal language, but that doesn't mean that a steam-engine has the structure of a formal language. So the knowledge or abilities can be phrased in a computable language, without having the essential structure of that language.

7.   I owe this example to Andy Rogers.

8.   For a discussion of the motivation behind indirection, and a catalogue of means for being indirect, see Brown & Levinson (1978).

9.   Gordon & Lakoff (1975) themselves discuss examples like "It's hot in here" used to attempt to get the addressee to open the window, without being able to offer 'conversational postulates' for how they work (clearly, for this example, all sorts of background knowledge about the relative temperatures of inside and outside, who is obliged to look after the comfort of whom and so on, is relevant, and there simply are no context-independent force-conversion rules that will do the trick). Likewise Searle (1975a) discusses indirect speech acts based on, for example, *reasons* for doing requests (e.g. "I can't reach that suitcase") although these make no reference to felicity conditions, a fact he does not appear to notice.

10.   For a recent review of speech act theory that discusses these issues in detail see Levinson (n.d.).

11.   Here is a further example (cited in Atkinson & Drew 1979:142):

    M: wuhddiyuh doing wh dat big bow-puh-tank. Nothing?
        (0.5 sec)
    V: (COUGH)
    V: Uh-h-h
        (1.0 sec)
    V: I'm not intuh selling it or giving it. That's that.

There are other kinds of examples that would be much more resistant to an 'ellipsis' analysis (see footnote 13 below), but which would take too much space to cite and discuss in full.

12.   Example (22) for example would be an instance of a violation of the rule that questions should be followed by answers. *Re* sanctions see Sacks, Schegloff & Jefferson (1974).

13.   Clive Holes has pointed out to me that example (22) and similar examples might not constitute knock-down counter-examples to the conventional sequencing rules approach, if we take into account the sort of conversational 'ellipsis' suggested by Goffman (1976) and Merritt (1976). However, firstly there are examples of responses to 'perlocutionary intents' that are completely resistant to such an analysis. Secondly, there are serious methodological objections to such analyses. For example, on such an account, the offer in (22) would be generated by the rules but then 'deleted' as it were. But unless such deletion rules were precisely governed by some kind of recoverability condition, conversations could not (on the speech act model view) be understood. But recoverability is obviously a context-dependent issue: it will depend on features like the precise sequential context (see e.g. Sacks & Schegloff 1974) and the kind of activity the talk occurs within (see e.g. Merritt 1976, Levinson 1979). And in that case we are once again outside the purview of simple conventional sequencing rules. The meth-

odological objection that thus arises is that without precise formally-definable conditions on deletion, such a rule-based account with ellipsis would be unfalsifiable and thus essentially vacuous.

14. There are many further problems for speech act models of dialogue that I have ommitted for lack of space. Probably the most important of these is a proper consideration of the effects that different contexts have on (i) speech act assignment (see Levinson 1979), and (ii) sequencing rules (see Levinson 1978, Merritt 1976). The implications of these facts are that there would in fact have to be as many speech act models of conversation as there are distinct kinds of social activity or significant speech contexts. So what ever such models appear to gain in rigour, they are likely to lose in generality. A somewhat different set of problems is raised by Goffman (1976); he shows that responses in conversation are also determined by 'frame', e.g. by whether the prior utterance was a joke, a quote or example, or both a quote and an here-and-now contribution to the present action sequence - and so on. Labov & Fanshel (1977) utilize the notion of 'frame' without appearing to notice the difficulties it raises for the speech act model of dialogue that they subscribe to.

15. In attacking speech act models of dialogue, I hope it is clear that I am not *directly* attacking the notion of 'speech act' itself. All I have done is undercut one possible motivation for being interested in the notion, namely the motivation of giving an account of conversation. Well, not quite all - I have also argued that it looks impossible to define a well-formed function, let alone an algorith that would implement it, that would map utterances into speech act categories. Since any theory of speech acts, including the new context-change theory, will have at least to specify such a function, if my arguments are correct they do effectively undermine the viability of the concept of a speech act itself. For further pessimistic remarks on the future of speech act theory, see Levinson (1979), Levinson (1980). But for me, the failure of speech act theory to tell us anything interesting about conversation (and thus about the prototypical form of language usage) is damning enough.

16. Chomsky darkly alludes to the possibility that models of human motivation, plans, intentions and the like may be *innately* beyond our grasp: "It is not excluded that human science-forming capacities simply do not extend to this domain, or any domain involving the exercise of will, so that, for humans, these questions will always be shrouded in mystery" (Chomsky 1976:25). Goal-driven A.I. systems though seem to promise a peek under the shroud.

17. However the most relevant part of Game theory is that to do with 'games of pure co-ordination', that is co-operative games, which is the least developed branch of the theory. For some important initial steps, though, see Schelling (1960).