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Consciousness, Learning and Interlanguage Pragmatics

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During the past decade, the study of interlanguage pragmatics has produced important empirical findings, primarily through the identification and comparison of speech act realization patterns in various languages based on data from both native and nonnative speakers. In addition to this focus on product, some attention has been paid to the processes of comprehension and production in second language pragmatics (Faerch & Kasper, 1984, 1989; Kasper, 1984). In contrast to these concerns, there has been little discussion of how pragmatic abilities are acquired in a second language.

This chapter is concerned with the ways in which consciousness may be involved in learning the principles of discourse and pragmatics in a second language.[1] The role of conscious and nonconscious processes in the acquisition of morphosyntax has been hotly debated within the field of second language acquisition (Krashen, 1981, 1983; Munsell & Carr, 1981; Rutherford & Sharwood Smith, 1985; Seliger, 1983; Sharwood Smith, 1981), but these debates have ignored pragmatic and discoursal abilities. My discussion will of necessity be speculative, drawing on current theories of the role of consciousness in human learning in general, drawn primarily from cognitive science and experimental psychology, with some suggestions for the extension of general principles to the learning of pragmatics. This is an issue with important pedagogical implications. In second language teaching, as Richards (1990) points out, there are currently two major approaches to the teaching of conversation in second language programs. The first is an indirect approach, in which conversational competence is seen as the product of engaging learners in conversational interaction; the underlying assumption is that the ability to carry on conversation (which includes pragmatic ability and other factors as well) is something that is acquired simply in the course of doing it. In practice, this leads to the use of group work activities or other tasks that require interaction. The second, a more direct approach, focuses explicitly on the strategies involved in conversation and emphasizes consciousness-raising concerning these strategies.

Is Pragmatic Knowledge Conscious or Unconscious?

Wolfson has argued that native speaker knowledge of what she calls rules of speaking (which include both pragmatic and discoursal rules) is mostly unconscious:

> Rules of speaking and, more generally, norms of interaction are . . . largely unconscious. What this means is that native speakers, although perfectly competent in the uses and interpretation of the patterns of speech behavior which prevail in their own communities are, with the exception of a few explicitly taught formulas, not even aware of the patterned nature of their speech behavior. [Native speakers] . . . are not able . . . to describe their own rules of speaking. (Wolfson, 1989, 37)

Wolfson cites several types of evidence in support of her claim that speakers do not have reliable information concerning the ways in which they use language: people who are bilingual or bidialectal may switch from one language or variety to another without being aware of it and cannot accurately report their use of these languages or varieties (Blom & Gumperz, 1972); native speakers often report that they typically use or do not use specific forms, but their descriptions do not match reality (Wolfson, D'Amico-Reisner, & Huber, 1983); even highly trained linguists who rely on intuition to describe such phenomena as the differences between men's and women's speech (e.g., Lakoff, 1973) may find their intuitions proven incorrect; textbook writers, who almost always rely on intuition rather than empirical data, provide information regarding language use that is frequently wrong (Cathcart, 1989; Holmes, 1988; Williams, 1988).

There are several reasons why we should expect native speakers' intuitions about these matters to be fallible. First, there is the obvious problem of the intrusion of prescriptive norms, stereotypes, and folk-linguistic beliefs; when asked what they do, informants are likely to report what they think they should do. Second, this kind of introspection violates basic principles distinguishing between potentially accurate and inaccurate verbal reports (Ericsson & Simon, 1984; Nisbett & Wilson, 1977), because such intuitions are general rather than specific, retrospective rather than concurrent, and sometimes call for information that could not be reported even if the other conditions were met. Ericsson and Simon (1984) propose that the only information that is potentially available for accurate self-report is information that is attended to in short-term memory in the performance of a task. In other words, in order to give an accurate report of your own performance, you must have been paying attention and aware of what you were doing at the time. Speech act realizations and other aspects of rules of speaking are often produced by fluent speakers with little conscious reflection or deliberation during their performance, and are therefore not accurately reportable. If accurate self-reports are limited to reporting information that has been stored as a result of one's own conscious thought processes, intuitions about the linguistic behavior of groups are particularly suspect (Cameron, 1985).

The evidence cited by Wolfson (1989) shows that native speakers do not necessarily have access to their own rules of speaking, but it fails to show that speakers never have any access to such rules. Blum-Kulka (Chapter 10) and Olshtain and Blum-Kulka (1989) have argued that Hebrew-English bilinguals in Israel exhibit heightened metapragmatic awareness and are aware of their code-switching behavior. Odlin suggests that linguistic forms that are important for communicative competence are, in general, highly salient and accessible to awareness, which may be why the metalanguage observed in anthropological linguistics tends to describe linguistic functions more accurately than linguistic form (Odlin, 1986). The fact that communicative behavior is sometimes accurately reportable is also compatible with the principle that accurate self-report depends on information that is attended to during performance. Pragmatic and discoursal knowledge is not always used automatically and unreflectively. Conversations vary a great deal in terms of spontaneity and planning (Ochs, 1979). Some people preplan telephone conversations, and writing involves a great deal of conscious deliberation and choices in discourse organization. There are many occasions on which particular care is given to producing appropriately polite language. Students may worry about how to address professors, and many aspects of the use of personal address are not unreflecting responses to a determining context but represent strategic and sometimes manipulative choices (Kendall, 1981).

