LEARNING A SECOND LANGUAGE THROUGH INTERACTION

STUDIES IN BILINGUALISM (SiBil)

Volume 17

Rod Ellis

Learning a Second Language through Interaction

LEARNING A SECOND LANGUAGE THROUGH INTERACTION

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JOHN BENJAMINS PUBLISHING COMPANY
AMSTERDAM/PHILADELPHIA

The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences — Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

Library of Congress Cataloging-in-Publication Data

Ellis, Rod.
Learning a second language through interaction / Rod Ellis ; with contributions from Sandra Fotos ... [et al.].
p. cm. -- (Studies in Bilingualism, ISSN 0928-1533 ; v. 17)
Includes bibliographical references (p.) and index.
1. Second language acquisition. 2. Interaction analysis in education. I. Fotos, Sandra. II. Title III. Series.
P118.2.E38 1999
401'.93--dc21 99-40612
ISBN 90 272 4124 4 (Eur.) / 1 55619 736 5 (US) (Hb; alk. paper) CIP
ISBN 90 272 4125 2 (Eur.) / 1 55619 737 3 (US) (Pb; alk. paper)

John Benjamins Publishing Co. • P.O.Box 75577 • 1070 AN Amsterdam • The Netherlands
John Benjamins North America • P.O.Box 27519 • Philadelphia PA 19118-0519 • USA

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Acknowledgments

We gratefully acknowledge the following permissions to reprint material from previously published work: Cambridge University Press for R. Ellis and X. He 'The Roles of Modified Output and Input in the Incidental Acquisition of Word Meanings', *Studies in Second Language Acquisition* 21: 285–301; Defense Language Institute Foreign Language Center for R. Ellis 'Factors in the Incidental Acquisition of Second Language Vocabulary from Oral Input: A Review Essay, *Applied Language Learning* 5: 1–32; Language Learning for R. Ellis, Y. Tanaka and A. Yamazaki, 'Classroom Interaction, Comprehension, and the Acquisition of L2 Word Meanings', *Language Learning* 44: 449–491; Oxford University Press for R. Ellis, 'Modified Oral Input and the Acquisition of Word Meanings', *Applied Linguistics* 16: 409–441; Pergamon Press for 'Bugs and Birds: Children's Acquisition of Second Language Vocabulary through Interaction', *System* 25: 247–259; SEAMEO Regional Language Centre for R. Ellis 'Discourse Control and the Acquisition-Rich Classroom' in W. Renandya and G. Jacobs (eds.). *Learners and Language Learning* pp. 145–171. Teachers of English to Speakers of Other Languages for S. Fotos and R. Ellis, 'Communicating About Grammar: A Task-Based Approach', *TESOL Quarterly* 25: 605–628.

Preface

This book has two purposes. First, it is intended to contribute to the growing body of theory and research that has addressed the role of interaction in second language (L2) learning. Second, on a more personal note, it serves as a testimony to the years I spent at Temple University, first in Japan and then in Philadelphia, representing the work undertaken by myself and a number of students during this period.

The role of interaction in L2 learning is not an uncontroversial matter. On the one hand there are theories of L2 learning that minimize the contribution that interaction makes, emphasizing instead the centrality of learner internal mechanisms. Theories based on Universal Grammar view interaction as neither necessary nor especially important for acquisition. At best, interaction is seen as just one way in which learners can obtain the input needed to trigger parameter setting and resetting. On the other hand there are theories that view interaction as quite central in the process of L2 acquisition. Starting with the seminal work of Evelyn Hatch in the 1970s, 'interactionists' such as Long, Pica and Gass have gradually accumulated a range of theoretical arguments in support of the general claim that, while not strictly speaking necessary, interaction nevertheless constitutes the primary means by which language learners obtain data for language learning, both in the sense that interaction is how most learners obtain input and in the sense that the input obtained through interaction works better for acquisition than input obtained in other ways. Starting from Hatch's axiom that learners learn the grammar of the language *through* interaction rather than learn grammar *in order* to interact, second language acquisition (SLA) researchers have developed and tested theories relating to how interaction assists acquisition. Much of this work has taken place from the guiding perspective of an input-output model of L2 learning but, more recently, researchers have begun to pay attention to other theoretical perspectives, in particular those that view interaction as a sociocultural phenomenon in which learning actually takes place. This book is firmly interactionist in outlook and no attempt is made to debate the merits of such an outlook in relation to innatist outlooks. In general, the input-output

model frames the approach to interaction that is adopted. However, recognition is given to the need for alternative theoretical perspectives. While I see no need for a paradigm shift from an input-output model to these alternative perspectives, I can see great advantage in widening the scope of interactionist research in SLA by adopting a pluralistic stance.

Although most of the chapters in this book were written after I left Temple University, it remains true that Temple University is where the work on which these chapters are based took place. Temple University afforded me the time to develop my own thinking on the role of interaction. It also gave me the opportunity to work with some remarkably able students on a number of classroom studies of interaction. I am indebted, therefore, to both the university itself and to the individual students, whose names appear on the title page of this book. Without the support of the university and the perspicacity and industry of the students this book would not have been possible.

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April 1999

SECTION 1

Introduction

This book explores the relationship between interaction and second language (L2) acquisition. It addresses three general questions:

1. In what ways does interaction/input contribute to L2 acquisition?
2. Which types of interaction/input promote L2 acquisition?
3. What kind of language pedagogy is needed to ensure that classroom learners experience acquisition-rich interaction?

These questions are addressed both in chapters that review interactionist theories of L2 acquisition and in those that report specific research studies. The chapter in this introductory section provides a general review of interactionist theories.

