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## Determining Surface Form for Indirect Speech Acts in English

間接発話行為に関わる英語表現の決定について

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A variety of factors interact to determine the surface syntactic form of indirect speech act utterances in English. In this paper, we describe the syntactic/semantic, and pragmatic factors involved, and formalize, in a set of generation rules for machine translation, how their interactions determine the surface forms for indirect Requests, Suggestions and the like. In addition, we compare the speech act classification used by this system with that of the SL-TRANS 1 and with that described in Sadanobu et al. (1991). Finally, we make some suggestions for further refinements of the system.

本稿では間接発話行為に関わる英語表現を決定するための様々な要因とこれらの相互関係について述べる。中心となるのは表現決定のための統語意味的な要因、および、語用論的な要因の分析であり、これを機械翻訳のための生成規則として定式化する。また、既存の他モジュールとの整合性を調査するために、本稿で作成した発話行為の分類と SL-TRANS1 および定延らの発話行為の分類との比較を行なう。最後に本体系をより高度なものにするための指針についても述べる。

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## Introduction

One of the goals of a machine translation system must be to generate appropriate syntactic surface structures in the target language. To some extent, it is possible to do this "simply" by translating the surface syntax of the sentences of the source language into the surface syntax of the target language. This process is not entirely straightforward, but, in the case of a machine translation system designed to translate Japanese into English, the syntactic analyses of Japanese and of English are specific enough that many of the necessary adjustments can be made at the syntactic level.

However, there are other mismatches between the surface forms of Japanese and those of English for which a solution is not so readily apparent. These mismatches involve conventional uses of syntactic forms for specific communicative purposes other than (or in addition to) those for which the surface syntax of the form seems suited. These "conventional uses of syntactic forms" are known as indirect speech acts. Because these structures are conventional, they may, and do, differ from language to language. So, for example, while the Japanese utterance (1) may be used to *Invite* someone to your house, the English translation (2) may be used to *Request* them to come.<sup>1</sup>

1. Kite kudasai.
2. Please come.

Given the inherent non-uniqueness *within* any one language of the mapping from indirect illocutionary force (or speech act) to surface syntactic form, it is clear that the translation of indirect speech acts from one language to another can be problematic. Even where clear and unambiguous translations of surface syntactic forms are possible, the speech act functions that those surface forms represent in each of the two languages may be completely different (as in the examples above).

Below we will outline a feature-based system for rendering indirect speech act functions into appropriate surface syntactic forms. The system requires the use of not only semantic and syntactic features, but also the pragmatic features Intention, Politeness, and Local Context. These features allow generation to proceed on the basis of matching the speech act of the utterance to the speech act of the translation in the target language as well as to its syntactic form. In addition, an analysis of the interaction of the features used allows us to constrain the generation of possible surface syntactic structures for a particular speech act function to the form most appropriate to the discourse.

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<sup>1</sup>Actually, the problem is even a little more complex. (1) may be ambiguous between an Invitation reading and a Request reading; in fact, the line between the two speech acts is much less sharply defined for Japanese than it is for English.

The features described below are those necessary for the generation of appropriate English syntactic forms for the speech acts encountered in the corpus. We will also discuss how the feature system used for English interfaces with that used in the analysis of the Japanese utterances which are to be translated, and we will relate these features to the definitions of speech acts in Sadanobu, Yamaoka and Iida (1991). Finally, we will make some suggestions concerning further aspects of discourse analysis that bear on the translation process and how those considerations could be brought into play to refine the analysis here.

### **Factors which determine surface form**

In early work on indirect speech acts, it was suggested that utterances such as "I'd like the salt" or "Can you pass the salt?" used as Requests were, in fact, idioms and thus should not be analyzed into their syntactic forms but rather treated as unanalyzable wholes. However, this would make the list of possible idioms used as Requests unmanageably long, and ignores the fact that there are a number of syntactic regularities in the structures used. In addition, it is possible for someone to respond to the syntactic form of the Request as well as to the force of the Request, i.e., responding "Yes, I can," while passing the salt, where the verbal response is appropriate to the surface syntactic form and the action is appropriate to the speech act force. Thus, our description of speech acts will involve two different types of features: syntactic/semantic (syn/sem) features such as the interrogative features QREF and QIF for wh- and yes-no questions respectively, INFORM, and the like, and pragmatic features. The syntax and semantics of modals, person, benefit, and polarity will play a part in the syntactic/semantic analysis, while the notions of intention, politeness, and form of preceding utterances will figure in the pragmatic feature analysis. Below we will take up each one of these in turn in order to see what part it plays in the determination of surface structure for indirect speech act utterances in English.

#### **Syntactic/semantic features.**

**Modals.** Because the acts of suggesting, requesting, offering and the like often involve the use of modals, the syntactic/semantic structures used in these speech acts include a fairly comprehensive survey of the uses of modals in English. Table 1 gives a listing of the syn/sem labels for the uses of modals in the declarative in English. (These labels are used in the analysis below.)

Table 1. Syntactic/semantic labels for uses of English modals.

Semantic labels	Syntactic labels		
	INFORM (declarative)	Question IF (QIF) (interrogative)	Question REF (QREF) (wh-question)
<b>Require</b>	must, have to	have to	have to
<b>Oblige</b>	should, ought to	should	should
<b>Permit</b>	may, can, could	may, can, could	may, can, could
<b>Certain</b>	must, have to	are you certain, etc.	marked; would usually say "what/how/why, etc., is/does.." or "what/how/why do you think..." Only natural use of these modals in Question/Ref is echoic: "He must be here." "Who must be here?"
<b>Probable</b>	ought to, should, would	would	
<b>Possible</b>	might, may it is possible that...	??might, is it possible that...?	
<b>Able</b>	can	can	can
<b>Potential</b>	could	could	could
<b>Intention</b>	will	will	will
<b>Wish</b>	would like to, could	would like to	would like to

**Person.** In their literal or surface senses, modals can co-occur with subjects in any person. However, only with some person subjects are utterances containing modals perceived as functioning as particular indirect speech acts. For example, (3) can be clearly perceived as a Request for the salt (i.e., as functioning as an indirect speech act), while (4) may be perceived as an Offer (or a strange sort of question), and (5) is either a Request to you to ask him to pass the salt or a straightforward, i.e., literally interpreted, question concerning his ability.

3. Can you pass the salt?
4. Can I pass the salt?
5. Can he pass the salt?

Similarly, (6) is a Request, while (7) is simply a (questionable) statement about your desires.

6. I would like to apply for the conference.
7. You would like to apply for the conference.

**Benefit.** The semantic notion of benefit is another factor in the analysis of speech act function. Whether the benefit of the action named in the verb phrase

accrues to the speaker or to the hearer will have an effect on the function that the utterance can have. So, although both utterances have similar syntactic forms, (8) is an Offer, while (9) is a Request.

8. Can I show you your seat?
9. Can I show you my work?

In the former, the benefit accrues to the hearer; in the latter, to the speaker. Similarly for imperative forms; (10) is an Offer, while (11) is a Request.

10. Please call me if you have any problems.
11. Please call me when the order comes in.

**Polarity.** The addition of a negative to an indirect speech act may or may not affect its speech act status, depending upon the form that the speech act takes. So, for example, both (12) and (13) are certainly Invitations, (though ones that might be used under slightly different circumstances), but of (14) and (15), only (15) is a Request.

12. Would you like to go?
13. Wouldn't you like to go?
14. I would like to go.
15. I wouldn't like to go.

Changing the polarity of the utterance changes the speech act function of the Request, but not of the Invitation. Similarly, both of the following utterances are Suggestions:

16. Can't you take the train?
17. Why don't you take the train?

But only (16) remains a Suggestion when its polarity is changed; (18) is still a Suggestion, while (19) is not.