Pragmatic knowledge therefore seems to be partly conscious and partly accessible to consciousness, although it cannot be the case that all pragmatic knowledge is accessible to consciousness. Just as linguists seek to discover general principles of language that are reflected in the effortless control of grammar by native speakers but of which they have no conscious awareness, research in pragmatics seeks to identify patterns and general principles that native speakers are equally unable to articulate based on introspection. However, even if a great deal of pragmatic knowledge is held implicitly and cannot be articulated, this does not tell us how such knowledge was established. Skillful performance that currently relies on automatic processing and makes little demand on either attention or consciousness may have originated from conscious declarative knowledge (Lewis & Anderson, 1985). General principles, patterns, and rules of pragmatics may be beyond the reach of introspection, but this does not inform us of the possible role that awareness of crucial features of language rules, however incomplete and transitory, may play in the establishment of such knowledge (Munsell & Carr, 1981).

Consciousness and Principles of Language Learning

Our ordinary language use of words like *conscious, consciousness* and *consciously* is ambiguous. This is one reason why theorists in psychology and applied linguistics have preferred to use related technical terms such as *explicit* versus *implicit* knowledge (Bialystok, 1979, 1981; Krashen, 1981; Odlin, 1986; Sharwood Smith, 1981), *controlled* versus *automatic* processing (Bialystok, Chapter 2; Bialystok & Bouchard-Ryan, 1985; Carroll, 1981; McLaughlin, Rossman & McLeod, 1983; Posner & Klein, 1973; Shiffrin & Schneider, 1977); *declarative* versus *procedural* knowledge (Anderson, 1982; Ellis, 1989b; Faerch & Kasper, 1984; O'Malley, Chamot & Walker, 1987), *serial* versus *parallel* processing (McClelland, Rumelhart, & the PDP Research Group, 1986), and so on. Unfortunately, the use of

technical terms does not by itself eliminate the ambiguities. Odlin (1986) has discussed the various ways in which the contrast between explicit and implicit knowledge has been understood, and Norman and Shallice (1986) have identified ambiguities inherent in the concept of automatic processing, some of which are exact parallels to the ambiguities of consciousness. Since a great deal of debate about conscious and unconscious processes has been fueled by conceptual and definitional disagreements (Bowers, 1984; White, 1980), it is preferable to grapple with these issues directly, rather than masking them with alternative terms.

It seems to me that when we speak of having been *conscious of* something, we most often mean that we were aware of it, that we subjectively experienced it as part of the "stream" of consciousness (Battista, 1978; James, 1890; Natsoulis, 1987). However, when we speak of having done something *consciously*, we may mean either that we did it with awareness of what we were doing or that we did it deliberately. This is one of the main ambiguities involved in most discussions of consciousness: consciousness as awareness versus consciousness as intent (Ceci & Howe, 1982). When we speak of consciousness as awareness, there is also a question of the degree or level of our awareness. We may mean that we simply noticed the occurrence of something or that we had a more abstract understanding of it (Bowers, 1984). Therefore, when we speak of language learning as being conscious or unconscious, we might be thinking of several distinct aspects of the problem of consciousness in learning, including at least the following: whether a learner is trying to learn something; whether the learner is aware that he or she is learning; whether the target language forms that are learned are consciously noticed or picked up through some kind of subliminal perception; whether learners acquire general rules or principles on the basis of conscious understanding and insight or more intuitively; or whether learners are able to give an accurate account of the rules and principles that seem to underlie the construction of utterances.

There is experimentally based literature from psychology that bears on all of these issues, along with a small amount of evidence from second language acquisition studies. It is useful to summarize the relevant research in terms of three principal distinctions.

Conscious Perception versus Subliminal Influences in Learning

My personal choice of a label for the key concept here is *noticing*, although there are a variety of technical terms for this, including *focal awareness* (Atkinson & Shiffrin, 1968), *episodic awareness* (Allport, 1979), *conscious perception* (Dixon, 1971) and *apperceived input* (Gass, 1988). Each of these constructs presupposes the allocation of attentional resources to some stimulus and identifies the level at which perceived events are subjectively experienced and are reportable by the person who experiences them.[2]

Events may remain unnoticed for several reasons—because attention is directed elsewhere, because the information is too complex to be processed, or because it is presented too quickly or too softly to be consciously seen or heard. While it is virtually impossible when observing naturalistic language learning to know exactly

what the learner has or has not noticed, the existence of unnoticed information can be established under experimental conditions by the failure of subjects to report their awareness of a stimulus if asked immediately following its presentation. This criterion of subjective awareness can be contrasted with an objective measure of perception, which various experimenters have argued is best established by a subject's ability to discriminate among two or more alternative stimuli in a forced choice task (Cheesman & Merikle, 1986; Eriksen, 1960; Moore, 1988).

Although many theorists believe that unconscious learning (in some sense) predominates in second language learning, it is very unlikely that what language learners consciously perceive or notice in input is unimportant for learning. A more difficult question is whether it is *necessary* to notice what is said in a language in order for that information to be stored in memory and to play a role in language learning, or whether it is also possible for some learning to be based on unnoticed information, information that is perceived at some level and perhaps processed subliminally without being consciously registered.