It is useful to distinguish two different but related meanings of 'interaction'. First, interaction can be viewed as the social behaviour that occurs when one person communicates with another. Interaction in this sense is *interpersonal*. It can occur face-to-face, in which case it usually takes place through the oral medium, or it can occur as displaced activity, in which case it generally involves the written medium. In some sense, oral interpersonal interaction is basic to human communication, as all communities, whether literate or not, engage in it. Also, it constitutes the primary purpose for our species-specific language capacity and the means by which it has developed both phylogenetically and ontogenetically. This book will concern itself mainly with oral interaction of the interpersonal kind.

Second, interaction can occur inside our minds, both when we engage in the kind of 'private speech' discussed by Vygotsky (1978), and, more covertly, when different modules of the mind interact to construct an understanding of or a response to some phenomenon. In reading, for example, we draw interactively on our ability to decode print, our stored knowledge of the language we are reading and the content schemata through which our knowledge of the world is organised. Interaction of this kind, then, is *intrapersonal*. This book will also consider intrapersonal interaction and its relation to second language (L2) learning.

The purpose of the following chapter is to outline the theories of interpersonal and intrapersonal interaction that inform the rest of the book. There are, of

course, a large number of such theories. However, three in particular have figured in L2 research and we will restrict the discussion to these. They are Long's Interaction Hypothesis (Long 1983a, 1996), socio-cultural theory, as this has been applied to L2 learning (e.g. Lantolf and Appel 1994; Lantolf 2000), and depth of processing theory (Craik and Lockhart 1972; Craik and Tulving 1975). These theories all address the relationship between interaction, in its interpersonal and intrapersonal forms, and language learning. However, they do so in very different ways and involve very different discourses. They will be viewed, therefore, as incommensurable and no attempt to construct an integrative theory will be made. However, Chapter 1 will conclude with a general discussion of the 'interactionist perspective' on L2 learning.

CHAPTER 1

Theoretical Perspectives on Interaction and Language Learning

Rod Ellis

What do we mean when we talk of 'interaction'? In fact, we can mean two quite different things. Generally, the term is used to refer to the interpersonal activity that arises during face-to-face communication. However, it can also refer to the intrapersonal activity involved in mental processing. Furthermore, interpersonal and intraspersonal interaction are closely connected with regard to both our use and our acquisition of language. That is, intrapersonal interaction is required in order to interact interpersonally and, also, interpersonal interaction serves to trigger intrapersonal operations, including those that are involved in language acquisition. This chapter is especially concerned with the relationship between interpersonal and intrapersonal interaction. It examines three theories that address this relationship, albeit in very different ways; the Interaction Hypothesis, Socio-cultural Theory and Depth of Processing Theory.

The Interaction Hypothesis

The Interaction Hypothesis (IH) draws on early work in ethnomethodology which examined how native speakers repair breakdowns in communication (e.g. Schegloff, Jefferson and Sacks 1977) and on Hatch's (1978b) key insight that learners' can learn a second language (L2) *through* the process of interacting rather than just manifesting what they have already learned *in* interaction. The IH concerns itself with one particular kind of interaction — that which has become known as the **negotiation of meaning**. This concerns the conversational exchanges that arise when interlocutors seek to prevent a communicative impasse occurring or to remedy an actual impasse that has arisen. These exchanges involve what

Long (1980) has called **interactional modifications** (i.e. changes to the structure of a conversation to accommodate potential or actual problems of understanding). They contrast with the **input modifications** found in foreigner talk (i.e. changes, both grammatical and sometimes ungrammatical, in the formal properties of utterances addressed to learners). Such modifications may arise as a result of interactional modification but they can also occur in monologic discourse.

According to Varonis and Gass (1985), conversational exchanges involving communication problems have a definite structure, involving two stages, a trigger and a resolution. The latter can be further broken down into an indicator, a response and optional reaction to the response (see example (1) below). Such exchanges are accomplished by means of a variety of conversational strategies, such as comprehension checks (which can serve to head-off potential problems) and confirmation checks and requests for clarification (which are used to deal with problems that have arisen). These strategies often lead to **modified input** (i.e. input that has been adjusted to facilitate the interlocutors' comprehension). For example, in (1) student 2 uses a confirmation check to signal a communication problem and in the process modifies 'retire' by producing it in the correct form.

(1) Student 1: And what is your mmm father's job?
Student 2: My father is now retire. Trigger
Student 1: Retired? Indicator of problem
Student 2: Yes. Resolution: Response
Student 1: Oh, yes. Reaction
(From Varonis and Gass 1985: 74)[1]

The general claim of the IH is that engaging in interpersonal oral interaction in which communication problems arise and are negotiated *facilitates* language acquisition. That is, it creates conditions that foster the internal processes responsible for interlanguage development. Thus, the IH addresses how **incidental acquisition** (i.e. the acquisition that occurs, with of without awareness, when learners are primarily concerned with trying to communicate) takes place. It does not address **intentional acquisition** (i.e. deliberate attempts on the part of the learner to study and learn the L2). An assumption of the IH is that the acquisition of linguistic competence is primarily incidental rather than intentional.

IH researchers are at pains to emphasise that interaction involving meaning negotiation only facilitates acquisition; it does not *cause* acquisition to take place. In other words, modified interaction can only 'set the scene for potential learning' (Gass, Mackey and Pica 1998: 304). Furthermore, as Pica (1996b) has pointed out the Interaction Hypothesis does not claim that meaning negotiation is the only type of interaction in which the conditions that foster learning arise.

She acknowledges that 'uninterrupted communication' (i.e. communication where there is no problem of understanding) can also contribute to acquisition, although, like Long, she maintains that learners' data needs are best met through negotiation.