18. Can you take the train?
19. Why do you take the train?

**Generality/specificity.** There are other, less wide-ranging, syn/sem features that play a smaller part in determining surface form. One of these is the notion of "generality." Speakers tend to discuss needs at a moderate level of generality. "Normal" Requests are made using syntactic forms determined (at least in part) by the interactions of the factors discussed above. But speakers can also make Requests in more general or more specific forms. "Would" is used to express a more general Request. When the conference office secretary describes the general procedure for applying to give a paper at the conference, he usually will not couch it in terms of an imperative such as (20), since that is directed at "you," a

specific and certain person. Instead, he uses a form with "would" such as (21):

20. Please send an outline by... (moderate level of generality)

21. We would like to have an outline by... (general)

Speakers may also need to be more specific in their Requests. In that case (at least in this corpus), they use "can." Having made the general Request (20), the client then makes his Request more specific as in (21):

22. I would like to ask about accommodations. (general)

23. Can you give me any ideas? (specific)

**Ability.** A basic assumption that we have made so far is that an utterance with a particular syn/sem feature structure may, in fact, have a meaning "other than" or "in addition to" that basic meaning by virtue of the fact that it has some Intention other than the basic Intentions of asking a question or giving information. We have been acting as if the Intention feature somehow simply subsumed the basic, "literal" meaning. It is clear that this is not quite the case; the differences in nuance shown by different Requests worded with different modals are clearly due to the semantic contributions of the modals used. However, the differences are subtle and it is not necessary to supply a full-blown semantic account; the features proposed here suffice to enable us to make an appropriate choice of surface form without detailed semantic analysis. However, in one case, the semantic contribution of the modal is strong enough to warrant comment. Taken by itself, a question like (24) is ambiguous between at least two different speech acts: a Request for information about ability (i.e., it is a direct Interrogative speech act) and a Request for help carrying the bag (it is an indirect Request speech act).

24. Can you carry this bag?

Usually, a speaker has several choices of surface form to use when making a Request, but in this case, speakers may choose this particular form in order to exploit the ambiguity between syn/sem meaning and Intention. That is, they may want to know *both* if a person is *able* to do something *and* if they *will* do it. In this case, because the semantic contribution of the modal "can" is an integral part of the intended meaning of the sentence, it is that aspect of the sentence that determines the form of the Request. That is, such an utterance could not be worded in any way other than the form in (24); because part of the intended meaning is QIF/Able, it is that form that must be used in deriving the surface form.

#### **Pragmatic features.**

Features on the pragmatic level characterize the entire utterance; thus, they recognize the "idiomatic" nature of indirect speech acts. They describe the function of the utterance as well as the level of politeness at which the utterance is framed. Furthermore, they take into account the fact that utterances occur in the context of a discourse and may depend upon other utterances for their form and function.

**Intention.** The Intention feature labels the speech act function of the utterance. Since the time when speech acts were first recognized, numerous attempts have been made to characterize or list all possible speech acts or speech act types. Our system is not another such characterization, nor does it represent a choice among previous alternatives. Rather, it reflects what we feel to be a reasonable description of the functions utterances perform in the corpus we are working with. We have listed those speech act functions in Table 2. With each one, we have also listed the syn/sem structures that may instantiate the speech act in English.

Table 2. Intention features and surface realizations.

<u>Intention feature</u>	<u>Syn/Sem</u>	<u>Surface form</u>
<b>Request</b>	QIF/Probable QIF/Able QIF/Potential Q INFORM/Intention INFORM/Wish IMPERATIVE/ Please	would you... can you... could he... NP, please I will... I would like (you) to.. Please do...
<b>Request/Permit</b>	QIF/Permit	Can, could, may I...
<b>Suggest</b>	INFORM/Able INFORM/Potential QIF/Able(not) QIF/Potential(not) QREF/Why/Not QREF/How about	you can... he could... Can('t) you... Could(n't) he.. Why don't you... How about VPing
<b>Invite</b>	QIF/Wish	Would you like to...
<b>Offer</b>	QIF/Permit INFORM/Able INFORM/Potential QIF/Able QIF/Potential INFORM/Intention QREF/Permission or Able QREF/Potential IMPERATIVE/please	Can, could, may I... I can ... I could... Can I... Could I... I will... What can/may I ... How can/may I .. What/How could I... Please ask me...
<b>Reject</b>	INFORM/Not/Able INFORM/Not/Possible	I can't... It isn't possible...
<b>Response</b>	All right, Sorry, yes, no...	
<b>Acknowledge</b>		I see, all right
<b>Inform</b>	INFORM	declaratives
<b>Question</b>	QREF QIF	wh-interrogatives yes-no interrogatives



There are different degrees of abstraction associated with speech acts. On the most transparent level, there is a direct syntactic/semantic-to-Intention mapping that is relatively straightforward and uncontroversial. If, for example, it is someone's Intention to ask about someone else's ability to do something, that is, if the Intention feature of the utterance is Question, that person uses a corresponding syntactic/semantic form QIF/Able:

25. Can you lift 400 pounds?

However, there may be no such straightforward mapping. Instead, the speech act may be indirect; (26) has the syntactic/semantic structure labeled QIF/Able but an Intention feature of Request.

26. Can you lift that box of books?

We as speakers of the language recognize this structure as a conventional way to make a Request and so we interpret the utterance accordingly. (For more on the dynamics of that interpretation, see below.) Although there is a mismatch between syntactic/semantic structure and speech act function, it is a mismatch that we recognize and so interpret correctly. It is these two types of structures--those with a clear correspondence between Intention and syn/sem structure (direct speech acts) and those with a conventional one (indirect speech acts), to which we assign specific Intention features.

Notice that *any* utterance has a potentially large number of different Intention features. For example, (27) has the syn/sem structure INFORM/Probable.

27. The books in that box would look best on the shelf upstairs.

However, spoken by a mother to her strong son looking at the box at the bottom of the stairs, it could also be interpreted as a Request to carry the box upstairs. Spoken between two friends, it could be either a Suggestion or an Offer, depending upon who the implied agent for shelving the books is (speaker or hearer). This utterance, however, is not *conventionally* recognized as any of these. As a result, in our analysis, this sort of utterance will be designated only by its syn/sem structure, in this case, INFORM/Probable. The distinction made here between conventionally recognized indirect speech acts and unconventional ones is the same distinction made by Kume et al. (1989) between "speech-act indirectness" and "propositional indirectness," and that made by Brown and Levinson (1978) between "conventional indirectness" and "implicature."

**Politeness.** We made the point above that a particular speech act may be instantiated by any number of syn/sem structures. However, it is possible to fine tune the analysis somewhat by looking at the levels of politeness exhibited by the various structures. For example, all of the following utterances can be used to make a Request:

28. Would you please tell me how to get to the conference?
29. Could you tell me how to get to the conference?
30. I will need to know how to get to the conference.
31. Tell me how to get to the conference.

However, they vary in politeness and thus in appropriateness to the context of the utterance, (28) being most polite and (31) being least polite.

Brown and Levinson (1978) argue convincingly that the desire to be polite is the motivating force behind the use of all indirect speech acts. They claim that one of the strategies speakers use in social interaction is to try to anticipate the worst possible offence they could commit and then prepare for it accordingly by phrasing their utterances appropriately. They discuss three different factors speakers take into account in determining how polite to be: the social distance between the speaker and the hearer; the relative power of speaker and hearer; and the "weightiness" of the possible offence. The last factor, especially, is culturally determined; each culture has its own "ranking" of offences. Brown and Levinson describe a whole range of strategies speakers use to be polite, depending upon whether they want to "go on record" (be explicit) or "off record" (be ambiguous), among other considerations. They describe an indirect speech act as one that signifies that the speaker wishes to be indirect (that is, polite), but he wants to get credit for it, he wants to be recognized as having been polite. Thus, he uses a conventionally indirect speech act--indirect, but conventionally recognized. It is this type of speech act we are concerned with here. .

As Brown and Levinson describe it, politeness is quite complex. So, we could have incorporated into our account features of distance, power, and "weightiness" whose interactions would determine a level of politeness, much as they do in their study. We do see evidence in the corpus that speaker and hearer are speaking at different levels of politeness; this would certainly seem to be a reflection of the difference in standing between the two participants ("distance" and "power"). However, we have chosen simply to designate a level of politeness for the participants in an exchange for several reasons. First of all, given that our corpus is restricted to the context of a telephone call to a conference office, the social distance between speaker and hearer and the power ratings of the speaker and hearer remain fairly constant. Thus, although the levels of politeness typical for the speaker and for the hearer may differ, those levels should remain fairly constant throughout the exchange and throughout the corpus. The "weightiness" of the Requests made in the course of the exchanges will vary, but probably only within acceptable limits. Decisions concerning how polite an utterance is are not so fine grained as to be intolerant of some variation, such as the variation in the "weightiness" of the Requests found in the corpus.