There is a widespread belief (at least in North America) that the existence of subliminal learning of some kind has been established for decades. In the 1950s, Packard objected to the covert manipulation of consumers through the use of subliminal messages in advertising (Packard 1957), a theme expanded upon by Key (1973). Beginning in the 1980s, subliminal audiocassettes were aggressively marketed that promised everything from cures for obesity and drug addiction to enhanced visual acuity, improvement in examination performance, and more effective language learning. However, there seems to be virtually no scientific support for claims of behavior modification through subliminal messages. Moore has reviewed the research on subliminal techniques in advertising, concluding that the advertising stories everyone has heard about (such as the stimulation of movie theater patrons to buy popcorn or softdrinks through subliminal messages) are apocryphal. Such techniques probably never were used, and even if they were, "there is no evidence that subliminal messages can influence motivation or complex behavior" (Moore, 1988, 293). Merikle has examined commercially distributed "subliminal" audiotapes and subjected them to both psychophysical experimentation and spectographic analysis, reporting that the cassettes analyzed contained no embedded subliminal messages whatsoever that could conceivably influence behavior (Merikle, 1988, 355).

There is a well-attested phenomenon of subliminal *perception*. Stimuli that are presented too rapidly for conscious detection or in competition with tasks that are assumed to consume all attentional resources may activate existing memory structures and associations (Dixon, 1971, 1981; Marcel, 1983). Eich (1984) has reported experiments in which pairs of words were both presented to the unattended channel in a shadowing task, one of which was ambiguous (e.g., *fair* or *fare*), while the other word biased its less common interpretation (e.g., *taxi*). Recognition of both members of such pairs was poor but in a spelling test subjects were biased in the direction of the disambiguated meaning. These and other similar demonstrations show that words that are not consciously perceived or noticed can be processed to the level of word meaning. However, all demonstrations of subliminal perception so far have involved subtle effects resulting from the unconscious detection and pro-

cessing of very familiar stimuli. Such effects do not imply the creation of new memory structures, the establishment of new associations, or the learning of new concepts (Ericsson & Simon, 1984; Underwood, 1976, 1982), and certainly nothing remotely analogous to learning a second language.

At the present time, the available evidence is compatible with the strong assertion that there is no such thing as subliminal language learning or any other kind of subliminal learning. Second language forms that are not noticed do not affect learning. This allows the concept of *intake* in second language learning to be defined in terms of what the learner attends to and notices (Schmidt, 1990).

Explicit versus Implicit Learning

The contrast between subliminal learning and implicit learning, or learning without understanding, has to do with the level of awareness involved. I use *noticing* to mean registering the simple occurrence of some event, whereas *understanding* implies recognition of a general principle, rule, or pattern. For example, a second language learner might simply notice that a native speaker used a particular form of address on a particular occasion, or at a deeper level the learner might understand the significance of such a form, realizing that the form used was appropriate because of status differences between speaker and hearer. Noticing is crucially related to the question of what linguistic material is stored in memory (Atkinson & Shiffrin 1968; Kihlstrom, 1984); understanding relates to questions concerning how that material is organized into a linguistic system.

Implicit learning refers to nonconscious generalization from examples. The general phenomenon of implicit learning has been well established in the psychological literature and is viewed as a natural product of attending to structured input (Hartman, Knopman, & Nissen, 1989; Reber, 1989). There is a gathering consensus within psychology that the mechanisms of implicit learning probably involve the strengthening and weakening of connections between nodes in complex networks as the result of experience, rather than through the unconscious induction of rules abstracted from data. An example of this recent shift in perspective can be seen in the work of Reber, who has carried out numerous experiments involving exposing subjects to strings of letters generated by an artificial grammar. After training, subjects were able to make accurate judgments about the well-formedness of novel strings, without being able to articulate the rules of well-formedness (Reber, 1976; Reber, Allen & Regan, 1985; Reber, Kassin, Lewis & Cantor, 1980). Until recently, Reber (1976) argued that knowledge resulting from implicit learning was encoded in the form of unconscious abstract representations. In a more recent publication, Abrams and Reber (1988) have suggested that implicit learning as demonstrated in these experiments probably rests upon some kind of covariation counter, a system that logs both event frequencies and event co-occurrences. One model that simulates the mechanisms currently believed to underlie implicit learning is Parallel Distributed Processing (PDP). PDP has been used to model the acquisition of the German definite article (MacWhinney et al., 1989), the past tense in English (Rumelhart & McClelland, 1986), the development of visual word recognition skills (Seidenberg & McClelland, 1989), and the acquisition of gender in French (Sokolik & Smith, 1989).

Explicit learning, that is, conscious problem solving, relies on different mechanisms, including attempts to form mental representations, searching memory for related knowledge and forming and testing hypotheses (Mathews, Buss, Stanley, Blanchard-Field, Cho & Druhan, 1989; Johnson-Laird, 1983). Both implicit learning and explicit learning have particular strengths. Implicit learning appears to be superior for the learning of fuzzy patterns based on perceptual similarities and the detection of nonsalient covariance between variables, while explicit learning is superior when a domain contains rules that are based on logical relationships rather than perceptual similarities (Mathews et al., 1989).

Intentional versus Incidental Learning

Whereas the concepts of subliminal and implicit learning are both related to the consciousness as awareness, incidental learning refers to consciousness as intent. If, as I have claimed, it is necessary to notice the occurrence of linguistic forms in order for them to serve as intake for learning, is it also necessary to deliberately pay attention to such features in order to notice them? More generally, is it necessary to want to learn in order to learn?