The early version of the IH was closely associated with the Input Hypothesis (Krashen 1985). This claims that learners will acquire an L2 when they have access to comprehensible input and when their 'affective filter' is low (e.g. they are motivated to learn and are not anxious) so that the comprehended input is made available to the internal acquisitional mechanisms for processing. Krashen viewed interaction as just one of three ways in which input can be made comprehensible, the other two being simplified input, such as that found in graded readers, and learners' use of context to help decode messages in the L2. Krashen has consistently argued that, although interaction can serve as a good source of comprehensible input, it is neither necessary nor especially privileged (see Krashen 1982 and 1998). Long (1980, 1983a) agreed with Krashen that comprehensible input was necessary for acquisition but differed from him with regard to the importance of interactionally modified input, which he claimed was especially beneficial in that it supplied learners with information relating to linguistic forms that were problematic to them. However, the early version of the IH (like the later) did not claim that such input was necessary or sufficient for acquisition.

To facilitate empirical research based on the IH Long (1985) suggested that researchers follow three steps. First, they need to show that conversational adjustments that arise when meaning is negotiated promote the comprehension of input. Second, they need to show that comprehensible input promotes acquisition. Third, they can then deduce that conversational adjustments assist acquisition. The research that ensued focused on the first of these steps. It demonstrated that when learners had the opportunity to negotiate meaning they were better able to comprehend input (e.g. Pica, Young and Doughty 1987; Loschky 1994). Other studies focused on identifying the participatory, task and learner variables that influenced whether and to what extent meaning negotiation took place (e.g. Pica and Doughty 1985; Duff 1984; Gass and Varonis 1984). However, until very recently, there have been few studies that have investigated directly whether comprehension results in acquisition or indeed whether interactionally modified input assists acquisition. Instead, researchers relied on indirect evidence for the necessity of comprehension for language acquisition (e.g. studies of the hearing children of deaf parents which showed acquisition was delayed because of an absence of comprehensible input — see Long 1983a).[2]

This early version of the IH was challenged on a number of fronts. First, Long's second hypothesis, that comprehension promotes acquisition, was questioned. A number of theorists (e.g. Sharwood Smith 1986; Faerch and

Kasper 1986) have argued that it is necessary to distinguish input processing for comprehension and input processing for language learning. Learners can comprehend input by drawing on context and their schematic knowledge of the world in such a way that they do not have to attend to the actual linguistic forms in the input. They can infer the meanings of messages. This results in successful comprehension but not in acquisition. For acquisition to take place, learners need to attend to the linguistic forms in the input and the meanings they realise and to compare what they notice with their own output. In these ways they can obtain the data they need to restructure their interlanguages. In such cases, acquisition may take place with or without message comprehension. In other words, according to this position, it is 'processing input' rather than 'comprehending input' that is crucial for acquisition. In many cases, of course, the two may co-occur but clearly occasions can arise where they do not.

Second, Long's claim that interactionally modified input was especially beneficial for acquisition was challenged. We have already noted that Krashen disputed this claim, arguing that simplified input that was not interactionally derived (i.e. **premodified input**) served equally well. There is, in fact, substantial support for the claim that premodified input is highly effective in promoting comprehension (see Chaudron 1988 for a review of this research), although, again, until recently there has been no research that has investigated whether premodified input facilitates acquisition. A question of some interest is whether interactionally modified input is more effective in promoting comprehension than premodified input. Pica, Young and Doughty (1987) investigated this question in a study that compared learners' comprehension of directions under three conditions; a baseline condition (which involved listening to directions of the kind native speakers address to other native speakers), a premodified condition (where baseline directions were simplified in accordance with the kinds of modifications native speakers make when they address non-native speakers) and an interactionally modified condition (where the learners were given the opportunity to negotiate the directions if they did not understand them). Pica, Young and Doughty found that learners comprehended the directions best in the interactionally modified condition and worst in the baseline condition, with comprehension in the premodified condition intermediate. It should be noted, however, that the interactionally modified input condition took considerably longer than the premodified condition. To address the role of time, Pica (1989) carried out a study where the length of time taken up by the premodified input and interactionally modified input was controlled. In this study, the comprehension scores of the two groups were not statistically different. Other studies have not controlled for time. Gass and Varonis (1994) report that interactionally modified input was

more effective than premodified input for both learners' comprehension and their subsequent production of directives in communicative tasks. Loschky (1994), in a similarly designed study to Pica, Young and Doughty's, also found that interactionally modified input led to better overall comprehension than premodified input. Loschky also investigated the relative effects of the two types of modified input on the acquisition of Japanese locative expressions, but found no difference. This research, therefore, provides only limited evidence in support of the IH. First, it is not clear, whether the beneficial effects of interactionally modified input on comprehension are the result of more input and longer processing time or of the kinds of qualitative differences Long and others have claimed to be important. Second, it has failed to show that interactionally modified input works better than premodified input in supporting acquisition.