Another aspect to politeness is the place where the Request falls within the structure of the discourse, and as yet, we have no mechanism for handling considerations of that type (though see below for a brief discussion of this issue). Thus, we will simply designate a level of politeness for the participants in the discourse and for each of the various surface structures that can instantiate a particular speech act.

We have somewhat arbitrarily designated three levels for politeness: Level 1 could be called "informal," and would be used among intimates and people of "equal status" for fairly trivial matters; Level 2, "moderately polite," such as used among non-intimates of similar status for issues of moderate "weight;" and Level 3, "formal," such as used by someone in a "lower" position to someone "higher" or where the issues involved are "weighty." (32) gives an example of each level.

32. Level 1: Housewife to friend: Can I borrow a cup of sugar?  
Response: Sure.

Level 2: Professor to colleague: Could you give me a copy of your paper?  
Response: Yes, I can.

Level 3: Secretary to invited speaker: Could I ask you to give me your name?  
Response (may be Level 2 or 3): Certainly.

**Local Context.** So far we have talked primarily about speech acts that can initiate a communication exchange: Inform, Request, Suggest and the like. While the level of politeness that these acts are phrased in *may* be affected by their place in the discourse, these utterances are usually relatively unaffected by such considerations. However, for one group of utterances, such considerations are crucial; this is the case for Responses.

Some Responses behave in a fairly straightforward way and can be translated simply on the basis of their Intention feature and their syn/sem forms. Utterances like "Thank you" or "Goodbye" fall into this group (their Intention features will be Thank or Greet, and the translation is fairly straightforward). And, of course, any Inform utterance can be a Response, given the appropriate context. What we will be concerned with here are the Responses in between these two cases, those that are not as strictly regular as the Thank and Greet Responses, and yet are not as variable as Inform Responses. These Responses are those whose form depends crucially upon the context of the discourse. This is the case for what we will call "short answers" such as "Yes, I do" or "No, she hasn't," and for minimal responses such as "Yes," "Sure," "Sorry," or "I see."

Both Japanese and English use short answers in polite conversation to respond to questions; however, the syntactic forms of these short answers differ. Typically, in a short answer in Japanese, the subject and object are omitted, and the verb is given, as in (33). In a short answer in English, the subject is given and the appropriate form of an auxiliary verb, "be" or "do" is used:

33. JS1: Annai-sho wa o-mochi desu ka?  
JS2: Iie, motte imasen.

ES1: Do you have an announcement?  
ES2: No, I don't.

When a short answer is given in the course of a conversation, the syntactic form of the English translation will depend upon the syntactic form of the (English) question which it is answering. An utterance with the Intention feature Response will have a Local Context feature. The value of the Local Context feature is the pragmatic and syn/sem features of the preceding utterance(s), i.e., of the question it is intended to answer. This allows, for example, the values for the subject and auxiliary of the question and those of the short answer to be matched.

The feature Local Context also functions in the generation of minimal answers. Like short answers, these Responses are sensitive to the syntactic form of the preceding utterance both in Japanese and in English. They do not match the form of the question, as short answers do, but the choice of lexical item for a minimal answer depends upon the syntactic form of the question to which it is a Response. That is, if the preceding indirect speech act is in the form QIF as in (34) or QCONF as in (35), the Response will take a different form from the form that is used to respond to QREF or Inform utterances.

34. Can you get me a form?

35. Your name is Jim Jones, right?

More specifically, for English, Responses to QIF or QCONF utterances tend to be "yes" or "no" while those to INFORM or QREF indirect speech acts tend to be "all right," "OK," or "Sorry." "Sure," "of course," and "certainly" can be used in either case.

"Hai" can be used in Japanese to respond to a question in any syntactic form; however, its English translation depends upon the context in which it occurs. When it occurs after QIF and QCONF utterances, it will be translated as "yes;" after QREF and Inform utterances, it will be translated "all right." Using the feature Local Context allows us to make the necessary distinction between the two contexts.

So far we have discussed examples in which the critical Local Context features were syn/sem features. However, it is sometimes necessary to access Intention features of previous utterances as well. Above we described the short answer form for English in which the subject and auxiliary of the question were repeated (with necessary adjustments in the subject form, of course, for the changing point of view). However, sometimes short answers to indirect speech acts are sensitive to the Intention feature of the speech act rather than or in addition to its syn/sem feature. This is true in the case of Requests using the modals "could" and "would"; short answers to these Requests contain "can" and "will" instead of "could" and "would." So, for example, a Request like (36) has the syn/sem feature QIF/Potential:

36: Could you send me a form?

The short answer to this Request will be "Yes, I can," not "Yes, I could." However, when the Intention feature is simply Question instead of Request (and the syn/sem feature is QIF/Potential), the Response does, in fact, contain "could" and not "can:"

37. Speaker (S)1: Could you really eat three Big Mac's?  
S2: Yes, I could [if I were hungry enough].

### **Interactions among factors.**

Up to this point, we have listed the factors involved in the determination of the surface form of these utterances without giving any indication of how these factors interact. In this section, we will describe the relationships among the syn/sem and pragmatic features and how these relationships determine surface form. These relationships are given a more formal description in the following section on generation rules.

**Interaction between person of subject and Intention.** It should be clear from the discussion above concerning person of subject that there is an interaction between the person of the subject with which a modal occurs and the possible Intention function it can serve. Thus, while a second person subject QIF/Probable utterance like (38) can be a Request, a first person subject QIF/Probable utterance like (39) cannot:

38. Would you get me that book?  
39. Would I get you that book?

These relationships are fairly stable and predictable; one characteristic, in fact, that distinguishes an Offer from a Suggestion is that the former is couched in first person subject as in (40) while the latter uses second or third person subject as in (41):

40. I could put the box over there.  
41. You could put the box over there.

An Invitation in the form QIF/Wish can have only a second person subject, or it ceases to be an Invitation and has the meaning simply of a QIF/Wish; compare (42) with (43) or (44):

42. Would you like to go to the movies?  
43. Would I like to go to the movies?  
44. Would he like to go to the movies?

**Interaction between person of subject and syn/sem form in Requests.** The structures that may express Requests illustrate an interaction among person of subject and syntactic form. Requests in the form QIF can have second person subjects, but Requests in the form INFORM can have only first person subjects. Thus, (45) can be a Request, as can (46), but (47) cannot.

45. Can you lift this?  
46. I would like you to make a reservation.  
47. You would like to make a reservation.

**Interaction between benefit and Intention.** We have also seen above how the notion of benefit can affect what speech act function an utterance can fulfill. In fact, any QIF (except for Requests for Permission), INFORM, or IMPERATIVE Offer can be "made into" a Request simply by making the benefit from the verb phrase go to the speaker rather than the hearer. Thus (48) is an Offer, but (49) is a Request.

- 48. Can I help you with that?
- 49. Can I get some help with this?

Similarly for QIF Suggestions; (50) is a Suggestion, but (51) is a Request.

- 50. Can you take the train?
- 51. Can you take my bag?

Thus, there is a pattern of interactions among benefit relations and Intention.

**Interaction between polarity and Intention.** Most Intentions are expressed in a positive form. Some, however are expressed only in a negative form or may be expressed in both a negative and positive form. Conversely, some Intentions can not be expressed in a negative form, that is, they either lose their Intention feature and express only their more basic syn/sem meaning, or they change their Intention feature when a negative is added to their form. So, for example, the use of "can't" and "couldn't" in a Request (in QIF form) changes the utterance to a Suggestion; similarly, for a Request of the form QIF/Intention, the addition of a negative changes the Intention: the form "won't you" is used as an Offer at a very polite level.<sup>2</sup>

Where "can" and "could" are used in declarative form Offers, those utterances become Rejections when negated; the Offer (52) becomes the Rejection (53), (and similarly for "could" ):

- 52. I can help you.
- 53. I can't help you.
- 54. I couldn't help you.

On the other hand, Offers with "will" can be negated and still remain Offers *not* to do something:

- 55. I won't sing if that makes you nervous.

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<sup>2</sup>Of course, this does not mean that you can't make negative Requests, i.e., Requests for someone *not* to do something. In general, negative Requests are made in one of two ways: either by adding negation to the VP as in (a) or by using the verb "refrain" as the main verb of the VP as in (b):

- a. Could you not smoke in here?
- b. I would like you to refrain from smoking.

See the generation rules for negative Requests below.