This is not so difficult a question as the others I have raised. In many cases, it does not matter if a language learner intends to pay attention or not. A language learner's limited processing abilities may make it impossible to notice something regardless of an intent to do so. There are other cases in which some task to be performed forces the learner's attention to be focused on some pieces of information rather than others, and in such cases, what is stored in memory is the information that must be attended to in order to complete the task (Ericsson & Simon, 1984); the learner's intention to learn is irrelevant (Anderson, 1985). On the other hand, there are many situations in which a language learner is free to opt in and out of learning contexts and to pay attention or not, depending on one's personal hierarchy of deep goals and momentary dispositions (Baars, 1988; Kahneman, 1973; Kihlstrom, 1984); in such cases paying attention is crucial.

Extensions to the Learning of Pragmatics and Discoursal Rules

I have argued that linguistic forms can serve as intake for language learning only if they are noticed by learners; that paying attention to such forms is certainly helpful, but not necessary if other factors in the learning context focus attention on them so that they are noticed; and that general principles of the organization of language may be discovered through the use of either explicit or implicit learning mechanisms. I have also suggested that even in cases where what native speakers "know" about the pragmatic principles of their language is inaccessible to consciousness, such knowledge may nevertheless be based on insights and understanding at the time of learning. What evidence is there that these claims are relevant for the learning of pragmatics?

First Language Learning of Pragmatics

Research on the acquisition of first language pragmatics suggests that both noticing and some level of understanding are important in such learning. Clark (1978) has observed that the types of metalinguistic abilities shown by preschool children are primarily related to communicative interaction rather than grammatical form. The ethnographic literature on language socialization shows that an important child-rearing goal is to develop the child's communicative competence. Demuth (1986) has reported on the prompting routines for appropriate verbal behavior that play an active role in the social development of Basotho children. Ochs (1986) has described the ways in which Samoan caregivers use prosodic strategies for teaching children how to encode affect-laden utterances. Clancy (1986) has shown how Japanese mothers interweave questions and declarative hints to socialize children in the use of indirectness. Watson-Gegeo and Gegeo (1986) describes how Kawara'ae caregivers use repeating routines to teach children what to say and when to say it. These and many similar reports suggest that while parents and other caregivers use different socialization strategies in different cultures, there is probably universal validity to the observation of Gleason and Perlmann:

> Unlike the acquisition of syntax, semantics, and even some sociolinguistic rules, when it comes to speaking politely adults do not leave it to the child to construct the rules on his or her own. Here, they take an active, even energetic part in directly instructing their children in the use of the various politeness devices. (Gleason & Perlmann, 1985, 102)

Snow, Perlmann, Gleason and Hooshyar (1990) have examined parent-child interactions in 110 families in order to see what kinds of information concerning politeness strategies are made available to children from their interaction with parents. Assuming that the basic dimensions of power, social distance, and degree of imposition underlie the general rule system for politeness, Snow et al. looked for evidence for three types of information that might be made available to children: direct teaching of general rules of politeness, manipulation of the dimensions of politeness so that the relevant covariations were made more salient, and information about the use of specific forms. Snow et al. found that the first type of information was rare, but that there was plentiful evidence in their data that children were explicitly told what forms to use in particular situations, and that correlations between forms and the dimensions of politeness were made salient in interaction. These findings suggest (though they do not prove this point) that children are not only exposed to but also notice surface forms. Children are also presented with information that could be used to induce more general principles (through either implicit or explicit learning mechanisms), but are not taught the underlying principles directly.

Second Language Learning of Pragmatics

Since adults can report their understandings much more readily than children, it ought to be possible to examine the role of noticing and understanding in the development of pragmatic ability by adult second language learners directly, by

asking learners to report their experiences. Even so, the relevant data are difficult to obtain, requiring both a sound methodology for eliciting self-reports (Faerch & Kasper, 1987) and opportunities to catch learners in the actual process of learning, rather than simply performing their current competence. Unfortunately, there have been few studies of any aspect of the phenomenology of second language learning and no studies at all which have attempted systematically to ascertain what learners have been conscious of as pragmatic principles were learned.

Anecdotally, there is evidence for a relationship between what learners notice and understand about pragmatics and discourse and what is learned. The following six examples are from my own experience, either as a language learner or from interacting in English with second language speakers with different linguistic and cultural backgrounds; they concern interactions about which I wrote brief notes to myself shortly after they happened. The first four examples represent the coincidence of recognition and insight with rapid learning; the last two represent instances of less successful learning.

(1) In the course of a 22-week stay in Brazil, during which I progressed from no proficiency at all in Portuguese to the S-2 level on the FSI scale (see Schmidt & Frota, 1986, for details), I kept a language learner's diary. Several entries illustrate the phenomenon of being told about some aspect of the pragmatics of Brazilian Portuguese in class and then almost immediately noticing it in input, such as the following:

> Journal entry, Week 6. This week we were introduced to and drilled on the imperfect. . . . The basic contrast seems straightforward enough: *ontem eu fui ao clube* ["yesterday I went to the club"] vs. *antigamente eu ia ao clube* ["formerly I used to go to the club"]. L gave us a third model: *ontem eu ia ao clube* ["yesterday I was going to the club"], which L says is a common way of making excuses. . . . Wednesday night Amos came over to play cards, and the first thing he said was *eu ia telefonar para você* ["I was going to call you"], exactly the kind of excuse L had said we could expect.