There are other criticisms of the research based on the early version of the IH (see Ellis 1991). First, as Hawkins (1985) has shown, learners often fake comprehension. That is, they frequently pretend they have understood as a result of negotiating a comprehension problem when, in fact, they have not. Clearly, there are social constraints that influence the extent to which learners are prepared to negotiate to achieve understanding. Second, Aston (1986) has pointed out that the forms used to realize the topic management functions associated with meaning negotiation can also be used to realize entirely different functions. For example, modified repetitions of learner utterances (such as that in (1) above) need not be confirmation checks; they might serve to show that the addressee is in fact following what the speaker has said (i.e. they can function as conversational continuants). The identification of negotiation sequences, therefore, is problematic, although this is rarely acknowledged by IH researchers. Two other criticisms are potentially even more serious for the hypothesis. In general, researchers have sought to evaluate the quality of interaction for acquisition by simply counting instances of conversational modifications. However, it does not follow that more negotiation leads to more and better comprehension. Ehrlich, Avery and Yorio (1989) report a study showing that, on occasions, native speakers over-elaborated in the attempt to remedy learners' problems and that this had an overall detrimental effect on their comprehension. In other words, it would seem to be the *quality* of negotiation that is as much if not more important than the sheer quantity. Finally, Satos's research (1986) has led researchers to recognize that there may be some aspects of the L2, in particular inflectional morphology, that do not get negotiated. Sato found that the two Vietnamese children she investigated longitudinally failed to show any progress in acquiring past tense markers over a ten month period and suggests that one reason for this was that the interactional support they were given obviated the need for them to attend to these features.

The later version of the IH has gone some way to address these criticisms. Long's (1996) updated IH emphasizes that the role of negotiation is to facilitate the kinds of conscious 'noticing' that Schmidt (1990, 1994, 1996) has argued is required in order for learners to process input for 'intake'. Long writes:

> … it is proposed that environmental contributions to acquisition are mediated by selective attention and the learner's developing L2 processing capacity, and that these resources are brought together more usefully, although not exclusively, during 'negotiation for meaning'. (p. 414)

In contrast to the early version of the IH, which simply postulated an effect for comprehensible input, this later version seeks to account for *how* interactionally modified input contributes to acquisition by specifying the learner internal mechanisms that are involved. Interactionally modified input works for acquisition when (1) it assists learners to notice linguistic forms in the input and (2) the forms that are noticed lie within the learner's 'processing capacity'. In effect, then, the updated version of the IH incorporates both an interpersonal and an intrapersonal view of interaction. Interpersonal interaction helps learners to notice features in the input; intrapersonal activity, involving different kinds of processing operations, is required for learners to process and acquire from the negotiated input.

Learners are credited with a limited processing capacity which makes it difficult for them to focus simultaneously on both meaning and form. Robinson (1995), in a review of **information processing models**, discusses capacity models[3] which credit learners with the ability to attend simultaneously to both message and code. However, dual processing of this kind only becomes possible when learners are able to draw on automatized knowledge of the L2. VanPatten (1988) has shown that learners, particularly beginning learners, have great difficulty in attending to form when they are focused on meaning and, conversely, of extracting meaning when they are focused on form. It is not difficult to see the connection between the IH and an information processing model of this type; the opportunity to negotiate meaning provides learners with the time they need to attend to form while processing the message content. Furthermore, as discussed below, it can also show learners how these forms are constructed and how they map onto meaning.

The new version of the IH also affords a much richer view of how negotiation can assist language learning. As in the early version, negotiation is seen as enabling learners to obtain comprehensible input, thereby supplying them with **positive evidence** (i.e. 'models of what is grammatical and acceptable' — Long 1996: 413). The exchange in (1) above illustrates this; student (2) receives a model of the past tense form, 'retired'. Pica's detailed analyses of negotiation

sequences (see, for example, Pica 1992, 1996a) have shown how negotiation can give salience to both form-function relationships and also how it helps learners to segment message data into linguistic units. In (2), for example, the native speaker's modification helps the learner to segment a constituent ('above') in the input. Such external segmentation processes can be expected to assist 'noticing' because they help learners to analyze chunks of input into their parts.

(2) NS: with a small pat of butter on it and above the plate
NNS hm hmm what is buvdaplate?
NS: above
NNS: above the plate
NS: yeah
(Pica 1992: 225)

Pica (1992) distinguishes between three kinds of modification that can occur in negotiated input; semantic, segmentation (as in (2) above) and movement of constituents. She reports that out of the 569 negotiation sequences she investigated 346 involved one or more of these types of modification, a remarkably high percentage. However, she also reports that there were no instances of morphological modifications, a finding that bears out Sato's claim that interaction may contribute little to the acquisition of morphosyntax. It should be noted, however, that although there is now a rich body of descriptive research documenting how negotiation leads to input that has been modified in ways that can potentially promote acquisition there is still no research demonstrating a link between such input and acquisition. Linnell (1995), for example, failed to show that learners who engaged in interaction with negotiation outperformed learners who experienced interaction with no negotiation or learners with no opportunity to interact at all. He found that 'syntactization appeared to continue regardless of the type of discourse learners engaged in' (p. 96). It remains to be shown, therefore, that Pica's and Long's claims regarding the positive evidence learners obtain from negotiated input actually works for acquisition.

The later version of the IH also posits two other ways in which interaction can contribute to acquisition; through the provision of **negative evidence** and through opportunities for **modified output.** Long (1996: 413) defines negative evidence as input that provides 'direct or indirect evidence of what is grammatical'. It arises when learners receive feedback on their own attempts to use the L2. One of the major ways in which this takes place is through 'recasts' (i.e. utterances that rephrase a learner's utterance 'by changing one or more sentence

components (subject, verb or object) while still referring to its central meanings' (Long op cit; 435). (3) provides an example. Here the learner produces an erroneous utterance ('I don't have a telephones picture') which the native speaker immediately recasts by modifying the direct object to 'a picture of a telephone'.

(3) NS: and right next to her a phone rings?
NNS: forring?
NS: a phone? Telephone? Is there a telephone next to her?
NNS: yeah … I don't have a telephones picture.
NS: you don't have a picture of a telephone?
(Pica 1996a: 8)

Long argues that recasts provide the opportunity for 'cognitive comparison' (i.e. for learners to compare their own deviant productions with grammatically correct input). Gass (1997) suggests that the negative evidence learners obtain through negotiation serves only to *initiate* interlanguage change but that permanent restructuring may only take place after an 'incubation period' during which the learner has access to input that provides further evidence of the need for the change.