An IMPERATIVE Offer can still be made with the negative if the benefit continues to go to the hearer:

56. Please don't hesitate to ask if I can help further.

INFORM Suggestions made in the negative cease to be Suggestions, while Invitations made in the negative remain Invitations; you can ask someone to join you in either of these ways:

57. Would you like to join me?

58. Wouldn't you like to join me?

There are subtle differences in meaning or in the social contexts under which each utterance would be used, but these subtleties are beyond the scope of this discussion and certainly beyond the requirements implied by the nature of the corpus.

**Interaction between politeness level and syn/sem form.** We discussed above the fact that the semantics of modals probably contribute to the nuances in politeness level perceived among the various possible forms for Requests. It is beyond the scope of this paper to describe those effects here; rather, we simply assign politeness levels to the possible forms for a Request. This "squashes" some distinctions of distance between speaker and hearer and the like, but nevertheless, there are some regularities that can be observed. In general, question forms are more polite than statement or imperative forms, and the "past tense modals" "could" and "would" are more polite than their "present" counterparts "can" and "will." Further, "will/would" forms are less polite than "can/could" forms.

It is possible for the politeness scale to continue "up," that is, with more and more polite forms of Request:

59. Can you possibly...

60. Would it be too much to ask...

61. Is there any chance that it might be possible that...

Because these forms do not share any specific predictable patterning, we have not tried to accommodate them *per se*. Furthermore, the politeness level in the corpus is fairly stable and does not include utterances of this type.

The politeness scale for Offers can be similarly listed, though the considerations that affect the order of utterances in this listing are slightly different. All of the Offers made in the corpus are what we call "solicited" Offers, that is, they are Responses to a Request made at some point in the exchange, with the exception of the standard "unsolicited" Offers of help at the beginnings, (62), and ends, (63), of conversations:

62. May I help you?

63. If there is anything else you need help with, please call.

Solicited Offers are more polite when they are easy to accept (since they are being made in response to the client's Request in the first place and thus he is expected to accept them). Thus, unlike the case for Requests, Offers are more polite if they are more direct. This is only true to a certain point, however. At the highest level of politeness, the considerations of distance between speaker and hearer and the relative power of each come into play. Where the distance is great and the speaker has greater power (i.e., where the "offerer" must be most polite), question forms, being more distant in this case, are more polite, and the question form with the past tense modal "could" is the most polite. Again, these "superpolite" forms need not concern us here as the politeness level of the corpus is stable at a more moderate level.

**Interaction between polarity and politeness in short answers.** Above we talked briefly about short answers and how the Local Context feature can be used to insure that the proper information is carried over to the answer from the preceding utterance in a fairly straightforward way. In the case of a positive short answer, the process is clear and the short answer Response is moderately polite. However, where the Response is in the negative, the short answer form has a lower level of politeness than the positive short answer form. Where the benefit implied in the utterance accrues to the hearer, that is, for the Intentions of Offer, Suggest, and Invite, the negative short answer is abrupt. Thus, if an Offer is made in QIF form, as in (64), an answer of "yes, you can" is moderately polite (level 2), while an answer of "no, you can't" is abrupt:

64. Can I carry your bag for you?

Or again, for an Invitation such as (65), "Yes, I would" is level 2, but "No, I wouldn't" (alone) is abrupt.

65. Would you like to join the tour?

English uses "thanks" to "soften" a negative Response for Offers and Invitations, and "sorry" to "soften" a negative Response to a Request or Suggestion. Further explanation may be added to make the Response even more polite:

66. Offer: Can I carry that for you?

Response: No thank you; (I can carry it myself just fine).

67. Request: Could you make a reservation for me?

Response: No, sorry, I can't; (that is handled by a different office)..

**Effects of syn/sem form and polarity on Acknowledgments.** So far, we have dealt with utterances and Responses to those utterances. In fact, it may also be the case that those Responses are acknowledged, yielding a third element in the discourse structure, as, for example, in (68):

68. S1: Request: Can you make a reservation for me?

S2: Response: Yes, I can.

S1: Acknowledgment: All right.



We call utterances like "all right" Acknowledgments. The form of an Acknowledgment depends not only upon the form of the Response it is an Acknowledgment to (i.e. for our purposes, the immediately preceding utterance<sup>3</sup>), but also upon the form of the utterance to which the Response is used to respond. Thus it is appropriate to say "you're welcome" to "thank you" said in response to an INFORM Offer, but not to "thank you" said in response to a QIF Offer. That is, (69) illustrates an appropriate use of "welcome," while (70) does not:

69. S1: I can make a reservation for you.  
S2: Thank you.  
S1: You're welcome.
70. S1: Can I make a reservation for you?  
S2: Yes, you can, thanks.  
S1: \*You're welcome<sup>4</sup>.

Further, the form of an Acknowledgment may also vary with the polarity of the Response. That is, for an IMPERATIVE Request, the Acknowledgment "all right" is appropriate only if the Response to the Request is negative; contrast (71) and (72):

71. S1: Please reserve a room for me.  
S2: Sorry, I can't.  
S1: All right.
72. S1: Please reserve a room for me.  
S2: Of course.  
S1: \*All right.

### Generation rules

It is necessary to specify more clearly the nature of the relationships discussed above so that that information can be used to generate syntactically and socially appropriate English sentences. The generation rules given in the Appendix summarize this information. The features listed for Input and Syn/sem are the features that are relevant to the determination of appropriate surface structures. The numbers given in the examples refer to utterances in the corpus. Examples have been taken from the corpus where possible.

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<sup>3</sup>We leave aside the question of determining the utterance to which a particular speech act is a response in the case where those two utterances are separated by other portions of the dialogue.

<sup>4</sup>Clearly, we are using the asterisk here to denote "unnaturalness." There is no sense in which the forms so marked are "ungrammatical," and they may, in fact, be heard in conversation. However, the asterisk marks the fact that an utterance is not the most natural one for that context.

## Interface with Japanese speech act features

Thus far, the discussion has centered around the interaction of various features within the framework of the generation of English sentences. Those sentences are generated from input from the analysis of Japanese utterances. The next question to be explored, then, must be: what is the nature of the interface between the needs of the English generation system and the output of the Japanese analysis?

It is first necessary to be explicit about exactly what the needs of the English generation system are. The syntactic features that are required are fairly straightforward: designations for declarative sentences, interrogative sentences of the type yes-no and wh-word, and imperatives are necessary, as well as for person, present tense, and polarity. These are fairly uncontroversial syntactic categories and need not concern us here. The semantic features necessary include notions of: permission, probability, possibility, ability, potential, intention, desire (wish), generality, and benefit. These notions are somewhat more problematic, but will also not be our major concern here. Pragmatic features required refer to issues of: politeness, intention, and local context. Politeness values are simply designated as levels; the Local Context feature takes as its values the syn/sem and pragmatic features of previous utterances. Thus, these two features are also straightforward, for the most part. The values for the Intention feature which are necessary to characterize the corpus are: Inform, QIF, QREF, Request, Suggest, Invite, Offer, Reject, Positive and Negative Response, Acknowledgment, Greet and Thank.

It is this last group, the values for the Intention feature, that we will be primarily concerned with here, since they characterize a much less well-defined area of grammar. A comparison of these features with the features currently in use in the analysis of Japanese utterances will help to identify those areas in which there is compatibility between the two systems and those areas in which further work needs to be done to insure the necessary connection between the two systems.

**The Illocutionary Force Types of SL-TRANS 1.** These are the Illocutionary Force Types of the current SLTRANS 1: Inform, QIF, QREF, Request, Promise, Response, Phatic and Expressive. When these are compared to the Intention values listed above, the following correspondences obtain:

<u>English</u> <u>generation</u>	<u>SL-TRANS</u>	<u>English</u> <u>generation</u>	<u>SL-TRANS</u>
Inform	Inform	Offer	Promise, Inform
QIF	QIF	Reject	Response, Inform
QREF	QREF	Response	Response
Request	Request, Inform	Acknowledgment	Response
Suggest	--	Greet	Phatic
Invite	--	Thank	Expressive

Where the correspondences are one-to-one, the situation is fairly straightforward. It remains only to verify that the domains implied by the terms in the relationships, here, QIF, QREF, Greet/Phatic and Thank/Expressive, are co-terminus. That is, we

need to insure that the labels "QIF," etc. mean the same thing in the two different systems. The other relationships require some re-analysis if they are to be brought into a one-to-one relationship. For example, it may be the case that it is not necessary to distinguish the three groups of responses identified in the English system (Response, Reject, and Acknowledgment) with different Intention features; differing syn/sem features might distinguish Rejections from Responses, and the "depth" of the values for the Local Context features of Responses and Acknowledgments could distinguish those two types of utterances. Upon further investigation of the forms for Promise and Offer, it may be the case that those two categories are actually identical. On the other hand, it may be necessary to define a subset of the forms now considered Inform or Request utterances in the SL-TRANS-1 analysis, to be labelled Suggestions and Invitations. So, despite the fact that some areas for discussion remain, there seems to be a possible fit between the analysis of Illocutionary Force Types provided by the SL-TRANS 1 system and the English analysis described above.