(2) I noted in my diary several times the difficulties I had with telephone conversations, especially in knowing when and how to end a conversation (Schmidt & Frota, 1986, 276). I knew that with friends the closing move would be for both parties to say *ciao*, but I could never identify the point at which I could say it, so I would often stand holding the phone waiting patiently for the other person to say it first. Finally, during the last week of my stay, a friend came to my apartment and used my telephone to make several calls. I listened carefully, and noticed that in two successive calls, shortly before saying *ciao*, my friend said the phrase *então tá*, which means no more than "so, then." Suspecting that this might be a preclosing formula, I immediately called another friend and after a few minutes of talk, said *então tá*, paused briefly and plunged ahead with *ciao* in the same turn. It worked, and after that I had no trouble at all getting off the phone efficiently. I subsequently asked several native speakers how to close a telephone conversation. None could tell me, but when I suggested the use of *então tá*, they agreed that was right.

(3) Midway through my stay in Brazil, I took a trip to another city for several days, and later wanted to send postcards to people I had met there. I wrote a few cards, and then asked a native speaker to rewrite one for me. I noticed that he began

rephrasing my message with the expression *E aí, como estão?* ("So, how are you?"), so I did the same with each subsequent card. A week after sending the cards, I got a call from one of the recipients (a native speaker of English who was a long-term resident in Brazil) who began the conversation by commenting that my Portuguese must be improving rapidly, given the colloquially appropriate style of my postcard.

(4) On the first day of a 2-week trip to Thailand, I presented a paper at the end of the day at a national conference. After the lecture, several Thais with whom I would be working for the following week approached me and made some brief remarks in English (I know no Thai) and then slipped away. I found myself standing by myself much quicker than I expected, and had the unsettling feeling that my talk must have been very poorly received. I returned to my hotel feeling quite depressed about this. That evening, I looked over some materials that I had collected during the day, including an article by Sukwiwat and Fieg (1987) on greeting and leave-taking in Thai. Sukwiwat and Fieg pointed out that conversations are closed quickly in Thai but tend to be drawn gradually to a close in English, so that Americans are often taken aback by what appear to be abrupt, brusque, and sometimes rude departures. Thais, on the other hand, think that American leave-takings drag on excessively and involve unnecessary verbiage. I immediately realized that I might have misinterpreted the significance of what had happened earlier. For the remainder of my stay, I tried my best to beat the Thais at their own game by closing conversations faster than they could, for example, by suddenly announcing, "well, I'm leaving now." I never succeeded in getting away faster than they did, but my disquiet at this aspect of Thai behavior evaporated and I suffered no discomfort from behaving in a way that would be rude by my own cultural norms.

(5) Between the early 1960s and mid-1970s, I lived mostly in Arabic-speaking countries and became fairly proficient in both Egyptian and Lebanese Arabic. In some varieties of Arabic, parents and other relatives may address children with what Ayoub (1964) has called bipolar kin terms, ego addressing alter with the term that in its literal sense would be appropriate for alter addressing ego; e.g., a grandfather may address his granddaughter with a term equivalent to "grandpa." This occurs when the senior wants the junior to do something, but chooses a conciliatory request form, metaphorically reversing the power relationship between the two—what Brown and Levinson (1987) would call a point-of-view operation. I knew of this phenomenon only from Ayoub's article, however. I never noticed parents using it with their children in either Egypt or Lebanon, although I often observed parents and other family members interacting with children. Years later, I noticed the use of such a form when visiting friends from Lebanon in California. Playing in the swimming pool, the mother said to her son, in English, "Okay, Baron, swim down the other end of the pool now, Mommy." I have since been assured by speakers of both Egyptian and Lebanese Arabic that they do use such forms, but second language speakers of Arabic whom I have asked have reported that, like me, they have never noticed it being used.

(6) In several publications (Schmidt, 1983, 1984), I reported on a case study of a Japanese learner of English whose overall level of communicative competence was superior to his rather rudimentary control of English grammar. In looking at the development of pragmatic ability by my subject, Wes, I found that he often used

hints that native speakers of English, including myself, did not realize were intended as directives. For example, once in a theater, Wes turned to me and asked me if I liked my seat. I responded that my seat was fine, not realizing at all that he was indirectly requesting that we change places. After many years of interacting with Japanese speakers of English, I think that I now recognize such hints on most occasions, but this learning process has been slow.

All of these anecdotes indicate an apparently very close connection between noticing what was present in input and learning. Each case of successful learning also involved more than just noticing the forms used, but also an appreciation of their functional meaning: that an imperfective signaled an excuse, that *então tá* was a preclosing device, that *e aí* was useful for greetings, that an abrupt departure did not necessarily imply a problem. Two of my Portuguese examples also illustrate intentional rather than incidental learning—I was deliberately seeking speech routines for openings and closings, and discovered them. By contrast, in the case of abrupt Thai departures, the learning was incidental; I had no prior awareness of a learning problem or intent to learn anything. I noticed the behavior and may or may not have carried on some conscious inferencing in arriving at my conclusion that my poor lecture lay behind it (those thought processes are not recoverable), but my corrected understanding of the significance of such behavior was fortuitous and the information was externally provided. In the case of the Portuguese imperfect used for excuses, explicit information about pragmatic function seems to have made the input more salient, though it is virtually certain that such forms were in input all along.