A number of studies have investigated recasts in conversations involving L2 learners (see Long 1996 for a review). Richardson (1993) found that in adult NS-NNS conversations the NSs were more likely to recast ungrammatical utterances that were easy to remedy and very rarely provided multiple corrections. Richardson also found that learners were more likely to imitate corrective than non-corrective recasts. Oliver (1995) distinguished moves relating to the negotiation of meaning (e.g. requests for clarification and confirmation checks) and recasts. She found that in conversations involving NS and NNS children aged between 8 and 13 meaning negotiation arose as a response to utterances containing errors involving auxiliary verbs, copula, pronouns, word order and word choice whereas recasts were more likely to occur after utterances with singular/plural and subject-verb agreement errors. An experimental study by Mito (1993) compared the relative effects of recasts and models[4] targeted at two Japanese grammatical constructions. The results showed that whereas no learning occurred in any of the learners in the modeling condition, the recasts led to small but statistically significant gains by 6 of the 19 learners in this condition. Long, Inagaki and Ortega (1998) report a similar study involving adult learners of L2 Japanese and Spanish. In the case of the Japanese learners, recasts did not prove more effective than models in promoting acquisition of the same two grammatical structures that Mito investigated. However, recasts did prove more effective than models where one Spanish construction (adverb placement) was concerned,

although not for two other constructions. Mackey and Philps (1998) compared two groups of adult learners, one of which received interactionally modified input through negotiation and the other intensive recasts. They found that the recasts had a stronger developmental effect on advanced learners' use of question forms than interactionally modified input without recasts. However, recasts did not prove beneficial for the less advanced learners. Interestingly, in this study, the positive effect for recasts was evident even though the advanced learners rarely incorporated the corrections into their own utterances.

Clearly, research investigating negative feedback through recasts in interaction involving L2 learners is still in its infancy. There are some obvious problems. First, there is a theoretical difficulty. Acquisition can only take place if learners pay attention to the *form* of the recast and it is not clear that this is what they typically do. In general, utterances are not stored verbatim, in the form they were produced, but semantically (Clark and Clark 1977). It would seem, then, that for recasts to work for acquisition a number of further conditions must be met. (1) the learner must possess the necessary proficiency to process the recast as form. Mackey and Philps' (1998) study shows, learners need to be at a developmental stage that enables them to process the negative feedback they receive. (2) the learner must be oriented towards form rather than meaning in order to undertake the necessary formal representation of the utterance. Many learners may not be so inclined or may not be able to do so in the context of making sense of on-going conversation.

Second there is a methodological problem. Long (1996) clearly views 'meaning negotiation' and 'recasts' as distinct. In fact, though, a confirmation check (a negotiation move) often cannot be distinguished formally from a recast unless intonation (rising versus falling) is used as the distinguishing feature. This problem is fully evident in example (3) above, where the NS clearly rephrases the learner's utterance but, in fact, appears to be doing so in the context of negotiating meaning by means of a confirmation check. Oliver (1998) recognized this problem, admitting that she double coded such utterances as both confirmation checks and as 'other repetitions' (i.e. as recasts). This reflects a broader methodological issue which will be addressed at the end of this section.

Research based on the later version of the IH has also focused on the modified output that learners produce as a result of meaning negotiation and recasts. Theoretical interest in output as a source of language acquisition was stimulated by Swain's (1985) proposal that comprehensible output as well as comprehensible input may be required in order for learners to achieve high levels of grammatical and sociolinguistic competence in an L2. Swain argued that what she called 'pushed output' obligated learners to engage in syntactic processing,

as opposed to the kind of semantic processing involved in comprehension, and that this fostered acquisition. Swain (1995) discusses three functions of output where accuracy is concerned. First, it serves a consciousness-raising function by triggering 'noticing'. That is, producing language helps learners to notice their problems. Second, producing language enables learners to test out hypotheses about the L2. One way in which this occurs is through the modified output that learners produce following negative feedback. Third, output allows learners to reflect consciously about L2 forms. This can occur in the context of communicative tasks where the content is grammar (i.e. when learners negotiate for meaning as they grapple with a grammar problem). In addition, to these three functions, output can also help learners to achieve greater fluency by increasing control over forms they have already partially acquired. De Bot (1996) views this function as the most likely way output aids acquisition. He points out that production helps learners to increase automaticity of processing and, as a result, enables them to devote more attentional resources to the higher-level processes involved in message generation.

This theoretical framework has led researchers to address a number of questions. One is whether learners do in fact modify their output as a result of meaning negotiation. The answer to this question depends to a considerable extent on the nature of the indicating move. In (4) the indicating move consists of a confirmation check (which, in effect, functions as a recast). Here the learner responds simply by saying 'yes'; thus, no modified output occurs. In contrast, in (5) the indicating move is performed by means of a request for clarification, which results in the learner modifying his initial utterance. Pica's research (see Pica (1988) and Pica, Holliday, Lewis and Morganthaler (1989)) has shown that this constitutes a general response pattern. Learners generally do not modify their output when confronted with a confirmation check or a recast, a finding borne out by other studies. For example, Oliver (1998) found that children incorporated only 10% of all recasts into their following utterances. Lyster and Ranta (1997), in a study of immersion classrooms, report that learners 'uptook' 31% of the teachers' recasts. In contrast, learners are likely to modify their output when confronted by a request for clarification (e.g. Lyster and Ranta report that clarification requests resulted in a 88% uptake rate). However, as Pica (1992) documents, learners are overall less likely to modify their output than native speakers responding to a learner comprehension problem. Also, the scope of learners' modifications is more restricted.