**Speech acts as defined by Sadanobu, et al. (1991).** Sadanobu et al. describe a more finely differentiated system of speech acts, which they use to describe utterance patterns in Japanese. A comparison of their system with that for English described above yields the following set of correspondences:

<u>Sadanobu et al.</u>	<u>English generation system</u>
Greeting Open	Greet
Greeting Close	Greet
Aiduchi	--
<b><u>Demand Class</u></b>	
<b>Request</b>	
Request Promise-Action	Request
Request Promise Not-Action	Request/negative
Request Permit-Action	Request/Permit
<b>Confirm/Ask</b>	
Confirm	QIF, Request
Ask	QREF, Request
<b>Suggest/Offer</b>	
Suggest-Action	Suggest, Invite
Offer-Action	Offer

### Response Class

Promise-Action	Offer
Reject Promise-Action	Reject
Permit-Action	Inform/Permit
Reject Permit-Action	Inform/Permit/not
Inform-Affirmative	Response/positive
Inform Negative	Response/negative
Inform	Inform
Accept-Action	Response/positive
Reject-Action	Response/negative
Refuse Action	Response/negative

### Confirmation Class

Understand	Response
Yoroshiku	Thank (?)
Zannen	--
Thanks	Thank
Welcome	Thank

The general pattern of relations between the categories of the English generation system and the SL-TRANS 1 categories was a many-to-one pattern. However, the relation between the categories of the English generation system and the categories of Sadanobu et al. is a one-to-many relation. That is, the English generation system makes more distinctions of speech act category than does the SL-TRANS 1 system, but fewer than the the system of Sadanobu et al.

In some cases where the Sadanobu et al. system makes more distinctions than the English generation system, it is because English does not differentiate its surface forms for those categories. For example, the surface forms of Accept-Action and Inform-Affirmative are often the same in English; differences in form in these categories depends not upon the Intention of the Response (i.e., whether it is Accept-Action or Inform-Affirmative) but upon the form of the utterance to which it is responding.

As in the comparison between the English generation system and the SL-TRANS 1 system described above, the question of domain of category is again pertinent; though both the English and the Sadanobu et al. systems use the category "greet," for example, it remains to be determined whether the domains of the two categories are the same. We have not yet examined English forms of "aiduchi" and so have left that category unspecified to date.

Sadanobu et al. make a distinction between Request (to be performed at a later date) and Confirm or Ask (sometimes a Request to be performed at the time of the Request, such as Requests for name and address). Because these two types of Request receive syntactically similar replies in English, we simply called both types "Request."

English seems to be less rich in its conventional utterances for refusing action, promises or permission. For that reason, there are only two categories in the English analysis (Inform/Permit/not, which is quite limited in scope, and Negative

Response) which correspond to at least four categories in the Sadanobu et al. analysis, with no English category corresponding to Zannen. "That's too bad," the closest English equivalent, is used under so much more restrictive circumstances than "zannen" that it didn't seem correct even to suggest it as a possibility. Similarly for "thank," which has an only marginal similarity to "yoroshiku." Thus, there seem to be a number of distinctions made in the system of Sadanobu et al. which do not have obvious distinct English correspondences.

The correspondences among the three different systems do not at this point approach a "perfect fit," and yet it is clear that even at this stage in the analysis of both Japanese utterances and English generation, there is common ground. How to expand that common ground to the point where unequivocal transfer of concepts and categories from the analysis of Japanese utterances to those needed for the generation of syntactically appropriate English sentences is possible, is a matter for further research and examination. In the final section, we would like to suggest some more specific lines of inquiry that may prove fruitful.

## **Future Directions**

Further work needs to be done in two major areas: fine-tuning distinctions made above that contribute to the determination of surface structure, and looking at larger patterns of discourse that also ultimately have an effect on these structures.

One obvious feature requiring "fine tuning" is politeness. We mentioned briefly above considerations of distance, power and "weightiness" of Request that seem to interact to determine politeness level. We opted simply to fix the level of politeness for each utterance structure, although even in doing that much, we were undoubtedly guided by our intuitive understanding of these factors. If it were possible to make the nature of these factors explicit and to find a working place for them in our system, it would allow us the flexibility of dealing with a wide range of social situations and interchanges outside the limited one of the current corpus. Determining the relative scales of "weightiness" for different cultures and how those values interact with values of distance and power to determine surface structures of utterances in different cultures would be a major contribution to the field of machine translation between different languages.

This issue requires some sociological input, but in the case of two other questions of "fine tuning" raised above, the facts are relatively straightforward, though it remains to incorporate this information in some useful way in the system. One form of Request that occurs relatively frequently in the corpus, but which was not discussed here is the Q? form. This form consists of a phrase, in our case, a noun phrase, uttered alone (or possibly accompanied by "please") with question intonation. It is sometimes used as the continuation of a Request (in which case it is often preceded by "and"). For example, the speaker may make a Request for information from the hearer by asking (73). After the hearer replies, the speaker may continue his Request simply by saying (74) with no syntactic marker that it is a Request.

73. May I have your name and address?

74. And your phone number?

This form of Request is actually typical in situations where the Request itself is highly predictable, as in the case of asking for a phone number after asking for a name and address. Other examples of situations where this form is standard is at airplane counters: "tickets, please," or on Academy Award nights where it has become so stylized as to be virtually obligatory: "the envelope, please." Somehow the notion of predictability seems to be the relevant one here, but how it can be incorporated into the generation system is not yet clear.

In the rule for determining the form of the Response to an Inform utterance, we listed the surface form merely as "I see; all right." In fact, however, there is a difference between the two possible Responses. We had initially formulated this difference using the Local Context feature in a way that certainly fit the facts as they appear in the corpus: "I see" was the Acknowledgment to the answer to a QREF question and "All right" was the Acknowledgment to the answer to a QIF question. However, upon further reflection it seemed clear that the relevant distinction was not in the syntactic form of the initial question but in the "substantiveness" of the answer. That is, "I see" is really used to acknowledge answers that have some substantive informational content, and, in fact, answers to QREF questions do tend to include this kind of new information. For example:

75. S1: What are the details of the conference?

S2: It will be held on May 13 and 14 at the Kyoto Conference Center.

S1: I see/\*All right.

On the other hand, "All right" is used to acknowledge answers that have little substantive content, as answers to QIF questions usually do.

76. S1: Can I apply to be a speaker at the conference?

S2: Yes, you can.

S1: \*I see/All right.

However, if a speaker were to elaborate upon the answer to a QIF question, it would be perfectly appropriate to acknowledge the answer with "I see."

77. S1: Can I apply to be a speaker at the conference?

S2: Yes, you can. You should send us an abstract of 200 words by June 4.

S1: I see.

Thus it seems that the notion of substantiveness needs to be available in the generation system<sup>5</sup>.

<sup>5</sup>This feature would be relevant in the description of a Response to an INFORM utterance as well; where the INFORM utterance was "substantive," the Response would be "I see," and where it was not, the Response would be "All right." In the current system, both possibilities are simply listed in the description for the Response to an INFORM or Reject utterance.