In contrast to the Thai example, externally provided information about Arabic bipolar kin terms had no effect on my learning. I never noticed their occurrence in the dialects to which I was exposed, and they never became part of my competence in Arabic. This example suggests some of the difficulty in accounting for what becomes conscious and what does not. This is a complex issue beyond the scope of this paper, but part of such an account would include Baars's observation that events remain unnoticed if they are either uninterpretable in context or so stable as to be part of the context (Baars, 1983). The Arabic use of bipolar kin terms seems to be especially opaque to native speakers of English, who find them nearly uninterpretable.[3] In the case of both Thai departures and Wes's hints in English, the problem lay not in noticing what was said but in understanding what was intended. The interpretation of hints is problematic for native speakers as well as learners (Ervin-Tripp, 1972), but it is not clear to me why externally provided information was sufficient to block future inferences from abrupt departures to perception of a problem in the case of my Thai example, whereas knowledge about Japanese speech behavior at a similar level of generality did not lead quickly to the establishment of the appropriate inferencing behavior.

Explicit and Implicit Learning of General Principles

While all of my examples involve understanding in the sense of matching surface forms with meaning, none of them are good examples of generalization from specific examples to more general principles. However, there are cases in which the

learning of pragmatics and discourse must involve such generalization, for example, not just the recognition and use of frozen routines such as *então tá* and *e aí, como estão*, but learning less frozen formulas, as well as fully productive structures for speech act realizations.

A good example of the involvement of consciousness in generalizing a formula has been provided by Ferguson (1976) in recalling his learning of Arabic root-echo responses. There are numerous adjacency pairs in Arabic in which a greeting, compliment, or other initiating utterance requires a formulaic response that contains a lexical item (usually a verb) derived from the triconsonantal root of the most important lexical item in the initiating utterance. On one occasion, Ferguson bought an article of clothing in a market, and when the purchase was complete, the seller said to him "mabruuk" (congratulations). He did not know the response formula for this, but did know that an appropriate response form would be one which contained the root BRK from the first part of the adjacency pair. By analogy with several other response formulas that he did know, he guessed what the root-echo response form might be. Ferguson comments:

> Probably *'alla ybaarik fiik* was the root-echo response to BRK. I tried it, and the smile showed I had given the right reply. The whole analysis took only a split second, and was just like getting an instance of grammatical concord or case government right. (141)

This is an example of conscious problem solving or explicit learning, but I have indicated that implicit language learning is also possible. It may be useful, therefore, to spell out in some detail how more general principles of pragmatics might be acquired without being conscious of them.

Following Fox (1987) and Spolsky (1989), I suggest that some pragmatic and discoursal principles are better represented as associative networks rather than as propositional rules, and that connectionist models are promising in accounting for those aspects of pragmatic knowledge that do appear to be unconscious. This may involve less of a paradigm shift in the areas of pragmatics and discourse than in syntax, since researchers in pragmatics have had a less fixed notion of what is meant by a "rule" of pragmatics than have syntacticians, and relatively little attention has been given to consideration of how such rules might be represented psychologically. Some ethnomethodologists have rejected the concept of rules as conceived in formal logic as a model of social action (Mehan & Wood, 1975). Probabilistic network approaches have been suggested for the analysis of code-switching (Dearholt & Valdes-Falles, 1978); and Pomerantz (1978) has described compliment responses as the result of the cooperation of multiple constraints. Each of these approaches is compatible with a connectionist interpretation.

There is one type of representation of pragmatic rules that I think is psychologically implausible, but that can also be recast in network form. The distribution of address forms has been represented by both Geoghegan (1971) and Ervin-Tripp (1972) in the form of a flowchart, illustrating decision points in the form of serially ordered binary selectors. For American English, Ervin-Tripp indicates that the first question to be asked is whether or not the addressee is a child or adult; then, if an adult, whether the interaction takes place within a status-marked setting; if the setting is not status-marked, whether the addressee's name is known; if the name is known, whether the addressee is kin; if not kin, whether the addressee is a friend or colleague; if so, whether the addressee is of higher rank; and so on, finally exiting the system with an appropriate address form. Ervin-Tripp (1972) and Geoghegan (1971) state explicitly that while paths through the flowchart represent rules, such flowcharts are like a formal grammar in representing a logical model and are not intended as psychological models of decision making.

There are various problems with these models. Kendall (1981) has pointed out that they are too deterministic, and that a factor called "dispensation," meaning essentially to disregard all other factors, is introduced to get around the problem of variability. Positing serially ordered selectors also implies complete scalability (each selector must be listed only once, and selectors encountered first in the flowchart must outweigh all subsequent selectors in their influence), which cannot be empirically supported. For the present discussion, the most important drawback to such models is that they are unlikely to have any psychological reality. While conscious choices of which address forms in unclear situations might indeed involve sequential consideration of the types of selectors contained within flowcharts, there is little reason to suggest that automatic choices are made on the basis of speeded-up serial processing; most psychological accounts of automatic processing assume that parallel processes dominate. However, flowcharts such as those suggested by Ervin-Tripp (1972) and Geoghegan (1971) can easily be restructured into connectionist architecture, and the choice of address forms can be reconceptualized as a network of unordered connections between features of social context (addressee age, rank, marital status, etc.) and linguistic outputs. Some connections between social context features and address forms may be so heavily weighted that the connection is almost categorical, while others may be very weak, leading to fuzzier, less determinate outcomes.