(4) NNS: I think on the front is a small store
NS: on the front?
NNS: yeah oh doors
NS: in the front of the door?
NNS: yeah
NS: there is a small step, yes
NNS: oh yes

(5) NNS: they are think about the fun thing so they are change the position each other
NS: what?
NNS: they change up the position so they think father went to pre-school and son went to the company OK

A second question of obvious interest is whether modified output assists language acquisition. In this respect, it should be noted that Krashen's Input Hypothesis and the revised Interaction Hypothesis make very different claims. As we have already seen, Krashen argues that acquisition is input driven. He specifically rejects the output hypothesis on the grounds that output (and especially modified output) is too scarce to make a real contribution to the development of linguistic competence, high levels of linguistic competence are possible without output and there is no direct evidence that modified output leads to acquisition (Krashen 1998). However, in part, Krashen misses the point, as, even if pushed output is scarce, it may afford qualitative opportunities to notice specific features that are problematic to learners. Long and Pica have both argued that modified output contributes significantly to acquisition. Long (1996) sees spoken production as 'useful … because it elicits negative input and encourages analysis and grammaticization' ; it is 'facilitative, but not necessary' (p. 448). Pica (1996b) argues that modified output helps learners to analyze and break a message into its constituent parts and also to produce forms that may lie at the cutting edge of their linguistic ability. These conflicting positions can only be resolved through empirical studies of the effects of output modification on acquisition. There have, however, been very few such studies.

In a small scale study involving just three learners, Nobuyoshi and Ellis (1993) found that two of the learners were able to improve the accuracy of their use of past tense forms in oral narratives as a result of being 'pushed' by means of requests for clarification. Furthermore, their improvement was sustained in narratives produced one week later when they were not pushed. The other learner neither modified his output initially nor showed any later gains in accuracy.

Krashen (1998) dimisses this study on the grounds that the sample size was very small and that the learners who improved may have been monitoring using explicit knowledge.[5] Stronger evidence comes from Mackey's (1995) study of questions forms. Mackey compared the effects of three environmental conditions on learners' development of English question forms; (1) participation in interaction focused on the question forms, (2) observation without the opportunity to produce, and (3) exposure to premodified input with no opportunity to interact. Mackey found that only active participation resulted in development (i.e. (1) was effective but (2) and (3) were not). Furthermore, those learners who modified their responses during interaction were the ones who benefited most in condition (1). Van den Branden (1997) found that 11–12 year old children who had been pushed to modify their output in the context of a two-way communicative task produced significantly more output, more essential information and a greater range of vocabulary in a similar communicative task performed later than did children who had not been initially pushed. Van den Branden argues that the post-test results provide a clear indication of the potential effects of pushed output on acquisition.

The updated version of the IH, with its emphasis on the contributions of negative feedback and modified output as well as comprehensible input and its recognition that interaction works by connecting input, internal learner capacities and output via selective attention, is obviously a major advance on the early version. There are, however, a number of caveats. The first has already been hinted at; there are obvious problems in distinguishing the separate components of meaning negotiation for study. The second is that a theory of language acquisition based on a single type of interaction (negotiation sequences) which constitutes only a small part of the total interaction a learner experiences would seem to be unnecessarily restrictive. The third concerns the problem of individual differences.

Earlier we noted the difficulties in distinguishing 'meaning negotiation' and 'recasts'. This reflects the more general problem in isolating specific negotiating moves for study. Consider the negotiation sequence in (2) above. Here the learner requests clarification and as a result obtains input that is comprehensible and also, perhaps, clues about how to parse the phrase 'buvdaplate'. But in this sequence the learner also produces a 'response to the response', repeating 'above the plate'. This constitutes modification of her own output. This sequence then incorporates both comprehensible input and modified output. Such exchanges are not rare. Also, in exchanges between learners, one learner's modified output is another learner's comprehensible input. Clearly, it is not an easy matter to devise experimental studies to examine the acquisitional effects of specific interactional moves. Nor is this purely a methodological problem because, as Van Lier (1996)

has pointed out, counting individual units of negotiation may result in important qualitative aspects of the discourse being missed. Van Lier rejects the atomistic approach that the IH has given rise to, arguing that discourse needs to be treated as holistic, collaborative and dynamic, a position that resonates closely with sociolcultural theory (see below).

As we have already noted, IH researchers are careful not to overstate their case. Long (1996) explicitly points out that the updated version of the IH is not a complete theory. Pica (1996b) points out that interaction, even when it is rich in meaning negotiation, may not be sufficient to ensure full linguistic competence and that some kind of focus on form may also be required to provide additional support. She also suggests that negotiation may work best with intermediate learners; beginner learners lack the resources to negotiate effectively while advanced learners tend to focus on opinion and interpretation rather than comprehension or linguistic clarity. Further, negotiation centres on lexical problems and larger syntactic units and, as we have already noticed, rarely involves inflectional morphology. The IH, then, is clearly limited in its scope in these respects. But perhaps its greatest limitation lies in the restricted focus on interactional sequences involving some kind of communication problem. This limitation has two sides to it. First, as Pica (1996b) acknowledges, the processes presumed beneficial to acquisition that occur in negotiation sequences can also occur in uninterrupted communication. Second, and perhaps, most important, there must be surely much else going on in uninterrupted communication that is facilitative of acquisition. These limitations do not warrant a dismissal of the IH, for, indeed, it has prompted some revealing research (including a number of studies reported in subsequent chapters of this book). However, they do suggest the need for researchers to broaden the scope of their enquiry.

