Chapter 8

CONTRASTIVE ANALYSIS, INTERLANGUAGE, AND ERROR ANALYSIS

Up to this point in the treatment of principles of second language acquisition I have focused essentially on psychological variables, making references to linguistic factors within a psychological framework. The reason for such a focus is that the psychological principles of second language acquisition form the foundation stones for building a comprehensive understanding of the acquisition of the linguistic system—the units and structures of language. Linguistic systems cannot be examined fruitfully without recognition and understanding of the relationship of language to the total human being. The *forms* of language—the sounds, sound systems, grammatical structures, words, and discourse features—are utilized to accomplish certain intended *functions* of communication. We have encountered a good many of those functions of language in our examination of first and second language acquisition, human learning, cognitive processes, styles, and strategies, personality variables, and sociocultural dimensions of second language acquisition. We have considered some of the physical, cognitive, and affective factors that come to bear on this most complex process. In this chapter we will begin to examine the most salient aspect of second language acquisition—the learning of the linguistic system itself.

The Contrastive Analysis Hypothesis

In the middle part of the twentieth century, one of the most popular pursuits for applied linguists was the study of two languages in contrast. Eventually the stockpile of comparative and contrastive data on a multitude of pairs of languages yielded what commonly came to be known as the *Contrastive Analysis Hypothesis* (CAH). Deeply rooted in the behavioristic and structuralist approaches of the day, the CAH claimed that the principal barrier to second language acquisition is the interference of the first language system with the second language system, and that a scientific, structural analysis of the two languages in question would yield a taxonomy of linguistic contrasts between them which in turn would enable the linguist to predict the difficulties a learner would encounter. It was at that time considered feasible that the tools of structural linguistics, such as Fries's (1952) slot-filler grammar, would enable a linguist to describe accurately the two languages in question, and to match those two descriptions against each other to determine valid contrasts, or differences, between them. Behaviorism contributed to the notion that human behavior is the sum of its smallest parts and components, and therefore that language learning could be described as the acquisition of all of these discrete units. Moreover, human learning theories highlighted *interfering* elements of learning, concluding that where no interference could be predicted, no difficulty would be experienced since one could *transfer* positively all other items in a language. The logical conclusion from these various psychological and linguistic assumptions was that second language learning basically involved the overcoming of the *differences* between the two linguistic systems—the native and target languages.

Intuitively the CAH has appeal in that we commonly observe in second language learners a plethora of errors attributable to the negative transfer of the native language to the target language. It is quite common, for example, to detect certain foreign accents and to be able to infer, from the speech of the learner alone, where the learner comes from. English learners from such native language backgrounds as German, French, Spanish, and Japanese, for example, usually can readily be detected by native English speakers by easily identifiable—stereotypical, if you will—accents that we have grown accustomed to hearing. Such accents can even be represented in the written word. Consider again Mark Twain's *The Innocents Abroad* (1869:111), in which the French-speaking guide introduces himself: "If ze zhentlemans will to me make ze grande honneur to me rattain in hees serveece, I shall show to him everysing zat is magnifique to lóok upon in ze beautiful Paree. I speaky ze Angleesh parfaitmaw." Or William E. Callahan's Juan Castaniegos, a young Mexican in *Afraid of the Dark,* who says: "Help me to leave from thees place. But, Señor Capitán, me, I 'ave do notheeng. Notheeng, Señor Capitán." These excerpts

also capture the transfer of vocabulary and grammatical rules from the native language.

Some rather strong claims were made of the CAH among language teaching experts and linguists. One of the strongest was made by Robert Lado (1957:vii) in the preface to *Linguistics Across Cultures:* "The plan of the book rests on the assumption that we can predict and describe the patterns that will cause difficulty in learning, and those that will not cause difficulty, by comparing systematically the language and the culture to be learned with the native language and culture of the student." Then, in the first chapter of the book, Lado continues: ". . . in the comparison between native and foreign language lies the key to ease or difficulty in foreign language learning. . . . Those elements that are similar to [the learner's] native language will be simple for him and those elements that are different will be difficult" (pp. 1–2). An equally strong claim was made by Banathy, Trager, and Waddle (1966:37): "The change that has to take place in the language behavior of a foreign language student can be equated with the differences between the structure of the student's native language and culture and that of the target language and culture."

For a number of years materials in foreign languages were prepared on these "fundamental assumptions" about the relationship between two linguistic systems in learning a foreign language. Randal Whitman (1970) noted that contrastive analysis involved four different procedures. The first of these is *description:* the linguist or language teacher, using the tools of formal grammar, explicitly describes the two languages in question. Second, a *selection* is made of certain forms—linguistic items, rules, structures—for contrast, since it is virtually impossible to contrast every possible facet of two languages. Whitman admits that the selection process "reflects the conscious and unconscious assumptions of the investigator" (p. 193), which in turn affect exactly what forms are selected. The third procedure is the *contrast* itself, the mapping of one linguistic system onto the other, and a specification of the relationship of one system to the other which, like selection, "rests on the validity of one's reference points" (p. 196). Finally, one formulates a *prediction* of error or of difficulty on the basis of the first three procedures. That prediction can be arrived at through the formulation of a hierarchy of difficulty or through more subjective applications of psychological and linguistic theory.