Other kinds of pragmatic knowledge that may be similarly represented include the complex patterns of covariation among features of social context and the linguistic realizations of speech acts that have been empirically documented by analysis of CCSARP data (Blum-Kulka, House & Kasper, 1989). The theoretical framework proposed by Brown and Levinson (1987), which attempts to relate a very wide range of pragmatic realizations to variation in three basic contextual features—social distance, power, and culture-specific evaluations of threat to face—is a similar case since these cooperating (or conflicting) constraints exert probabilistic influences.

If we assume that associative network models have some face validity as a model of implicit pragmatic knowledge, we may then ask how such knowledge may be acquired, and specifically the role that consciousness is likely to play in the establishment of a network. There is some evidence from experimental psychology that bears on several aspects of this question.

(1) Do learners have to keep track (consciously, by counting) of the frequency with which contextual or pragmatic features occur? The answer to this is almost certainly no. Learners may be able to make reasonably accurate estimates of the relative frequency of such things, but they do not do so by counting, and it is widely accepted that attention to a stimulus event is sufficient to trigger the automatic (effortless and unintended) encoding of its frequency of occurrence (Hasher & Zacks, 1984).

(2) Do learners need to notice the specific relevant pragmalinguistic or contex-

tual features of an event in order to trigger such encoding of frequency? This question is somewhat controversial, but the answer is probably yes. Hanson and Hirst (1988) point out that an event may be thought of as a cluster of attributes. They report experiments supporting the hypothesis that attention to specific stimulus attributes is necessary in order to encode frequency information for those attributes.

(3) Do learners need to understand the significance of co-occurring linguistic and social context features in order to acquire a network of complex covariations? This is perhaps the most interesting question, and strikes to the heart of what is meant by implicit learning. Experiments in implicit learning suggest that implicit learning may be self-organizing, and that it is not necessary to realize the significance of one event for another in order to establish connections.

Lewicki (1986) has reported a series of experiments designed to demonstrate the nonconscious detection of covariations involving social stimulus material. Subjects were presented with a series of descriptions of persons which mentioned a number of psychological and social characteristics. Some of these traits were manipulated by the experimenter, either to confirm or disconfirm preexisting stereotypes. After a learning phase, subjects rated new stimulus material. The experiments showed that correlations built into the personality descriptions during the learning phase influenced judgments in the testing phase. By running different versions of the same basic experiment, Lewicki was able to assess subject awareness at various points in learning. Subjects did notice the manipulated traits (as intended by the experimenter) and were momentarily aware of their co-occurrence in single stimulus descriptions. That is, they were able to recall both of them when questioned immediately after exposure.[4] However, the subjects were unaware of any systematic relationship between the manipulated traits. When told that some traits (out of a large number used as descriptors) had been systematically manipulated by the experimenter, subjects were unable to identify which ones had been manipulated.

Analogously, we can specify the minimum requirements of learning an address system (or any other system of complex covariations) in a second language. If the task is to acquire an address system in which the ingroup/outgroup distinction is relevant or in which address forms systematically vary by sex of addressee, learners must attend to and notice in input both the linguistic forms and the relevant contextual features. This may mean attending to features of context that either are not relevant or are defined differently in the native language, so that learning a new pragmatic system often entails learning how to make new interpretative assessments of the world. However, it does not seem to be necessary for learners to make any conscious connection between the address forms encountered and the contextual factors that are correlated with such forms. For example, in learning the address system of Japanese, when you hear someone you know as Mr. Morita addressed as *Morita-kun*, where *kun* is an address form, you must notice both the form and the relevant contextual factors (these include sex, age, and rank of both speaker and addressee, intimacy, tone, and setting) if this is to be intake for learning, but need not draw the conclusion that Morita was addressed that way *because* of any of these factors.

Nevertheless, it would certainly be extremely helpful to be consciously aware of such connections. It is sometimes argued that implicit learning is superior to conscious problem solving (Krashen, 1981), but this seems to be true for only some

types of learning tasks. Reber has reported several times that subjects learning artificial grammars under an implicit learning condition (subjects were told to memorize examples, which presumably interfered with any attempt to analyze the input) were better able to recognize valid new strings generated by the grammar than those subjects who were told to try to figure out the rules of the underlying grammar. However it cannot be assumed that subjects who attempted to discover the rules succeeded in doing so. In a recent publication, Reber (1989) makes exactly this point. Arguing that the particular artificial grammar to be learned was constructed in such a way that subjects were unlikely to be able to find the rules they were searching for, Reber now argues that "looking for rules will not work if you cannot find them," but "looking for rules will work if you can find them" (Reber, 1989, 223). McLeod and McLaughlin (1986) report anecdotal evidence for the frequent occurrence of rapid restructuring following "clicks of comprehension."