In fact, both the notion of predictability and that of substantiveness invoke units of analysis greater than the utterance. That is, whether an utterance is predictable depends crucially upon the form and function of the utterances that precede it. Likewise, whether an utterance is substantive may be a function of whether it includes new information and the notion of "new information", in turn, depends upon whether that information is present in some form in previous utterances. These considerations bring us to the question of "larger patterns of discourse" mentioned above. For these questions and others, it seems that being able to access or reference some sort of discourse pattern or discourse grammar could be important for the generation system. We have spoken above as if politeness level, even if analysed in terms of its "finer" components of power, distance and weightiness, were a constant aspect of a conversation. In fact, however, speakers at set distances and with set levels of power and speaking of similarly weighted impositions use different levels of politeness depending upon where their utterances come in the course of the conversation. The beginnings and ends of conversations, where Requests are introduced and where final Offers of help are given, tend to be more polite, and the middle of the conversation, where the real negotiation of Request and Offer is done, less so. That this is so can be seen in the form that "stock" openings and closings take; these are typically worded at higher levels of politeness:

78. May I help you?

79. What may I do for you?

80. If there is anything I can do for you, please do not hesitate to ask.

This trend toward less polite speech in the middle of the conversation is apparent in the corpus as well. In one conversation in which the speaker makes a number of Requests, his Requests take these forms: Inform/Wish (I would like), QIF/Able (Can you), and Inform/Intention (I will take), decreasing in level of politeness as he goes from beginning to middle of conversation. In order to characterize this phenomenon and to generate appropriate syntactic forms, it is necessary to have access to information concerning where in the context of the discourse the utterance is spoken. We have seen already examples in which Local Context is used to access utterances "twice removed" from the utterance under analysis. In principle, there is no limit to how "far back" the feature "Local" Context can be used to go. It begins to look as if access to larger patterns is a necessary component of accurate and appropriate generation.

In fact, many researchers claim that the relevance of discourse structure goes much farther than just these examples would suggest. Referring to work by Schegloff and Sacks, Brown and Levinson claim that "conversational location, both in terms of 'local turn-by-turn organization' ... and in terms of overall conversational structure ..., is a crucial determinant of how an utterance is understood."

What does this have to do with appropriate generation? Take, for example, the speech-act ambiguous utterance "Could you carry that?" On the one hand it could be a simple question concerning the potential of the hearer to carry some object; on

the other hand, it could be a conventional indirect Request. The Response, as we discussed briefly above, crucially depends upon how the question is understood; if it is understood as a QIF/Potential, a positive, polite answer will be "Yes, I could." However, if it is understood as a Request in the QIF/Potential form, a positive, polite answer will be "Yes, I can." The choice between these two responses depends crucially upon the determination of the Intention of the question.

It is impossible to predict at this point where all such ambiguities in syntactic surface generation will lie. But it is clear that in resolving difficulties like this one, information about speech act Intention will be essential. Thus far, that information comes from syntactic analysis. And yet, central to the very notion of speech act is the *ambiguity* of surface meaning between (at least) a literal reading of the syntactic form and an indirect reading. Thus, although syntactic information is the crucial element in the generation of appropriate surface structures, it will sometimes be necessary to refer to discourse information in order to accurately determine speech act Intention. We have seen already at least one area in which the determination of speech act Intention has a crucial effect on the form of subsequent utterances. It may also make it easier to determine the appropriate surface structure for the utterance itself. It seems that we must conclude, with Sinclair and Coulthard (1975), that "[i]t is place in the structure of discourse which determines ultimately which act a particular grammatical item is interpreted as realising, though classification can only be made of items already tagged with features from grammar and situation."



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## Appendix: Generation Rules

<u>Input</u>	<u>Syn/sem</u>	<u>Surface Output</u>	<u>Examples</u>
[intention [[relation Request] [action ?action]]] (sent [sem specific <sup>Ⓢ</sup> ]) or (sent [sem [[reln able]]])	QIF/Able <sup>%</sup> [proposition ?action [[agen HR or SP]]]	Can you/I VP	see QIF/Able below
[intention [[relation Request] [action ?action]]] [politeness 1] [benefit [[action ?action] [recip SP]]]	INFORM/Intention [proposition ?action [[agen SP]]]	I will VP	Limited set of verbs <sup>*</sup> 10-18: I will take the single room... 10-30: I will need your name... Others: want, require, have (as in eat or drink)
	QREF/How about [proposition ?action [[agen HR]]]	How about VPing	Activity and accomplishment verbs How about sending me a registration form/giving me your name?
	QIF/Intention [proposition ?action [[agen HR]]]	Will you VP	Activity and accomplishment verbs Will you send me a form/give me your name?
	QIF/Able [proposition ?action [[agen HR]]] or [proposition ?action [[agen SP]]]	Can you/I VP	(([agen HR]) Activity and accomplish. verbs. 10-14: Can you make the reservations for me? ([agen SP]) Limited set of verbs <sup>#</sup> get (*myself) (some help, etc.), have (as in eat or drink)
	IMPERATIVE/Please/(not) [proposition ?action [[agen HR]]]	Please VP	Activity and accomplishment verbs 2-15: Please transfer to the bank account..., and many other examples
	INFORM/Able or Potential [proposition ?action [[agen SP]]]	I can or could VP	Very limited set of verbs: I could use a drink. Probably idiomatic.
(sent [sem general <sup>Ⓢ</sup> ]) [intention [[reln Request] [action ?action]]] [politeness 2] [benefit [[action ?action] [recip SP]]]	QIF/Probable [proposition ?action [[agen HR]]]	Would you VP	Activity and accomplishment verbs 6-16: Then would you please give me your name...
	INFORM/Wish [reln like] [[agen SP] [obj ?action] [[agen HR or SP]]]	I would like you to VP  I would like to VP	Activity and accomplishment verbs 9-5: I would like you to tell me ... 1-6: I would like to apply...
[intention [[reln Request] [action ?action]]] [politeness 2] [benefit [[action ?action] [recip SP]]]	QIF/Potential [proposition ?action [[agen HR or SP]]]	Could you VP, Could I VP	(([agen HR]) Activity and accomplish. verbs. 5-13: Could you refund the fee ([agen SP]) Limited set of verbs <sup>#</sup> Like QIF/Able above. 4Es.6900: Could I have your address please 19Es.2200: Could I take down your name... Others: get

	QREF/Why/not [proposition ?action [[agen HR]]]	Why don't you VP	Activity and accomplishment verbs Why don't you send me a form/give me your name.
[intention [[reln Request] [action ?action]] [politeness 3] [benefit [[action ?action] [recip SP]]]	QIF/Permit [reln ask [[agen SP] [obj ?action] [[agen HR]]]	Could I ask you to VP	Activity and accomplishment verbs Could I ask you to give me your name/make a reservation for me...
	QIF/Probable/mind [reln mind [[agen HR] [obj ?action] [[agen HR]]]	Would you mind VPing	Activity and accomplishment verbs 18Es. 4100: Would you mind sending..
[intention [[reln Request] [action ?action]] [[reln negative]]] [politeness 2]	[proposition ?action [[agen HR] [reln negative]]]	any Request form in which the Hearer is the agent, with "not" added to the VP	Activity and accomplishment verbs Would you mind not smoking? Would you not write with pencil? Please don't litter, etc.
[intention [[reln Request] [action ?action]] [[reln negative]]] [politeness 3]	[reln refrain [[agen HR] [obj ?action] [[agen HR]]]	any Request form in which the Hearer is the agent, with "refrain from VPing" as the VP	Activity and accomplishment verbs Won't you refrain from eating so much? I would like you to refrain from joking. Can you refrain from singing?
[intention [[reln Offer] [action ?action]] [politeness 2] [benefit [[action ?action] [recip HR]]]	INFORM/Potential [proposition ?action [[agen SP]]]	I could VP	Activity and accomplishment verbs I could make reservations for you.
	INFORM/Able [proposition ?action [[agen SP]]]	I can VP	Activity and accomplishment verbs 18Es.3200: We can send you a map...
	INFORM/Intention [proposition ?action [[agen SP]]]	I will VP	Activity and accomplishment verbs 1-18: We will send you the registration form immediately.
	QIF/Able [proposition ?action [[agen SP]]]	Can I VP	Activity and accomplishment verbs 3Es.400: Can I help you?
	IMPERATIVE/Please/(not) [proposition ?action [[agen HR]]]	Please (don't) VP	(IMP/Please) Limited set of verbs. 2-21:...please ask us at any time# Others: take, have, call (on), come (IMP/Please/not) Limited set of verbs: hesitate, fail, possibly idiomatic.
	QREF/Why/not [proposition ?action [[agen SP]]]	Why don't I VP	Activity and accomplishment verbs Why don't I send you a form, give you my name...
	QREF/Able [proposition ?action [[agen SP]]]	How/What can I VP	Standard forms: 7-5: What can I do for you? or What can I do to help you?, How can I help you? Idiomatic.