Finally, there is the question of individual differences. The IH, like many other theories in SLA, is universalistic in its frame of reference; it seeks to identify the environmental conditions that pertain to L2 acquisition in general. It would seem obvious, however, that learners vary enormously in their ability or their preparedness to negotiate. The bulk of the research has studied adolescent or adult learners. Do children negotiate in similar ways? Oliver (1998) found that children aged between 8 and 13 years negotiated in similar ways to adults but differed in their proportional use of individual strategies (e.g. they made less use of comprehension checks). Van den Branden (1997), in the study referred to above, also found that 11–12 year old children negotiated each other's output, although he noted that this negotiation was directed principally at meaning and content rather than form. As we will see in Chapter Three, younger children (under 7 years) appear to differ more radically in their ability to negotiate.

Another area of difference concerns interactants' negotiation styles. Polio and Gass (1998) found marked differences in the way native speakers engaged learners in communicative tasks, some adopting a 'leading' role by asking questions to elicit the information they needed while others allowed the learners, who had control of the information to be communicated, to lead. They provide evidence to suggest that learners comprehend better when they have control over the content and form of the discourse. There are obviously a whole host of individual difference variables (see Skehan 1989) that can potentially impact on negotiation. As Gass, Mackey and Pica (1998) have pointed out, individual differences need to be looked at carefully in future research.

Sociocultural theory, interaction and L2 acquisition

The view of interaction, and its relationship to L2 acquisition, embodied in the IH has been challenged on a number of fronts, in particular from a perspective that can be broadly characterized as social or socio-pyschological in orientation. Firth and Wagner (1996), for example, suggest that there exists a tension in SLA research between acknowledgement of the social and contextual dimensions of language use and acquisition on the one hand and of the internal, cognitive processes of the individual on the other. They argue that the two perspectives have not been in balance, with researchers favouring the psycholinguistic over the social, and that, overall, SLA as a field of enquiry has become distorted and blinkered. They point specifically to the work on meaning negotiation and input modification, criticizing it for treating learners as 'defective communicators', for assuming that NSs can provide a 'baseline' against which to measure NNSs, for implicitly constructing the NNS as a subordinate of the NS, and for failing to recognize the diversity that exists within NS and NNS groups — in short, for an uncritical acceptance of the prevailing monolingual orientation in SLA that ignores the complexity of multilingual societies. They argue that SLA should give more attention to language acquisition as a social phenomenon by examining how L2s are used interactively in a variety of contexts and for myriad purposes.

To adopt the kind of social perspective Firth and Wagner advocate is, in effect, to challenge the predominant metaphor of SLA — that of the learner as a computer that processes input in accordance with the mechanisms wired into the 'black box' of the mind and that subsequently produces output on demand. As Lantolf (1996) has shown SLA has borrowed this metaphor from Chomskyan linguistics. It situates SLA as a process that takes place in the mind of the individual rather than in people-embedded activity. The IH fits neatly into this

picture; the role of interaction is to supply the black box with the right kind of data for the internal mechanisms to set to work on. Pica (1996a), for example, specifically talks of the learner's 'data needs'. Like Firth and Wagner, Lantolf sees the need for SLA to take on board alternate metaphors that attribute greater agency to learners and that situate acquisition outside in the social world rather than inside the head of the learner. In particular, a social view of language learning favours the metaphor of 'participation' with its entailment of active involvement rather than the traditional metaphor of 'acquisition' with its entailment of possession (see Sfard 1998).

The critique of the computational metaphor in SLA extends beyond the way learners have been constructed to the way they have been studied; it is a methodological as well as conceptual critique. As we have seen, the IH, typical of theory derived from the computational metaphor, has been tested by means of research that is nomothetic in style. That is, it has adopted an atomistic approach to learner discourse, samples of which are generally collected in laboratory settings, quantified, and subjected to analysis by means of inferential statistics. In contrast, a social view of language acquisition calls for research that is idiographic in style, that adopts a more holistic approach to discourse involving learners and their settings, and which, therefore, employs qualitative methods that are more sensitive to the ways in which interactions are constructed by participants as they dynamically negotiate not just meaning but also their role relationships and their cultural and social identities. Such an approach is evident in the work of ethnomethodologists and ethnographers. However, as Donato (2000) points out this approach can also be criticized for focusing exclusively on the social, communicative aspects of interaction and ignoring its cognitive function. In this respect, the methodology developed by socio-cultural researchers, such as Frawley and Lantolf (1985), which examines the microgenesis of cognitive behaviours through the detailed study of interactional sequences over time, may be more compatible with the overall goals of SLA (i.e. the description and explanation of the process of L2 acquisition).

There are, of course, a number of theories (and accompanying metaphors) that view acquisition as essentially a social or socio-pyschological process that is best studied hermeneutically. We will focus on one of these — the socio-cultural theory that orginated in the work of Vygotsky and which has been applied to the study of L2 acquisition by researchers such as Lantolf. As Lantolf and Appel (1994) and Lantolf (2000a) make clear, the key construct in this theory is **mediation**. Learning, including language learning, occurs when biologically determined mental functions evolve into more complex 'higher order' functions through social interaction. This transformation results in

'consciousness', which involves both awareness of cognitive abilities and also the self-regulatory mechanisms employed in problem-solving. It is brought about through the creation of 'tools' which serve as the means by which individuals achieve their goals. These tools reflect the particular cultural and historical conditions in which they have developed. They can exist in a variety of forms; mechanical (e.g. a pencil), technical (e.g. a computer) or psychological (i.e. words). It is these tools, then, that mediate between individuals and the world. Development entails identifying and learning to use the culturally defined tools required to achieve higher order functions.