Conclusions

The data from experimental psychology clearly support a conservative hypothesis that whatever learning might result from unattended processing is insignificant compared to the results of attended processing. The data seem to me to be also compatible with two much stronger hypotheses, that attention to input is a necessary condition for any learning at all, and that what must be attended to is not input in general, but whatever features of the input play a role in the system to be learned. For the learning of pragmatics in a second language, attention to linguistic forms, functional meanings, and the relevant contextual features is required. I also claim that learners experience their learning, that attention is subjectively experienced as noticing, and that the attentional threshold for noticing is the same as the threshold for learning. Finally, I argue that, while incidental and implicit learning are both possible, consciously paying attention to the relevant features of input and attempting to analyze their significance in terms of deeper generalizations are both highly facilitative.

I do not claim that the anecdotal examples from my own language learning experiences prove these points, because the most that language learner diary reports can establish is that learners have noticed crucial facts about language use. What is needed is much more systematically gathered data on what learners notice (and are able to report) and what they do not notice (are unable to report) as they are learning.[5] Suspicions have been voiced that "it is doubtful that [introspection] can shed light on how the learner moves from one state to another, i.e., how input becomes intake" (Ellis, 1989a). I think that investigation of the learner's thoughts at such points of change is just what needs to be investigated. Even the harshest critics of reliance upon introspective methods agree that individuals do know the focus of their attention at any given point in time, as well as the content of their current thoughts, emotions, evaluations, and plans (Nisbett & Wilson, 1977) and that these conscious thought processes can be reported. A priori conclusions that there will be no relationships between such phenomena and language development are unwarranted.

No strong prescriptions for the teaching of second language pragmatics can be

drawn from this discussion, but some general observations seem in order. Simple exposure to sociolinguistically appropriate input is unlikely to be sufficient for second language acquisition of pragmatic and discoursal knowledge because the linguistic realizations of pragmatic functions are sometimes opaque to language learners and because the relevant contextual factors to be noticed are likely to be defined differently or may be nonsalient for the learner. Second language learners may fail to experience the crucial noticings for years. The fact that this does not seem to happen in first language learning is attributable not to any sort of pragmatics acquisition device, but to the efforts that parents and other caregivers make in order to teach communicative competence to children, using a variety of strategies.

Motivation is an important determinant of the allocation of attentional resources (Crookes & Schmidt, 1991). Because of the close connections among pragmatic realization strategies, assessments of role and status relationships between speaker and hearer, and the expression of personality, it is likely that there is a stronger relationship between motivation, acculturation and other affective factors in the development of pragmatic and discoursal ability than in other aspects of language learning, such as syntax (Schmidt, 1983). Those who are concerned with establishing relationships with target language speakers are more likely to pay close attention to the pragmatic aspects of input and to struggle to understand than those who are not so motivated. But since intentional learning is unnecessary when some task causes attention to be focused on what is to be learned, one way to develop pragmatic competence in classroom contexts could be through task-based language teaching (Long, in press). Tasks can be selected that focus the learner's attention on pragmatic forms, functions and co-occurring features of social context.

Explicit teacher-provided information about the pragmatics of the second language can also play a role in learning, provided that it is accurate and not based solely on fallible native speaker intuitions. Explicit teaching is often more efficient than attention to input for identifying the pragmalinguistic forms of the target language. The understanding of general rules and patterns may be unnecessary for learning, but Grossberg (1988) has argued that the learning mechanisms modeled in connectionist networks are slow because they result only from gradual changes in the bottom-up adaptive weights of the network, whereas top-down processes such as focused attention and expectations greatly speed up and actively reorganize the way in which input is processed. This is not to claim that explicit knowledge somehow "becomes" implicit knowledge, but to recognize a synergistic relationship between the mechanisms of implicit and explicit learning (Mathews et al. 1989), which justifies a consciousness-raising approach to the teaching of pragmatics.

Notes

1. I am grateful to Michael Long, Paul Munsell, and Danny Steinberg for very helpful comments on an earlier draft of this paper.

2. I owe the distinction made here between information that is perceived and information that is noticed to Bowers (1984), who argues that information becomes conscious when it is processed to the level of short-term memory and selectively attended to. Bowers also distinguishes between two senses of *unconscious*, referring to information that is unnoticed and information that is unappreciated or uncomprehended, and I have drawn upon his model in my description of subliminal versus implicit learning.

3. When I have presented this example to native speakers of English, they have often assumed that the mother must have meant for her son to "swim *to* Mommy," but this is not a correct interpretation; that is, this is not an example of a missing preposition.

4. In another series of experiments, Lewicki (1986) attempted to demonstrate that information which is presented subliminally or which is not attended to may also lead to learning. These experiments did not successfully demonstrate learning, but some interesting subtle effects were found. Subjects responded more slowly to questions mentioning those stimulus traits that had been presented subliminally. Lewicki argues that this demonstrates the internalization of weak processing algorithms, which could eventually result in more demonstrable learning effects. Such an experimental demonstration would disprove my claim that there is no subliminal learning whatsoever. Baars (1988) has claimed that this zero-point question is essentially unanswerable and has obscured the more important and answerable question of whether more conscious involvement is needed to learn more information, the answer to which is clearly affirmative.

5. Michael Long (personal communication) has pointed out to me that language learners may sometimes produce a vocabulary item in a second language that they did not know they knew until that moment, not being sure that it is right and certainly not knowing how it ever got into the mental lexicon. However, the issue of whether the learner noticed such a lexical item in input (which must have occurred, if my account is correct) is quite separate from the question of whether the learner will be able to say much later when it was encountered. We know all sorts of things without being able to recall the circumstances under which we acquired that knowledge.

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