[intention [[reln Offer] [action ?action]]] [politeness 3] [benefit [[action ?action] [recip HR]]]	QIF/Permit [proposition ?action [[agen SP]]]	May I VP	Activity and accomplishment verbs 1-5: May I help you?
	QIF/Potential/(not) [proposition ?action [[agen SP]]]	Could(n't) I VP	Activity and accomplishment verbs Could I send you a form/take down your name?
	QREF/Permit [proposition ?action [[agen SP]]]	How/what may I VP	Standard forms: 9-4: What may I do for you? or, What may I help you with? How may I help you? Idiomatic
	QREF/Potential [proposition ?action [[agen SP]]]	How/what could I VP	Like QREF/Permit and Able
[intention [[reln Suggest] [action ?action]]] [politeness 1] [benefit [[action ?action] [recip HR]]]	QREF/How about [proposition ?action [[agen HR]]]	How about VPing	Activity and accomplishment verbs How about going to the conference by taxi?
	INFORM/Able [proposition ?action [[agen HR or third person]]]	You/he can VP	Activity and accomplishment verbs 9-8: From there, you can take a bus...
[intention [[reln Suggest] [action ?action]]] [politeness 2] [benefit [[action ?action] [recip HR]]]	QREF/Why/not [proposition ?action [[agen HR or third person]]]	Why don't you/he VP	Activity and accomplishment verbs Why don't you go to the conference by taxi?
	QIF/Able/(not) [proposition ?action [[agen HR or third person]]]	Can(t) you/he VP	Activity and accomplishment verbs Can you go by taxi?
[intention [[reln Suggest] [action ?action]]] [politeness 3] [benefit [[action ?action] [recip HR]]]	INFORM/Potential [proposition ?action [[agen HR or third person]]]	You/he could VP	Activity and accomplishment verbs 3Es.3100: You could take the #4 bus...
	QIF/Potential/(not) [proposition ?action [[agen HR or third person]]]	Could(n't) you/he VP	Activity and accomplishment verbs Could he go by taxi?
[intention [[reln Invite] [action ?action]]] [politeness 2]	QIF/Wish/(not) [reln like [[agen HR] [obj ?action] [[agen HR]]]]]	Would(n't) you like to VP	Limited set of verbs+ 6-8: Would you like to participate? Others: go, see, have
[intention [[reln Reject] [action ?action]]] [politeness 2]	INFORM/Able/not [proposition ?action [[agen SP]]]	I can't VP	Activity and accomplishment verbs 7-8: I'm sorry, but I can't help you ...
	INFORM/Possible/not [reln possible [[obj ?action]]]	It isn't possible to VP	Activity and accomplishment verbs 5-14: I am sorry that it is not possible.

<pre> [intention   [[reln Response]    [polarity pos]]] [local_context [[sem [[reln QIF]]]                 [prag [intention                        [[reln Request]                         [action ?action]]]]]] [politeness 1] </pre>	<p>Sure/no problem</p>	<p>(10-4: I would like to ask about over-night facilities at the conference.)  10-5, Req.: Can you give me any ideas?  10-6, Response: Sure.</p>
<pre> [intention   [[reln Response]    [polarity pos]]] [local_context [[sem [[reln QIF]]]                 [prag [benefit                        [[action ?action]                         [recip HR]]]]]] [politeness 1] </pre>	<p>Sure/thanks</p>	<p>Offer: Can I help you with that?  Response: Sure/thanks.</p>
<pre> [intention   [[reln Response]    [polarity pos]]] [local_context [[sem [[reln INFORM, QREF/Why/not or How about, or IMPERATIVE]]]                 [prag [intention                        [[reln Request, Suggest, Offer, or Reject]                         [action ?action]]]]]] [politeness 1] </pre>	<p>OK</p>	<p>10-18, Request: Then I will take the single at the Kyoto Prince Hotel.  10-19, Response: OK.</p>
<pre> [intention   [[reln Response]    [polarity pos]]] [local_context [[sem [[reln QIF]]]                 [prag [intention                        [[reln Request]                         [action ?action]]]]]] [politeness 2] </pre>	<p>Yes + short answer<sup>&amp;</sup>  (modal [[syn [[v_form present]               [v_polarity positive]]]])</p>	<p>10-14, Request: Can you make the reservations?  10-15, Response: Yes, we can...</p>
<pre> [intention   [[reln Response]    [polarity pos]]] [local_context [[sem [[reln QIF]]]                 [prag [benefit                        [[action ?action]                         [recip HR]]]]]] [politeness 2] </pre>	<p>Yes + short answer<sup>&amp;</sup> +  thanks/thank you  (modal [[syn [[v_form present]               [v_polarity positive]]]])</p>	<p>Offer: Could I help you with that?  Response: Yes, you can, thank you.</p>
<pre> [intention   [[reln Response]    [polarity pos]]] [local_context [[prag [intention                      [[reln Invite]]]]]] [politeness 2] </pre>	<p>Yes + short answer<sup>&amp;</sup> +  thanks/thank you  (modal [[syn [[v_polarity positive]]]])</p>	<p>Invite: Wouldn't you like to go on the tour?  Response: Yes, I would, thanks.</p>

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln INFORM or QREF or IMPERATIVE]]  
 [prag [intention  
 [[reln Request]  
 [action ?action]]]]]]  
 [politeness 2]

All right

5-20, Request: Please inform us in advance if the substitute attends.  
 5-21, Response: All right.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln INFORM or QREF/Why/not or IMPERATIVE]]  
 [prag [intention  
 [[reln Offer]  
 [action ?action]]]]]]  
 [politeness 2]

Thank you

Offer: I could send you a form.  
 Response: Thank you.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln INFORM or QREF/Why/not or IMPERATIVE]]  
 [prag [intention  
 [[reln Suggest or Reject]  
 [action ?action]]]]]]  
 [politeness 2]

All right

Reject: I can't send you a form.  
 Response: All right.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln QIF]]  
 [prag [intention  
 [[reln Request]  
 [action ?action]]]]]]  
 [politeness 3]

Yes + short answer<sup>&</sup> +  
 certainly/of course  
 (modal [[syn [[v\_form present]  
 [v\_polarity positive]]]])

Request: Would you send me a form?  
 Response: Yes, I will, certainly.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln INFORM, IMPERATIVE or QREF]]  
 [prag [intention  
 [[reln Request]  
 [action ?action]]]]]]  
 [politeness 3]

Certainly/of course.

Request: Please send me a form.  
 Response: Certainly.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln INFORM, QREF/Why/not, or IMPERATIVE]]  
 [prag [intention  
 [[reln Offer]  
 [action ?action]]]]]]  
 [politeness 3]

Thank you very much

1-18, Offer: We will send you the registration form immediately.  
 1-20, Response: Thank you very much.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln QIF]]  
 [prag [intention  
 [[reln Offer]  
 [action ?action]]]]]]  
 [politeness 3]

Yes, thank you very much

Offer: Can I send you a form?  
 Response: Yes, thank you very much.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [reln QREF or INFORM]]  
 [prag [intention  
 [[reln Suggest]  
 [action ?action]]]]]]  
 [politeness 3]

All right, thank you very much.

Suggest: You could take the train.  
 Response: All right, thank you very much.

[intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [reln QIF]]  
 [prag [intention  
 [[reln Invite or Suggest]  
 [action ?action]]]]]]  
 [politeness 3]

Yes (+short answer<sup>&</sup>)  
 thank you very much  
 (modal [[syn [[v\_polarity positive]]]])  
 very much.

Invite: Wouldn't you like to join the tour?  
 Response: Yes, I would, thank you

[intention  
 [[reln Response]  
 [polarity neg]]  
 [local\_context [[sem [reln QIF]]  
 [prag [intention  
 [[reln Request, Invite, Offer]  
 [action ?action]]]]] or  
 [[sem [reln QIF or INFORM]]  
 [prag [intention  
 [[reln Suggest]  
 [action ?action]]]]]]  
 [politeness abrupt]

No + negative short answer<sup>&</sup>

Request: Could you send me a form?  
 Response: No, I couldn't.

[intention  
 [[reln Response]  
 [polarity neg]]  
 [local\_context [[prag [intention  
 [[reln Request, Suggest]  
 [action ?action]  
 (agen HF)]]]]]]  
 [politeness 1]

No + appropriate subject + can't

Suggest: Could you take the train?  
 Response: No, I can't.