One type of mediation of particular importance for learning is interpersonal interaction. Talk serves as a tool that enables parents to pass their particular culture to their children. According to socio-cultural theory, functions are initially performed in collaboration with others, typically through interacting with some other person, and then are subsequently performed independently. As Vygotsky (1981: 163) puts it:

> Any function in the child's development appears twice or on two planes, first it appears on the social plane, and then on the psychological plane, first it appears between people as an interpsychological category, and then within the child as an intrapsychological category.

One way in which this occurs in L2 acquisition is through the 'vertical construction' of syntactical structures, as illustrated in (6). Here, a teacher is showing the learner a What's Wrong Card depicting a bicycle without a pedal and is trying to get him to say what is wrong, a task that is linguistically beyond him. The sequence ends with the learner producing the two-word utterance 'black taes/', (i.e. 'black tyres'). He achieves this by first saying 'black' in one turn and then adding 'taes' in a second turn, in response to the teacher's question, 'Black what?'. Structurally simple as this utterance appears, it represents the first occasion that this beginner learner produced a two-word constituent of this kind. Subsequently, however, this learner began to produce such two word constituents on this own. Here, then, we see how interaction has the potential to enable a learner to advance linguistically (see Hatch 1978b and Wagner Gough 1975 for further examples).

(6) T: I want you to tell me what you can see in the picture or what's wrong with the picture.
L: a /paik/ (= bike)
T: A cycle, yes. But what's wrong?
L: /ret/ (= red)
T: It's red, yes. What's wrong with it?

L: Black.
T: Black. Good. Black what?
L: Black /taes/ (= tyres)
(From Ellis 1985)

Interaction of the kind illustrated in (6) provides **scaffolding**; that is, it serves as the means by which one person assists another to perform a function that he/she could not perform alone. At one level this refers to the collaborative process by which interactants construct their conversation in such a way that language learners are able to produce linguistic forms that lie outside their existing competence. But at another level it refers more broadly to the social, cognitive and affective support that interactants afford each other. Wood, Bruner and Ross (1976) identify the following features of scaffolding:

1. recruiting interest in the task
2. simplifying the task
3. maintaining pursuit of the goal
4. marking critical features and discrepancies between what has been produced and the ideal solution
5. controlling frustration during problem solving and
6. demonstrating an idealized version of the act to be performed.

One way in which such scaffolding can occur is in the context of an 'instructional conversation' (Tharp and Gallimore 1988). These are formal, classroom versions of the non-formal conversations that take place between a child and a parent. They are conversational in nature (e.g. they involve distributed turn-taking, spontaneity and unpredictability) but they have an instructional focus (i.e. are oriented towards a particular curricular goal) and are directed at helping learners reshape and extend their use of language. As Donato (2000) points out 'instructional conversations' constitute a potentially insightful target for analysis by SLA researchers because they involve a far wider range of communicative and cognitive functions than negotiation sequences. The study of scaffolding, then, provides a way of demonstrating how an 'expert' assists a 'novice' to perform a difficult task through interaction and, also, how learners, interacting among themselves, can collaboratively manage a task that would be beyond any of them acting as individuals.[6]

Like mainstream models of L2 acquisition that draw on the computational metaphor, socio-cultural theory acknowledges that the mediating power of interaction is constrained by learner-internal factors — that there is a psychological as well as social dimension to learning. Vygotsky (1978) evoked the metaphor of the **zone of proximal development** to refer to the psychological dimension. Let

us envisage three types of goals; (1) goals that the learner can meet without assistance, (2) goals that are completely beyond the learner even if given assistance and (3) goals that the learner can perform if he/she has access to mediational assistance. The ZPD consists of (3); it constitutes an area of potential development, lying between (1), the learner's actual development, and (3) an area of non-development. Mediation, in the form of social interaction, enables learners to transform skills that lie in the ZPD. Superficially, the notion of the ZPD and Krashen's notion of 'i + 1', on which the IH draws, resemble each other. However, there are essential differences. As Dunn and Lantolf (1998) have pointed out, Krashen views acquisition as involving a movement from one stage to the next in a fixed and, therefore predictable order, Vygotsky saw development as a ripening process along a path that was in part at least uncertain, dependent on the interactional experiences of the individual. In socio-cultural theory, then, interaction is not just a device that facilitates learners movement along the interlanguage continuum, but a social event which helps learners participate in their own development, including shaping the path it follows.

In broad terms, however, sociocultural theory does provide an account of how development proceeds universally. Vygotsky proposes that children are initially subject to 'object-regulation' (i.e. they are influenced by whatever object catches their attention), then pass through a stage of 'other-regulation' (i.e. they allow a parent to dialogically influence the locus of their attention) and finally achieve 'self-regulation' (i.e. they are able to regulate their own attention). Interesting, Foley (1991) has suggested that the topic-incorporation devices employed in the negotiation of meaning, can be viewed as devices for achieving self-regulation in conversation. As we noted, above, children below the age of seven are not typically able to make use of these devices. They do, however, make use of what Vygotsky has called **private speech** (i.e. speech that is addressed to themselves). This can be thought of as a proxy for social speech, assisting them to regulate their own behaviour in problem solving. Later this private speech transforms into **inner speech**, the semantically dense language (and gestures) that we use to talk silently to ourselves. Inner speech reflects the achievement of self-regulation. This general pattern of development, however, does not refer to how language itself develops but rather to how children develop cognitively by learning to control the use of language as a tool for mediating activity. Frawley and Lantolf (1985) have advanced the 'principle of continuous access', according to which adults do not forget the knowing strategies they practised as children and reactivate early strategies (such as private speech) when faced with a task that is cognitively challenging. In accordance with socio-cultural theory, then, we can expect to observe two different kinds of 'interaction'