<pre>[intention   [[reln Response]    [polarity neg]]] [local_context [[prag [intention   [[reln Request]    [[action ?action]    [agen SP]]]]]]] [politeness 1]</pre>	Sorry	Request: Could I get some help? Response: Sorry.
<pre>[intention   [[reln Response]    [polarity neg]]] [local_context [[sem [[reln QIF, INFORM, QREF/Why/not, or IMPERATIVE]]   [prag [intention   [[reln Offer]    [action ?action]]]]]]] [politeness 1]</pre>	No	Offer: Let me send you a form. Response: No.
<pre>[intention   [[reln Response]    [polarity neg]]] [local_context [[prag [intention   [[reln Suggest]    [action ?action]]]]] or   [[sem [reln INFORM, QREF, IMPERATIVE]   [prag [intention   [[reln Request]    [action ?action]]]]]]] [politeness 2]</pre>	Sorry + appropriate subject + can't	Suggest: Why don't you take the train? Response: Sorry, I can't.
<pre>[intention   [[reln Response]    [polarity neg]]] [local_context [[sem [reln QIF]   [prag [intention   [[reln REQUEST]    [action ?action]]]]]]] [politeness 2]</pre>	No + sorry + appropriate subject + can't	Request: Could you send me a form? Response: No, sorry, I can't.
<pre>[intention   [[reln Response]    [polarity neg]]] [local_context [[sem [[reln QIF, INFORM, QREF/Why/not, or IMPERATIVE]]   [prag [intention   [[reln Offer]    [action ?action]]]]]]] [politeness 2]</pre>	No, thank you.	Offer: Can I send you a form? Response: No, thank you.
<pre>[intention   [[reln Response]    [polarity neg]]] [local_context [[prag [intention   [[reln Request, Suggest]    [action ?action]]]]]]] [politeness 3]</pre>	Appropriate subject + form of be + very sorry, but subject can't	Request: I need you to send me a form. Response: I am very sorry, but I can't.



[intention  
 [[reln Response]  
 [polarity neg]]  
 [local\_context [[sem [[reln QIF, INFORM, QREF/Why/not, or IMPERATIVE]]  
 [prag [intention  
     [[reln Offer]  
     [action ?action]]]]]]  
 [politeness 3]

Offer: I will send you a form.  
 Response: No, thank you very much.

[intention  
 [[reln Response]  
 [polarity O]]  
 [local\_context [[prag [intention  
     [[reln Inform or Reject]  
     [action ?action]]]]]]

1-16, Inform: My name is Mayumi  
 Suzuki.  
 1-17, Response: All right.

[intention  
 [[reln Acknowledgment]]  
 [local\_context [[prag [intention  
     [[reln Response]  
     [polarity pos or neg]]  
     [local\_context [[sem [[reln QIF]]  
       [prag [intention  
         [[reln Request]  
         [action ?action]]]]]]]]]]  
 [politeness 1]

Request: Could you send me a form?  
 Response: Yes, I can.  
 Acknowledgment: All right.

[intention  
 [[reln Acknowledgment]]  
 [local\_context [[prag [intention  
     [[reln Response]  
     [polarity neg]]  
     [local\_context [[sem [[reln INFORM, IMPERATIVE, QREF]]  
       [prag [intention  
         [[reln Request]  
         [action ?action]]]]]]]]]]  
 [politeness 1]

Request: Please send me a form.  
 Response: Sorry, I can't.  
 Acknowledgment: All right.

[intention  
 [[reln Acknowledgment]]  
 [local\_context [[prag [intention  
     [[reln Response]  
     [polarity neg]]  
     [local\_context [[prag [intention  
       [[reln Suggest or Offer]  
       [action ?action]]]]]]]]]]

Offer: I can reserve your room for you.  
 Response: No, thank you.  
 Acknowledgment: All right.

[[intention  
 [[reln Acknowledgment]]]  
 [local\_context [[prag [intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [ [prag [intention  
 [[reln Request]  
 [action ?action]]]]]]]]  
 [politeness 2]

Thank you

Request: Please send me a form.

Response: All right.

Acknowledgment: Thank you.

[[intention  
 [[reln Acknowledgment]]]  
 [local\_context [[syn [[lex "sorry"]]]  
 [prag [intention  
 [[reln Response]  
 [polarity neg]]  
 [local\_context [[prag [intention  
 [[reln Request]  
 [action ?action]]]]]]]]  
 [politeness 2]

That's all right

Request: Please send me a form.

Response: Sorry, I can't.

Acknowledgment: That's all right.

[[intention  
 [[reln Acknowledgment]]]  
 [local\_context [[syn [[lex "thank"]]]  
 [prag [intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln INFORM, IMPERATIVE, QREF]]  
 [prag [intention  
 [[reln Offer]  
 [action ?action]]]]]]]]  
 [politeness 2]

You're welcome.

Offer: I can make a reservation for you.

Response: Thank you.

Acknowledgment: You're welcome.

[[intention  
 [[reln Acknowledgment]]]  
 [local\_context [[syn [[lex "thank"]]]  
 [prag [intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[sem [[reln QIF]]  
 [prag [intention  
 [[reln Offer]  
 [action ?action]]]]]]]]  
 [politeness 2]

No problem/my pleasure.

Offer: Can I make a reservation for you?

Response: Yes, you can, thanks.

Acknowledgment: No problem.

[[intention  
 [[reln Acknowledgment]]]  
 [local\_context [[syn [[lex "thank"]]]  
 [prag [intention  
 [[reln Response]  
 [polarity pos]]  
 [local\_context [[prag [intention  
 [[reln Suggest]  
 [action ?action]]]]]]]]  
 [politeness 2]

You're welcome.

Suggest: Can you take the train?

Response: Yes, I can, thanks.

Acknowledgment: You're welcome.

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[intention
  [[reln Acknowledgment]]]
[local_context [[syn [[lex "thank"]]]
  [prag [intention
    [[reln Response]
    [polarity neg]]]
  [local_context [[prag [intention
    [[reln Invite, Offer]
    [action ?action]]]]]]]]]]
[politeness 2]

```

All right.

Invite: Would you like to join the tour?

Response: Yes, I would, thanks.

Acknowledgment: All right.

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## Notes

%Syn/sem labels such as "QIF/Able" are a sort of shorthand for feature structures of the following form:

```

[reln QIF]
[obj
  [[reln able]
  [proposition ?action]]]

```

The abbreviated form is used here simply to save space.

@These expressions are simply shorthand for expressing the idea that when the import of the sentence is specific (general), "can" ("would") is used as the modal form in the Request. The mechanics of implementing these conditions have yet to be fully explored.

\*These verbs all have to do with need. The speaker is making his/her needs known with the implication that he/she would like the hearer to do something to meet those needs.

#These verbs have to do with acquisition. All Request forms in the first person are marked forms which can occur with only a limited set of verbs, except for the form "I would like (you) to VP." Intuitively, this is reasonable; requests are usually made for the *hearer* to do something, not for the speaker to do something. The "I would like" form merely states the speaker's desires or needs and lets the hearer infer the request. It is similar to the examples discussed in the previous footnote, except that the form "I would like" is the more conventionally accepted way to express this type of indirect request. On the other hand, all *Offers* made in the *second* person are marked; the only real example is the imperative/please form. The verbs used in the positive sense in this case include those used in *first* person subject *Requests*. In some sense, the subjects of these verbs (verbs such as "have," "get," or "take") are not only the agents of the verbs but also recipients. *Offers* are usually made by speakers intending to do something for hearers; in the case of the imperative offer, the intent is to authorize a hearer to do something that will benefit him/herself. (This group of verbs is somewhat broader than the group that occurs in first person *Requests*.)

+This class of verbs describes activities to which one could be invited. This seems to be a pragmatic rather than syntactic or semantic issue. It should be safe to assume that the semantic input to generation will be pragmatically appropriate so that no syntactic or semantic restrictions need to be placed on the verbs that can appear in this structure.

&"Short answer" is shorthand for an analysis of answers to QIF questions of the following form:

1. Can/will/should/did, etc. you go?
2. Yes, I can/will/should/did.

Roughly, this entails copying the subject (with the appropriate change for speaker/hearer), and the modal, auxiliary or "do" from the verb phrase. Of course, this analysis is not only applicable to indirect speech acts uses of QIF forms, but to all uses of the form QIF to ask questions.

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