It is not difficult to discern from Whitman's outline of procedures the subjectivity of contrastive analysis, something that falls short of a "scientific description" (Fries 1945:9) in the rigorous tradition of behavioristic psychology.

Hierarchy of Difficulty

In the heyday of the CAH, attempts were made to formalize the prediction stage of contrastive analysis and to remove some of the subjectivity involved.

The best-known attempt was made by Stockwell, Bowen, and Martin (1965), who proposed what they called a *hierarchy of difficulty* by which a teacher or linguist could make a *prediction* of the relative difficulty of a given aspect of the second language. Though the authors devised their hierarchy for English and Spanish, they claimed a universal application of the hierarchy. For phonological systems in contrast, Stockwell and his associates suggested eight possible degrees of difficulty. These degrees were based upon the notions of transfer (positive, negative, and zero) and of optional and obligatory choices of certain phonemes in the two languages in contrast. Through a very careful, systematic analysis of the properties of the two languages in reference to the hierarchy of difficulty, applied linguists were able to derive a reasonably accurate inventory of phonological difficulties that a second language learner would encounter. That inventory included a prediction of the difficulty—relative to other items in the inventory—of a particular unit of contrast. Stockwell and his associates also constructed a hierarchy of difficulty for grammatical structures of two languages in contrast. Their grammatical hierarchy included 16 levels of difficulty, based on the same notions used to construct phonological criteria with the added dimensions of "structural correspondence" and "functional/semantic correspondence."

Clifford Prator (1967) captured the essence of this grammatical hierarchy in six categories of difficulty. Prator's hierarchy is applicable to both grammatical and phonological features of language. The six categories, in ascending order of difficulty, are discussed below. Most of the examples are taken from English and Spanish (a native English speaker learning Spanish as a second language); a few examples illustrate other pairs of contrasting languages.

Level 0—Transfer

No difference or contrast is present between the two languages. The learner can simply transfer (positively) a sound, structure, or lexical item from the native language to the target language. Such transfer is posited to be of no difficulty, hence the label of "level zero." Examples can be found in certain phonemes and their distribution in English and Spanish (cardinal vowels, /s/, /z/, /m/, /n/, structures (say, general word order), or words (*mortal, inteligente, arte, americanos*).

Level 1—Coalescence

Two items in the native language become coalesced into essentially one item in the target language. This requires that learners overlook a distinction they have grown accustomed to. For example, English third-person possessives require gender distinction (*his/her*), and in Spanish they do not (*su*). It is difficult to provide phonological instances of coalescence because of the theoretical difficulty of claiming that two sounds actually "merge." One might, for example, claim that the English-speaking learner of Japanese can overlook the distinction

between /r/ and /l/, and simply produce an /r/ in Japanese. But such a contrast can also be argued merely as a case of a phoneme (/l/) that is *absent* (see Level 2) in the target language. A good lexical example of coalescence is found in the case of an English speaker learning French who must overlook the distinction between *teach* and *learn,* and use just the one word *apprendre* in French.

Level 2—Underdifferentiation

An item in the native language is absent in the target language. The learner must avoid that item. English learners of Spanish must "forget," as it were, such items as English *do* as a tense carrier, indefinite determiners (*other, certain*), possessive forms of *wh-* words (*whose*), or the use of *some* with mass nouns. A number of phonemes that are present in English are absent in Spanish: several vowels (/I/, /æ/, among others), and consonants like the interdental fricatives (/th/) and velar nasal (/ng/).

Level 3—Reinterpretation

An item that exists in the native language is given a new shape or distribution. Though it is difficult to argue that Level 3 is distinct from *any* of the other levels, Prator (1967) claimed that in some cases items in the target language are perceived as reinterpreted native language items. The English speaker who learns French, for example, must learn a new distribution for nasalized vowels. Or, when in English we use a determiner (He's *a* philosopher), in Spanish the determiner is optional (El es (*un*) filósofo); learners of Spanish must reinterpret their English system of determiners.

Level 4—Overdifferentiation

A new item entirely, bearing little if any similarity to the native language item, must be learned. For example, in learning Spanish the native English speaker must learn to include determiners in generalized nominals (Man is mortal/*El* hombre es mortal), to use *se* with intransitive verbs for an indefinite subject (*Se* come bien aquí), or, most commonly, to learn Spanish grammatical gender inherent in nouns.

Level 5—Split

One item in the native language becomes two or more in the target language, requiring the learner to make a new distinction. The split is the counterpart of coalescence. Typical of such items in learning Spanish are the learning of the distinction between *ser* and *estar* (to be) and between *tú* and *usted* (you), or even learning the distinction between Spanish indicative and subjunctive moods where in English the indicative alone is appropriate.

Prator's reinterpretation, and Stockwell and his associates' original hierarchy of difficulty, are based on principles of human learning. The first, or "zero," degree of difficulty represents complete one-to-one correspondence

and transfer while the fifth degree of difficulty is the height of interference. Prator and Stockwell both claimed that their hierarchy could be applied to virtually any two languages and would thus yield some form of objectivity to the prediction stage of contrastive analysis procedures.

Using the hierarchy of difficulty and the procedures for contrastive analysis described by Whitman, one can make simple predictions about difficulties learners will encounter. Let us look, for example, at the learning of English consonants by a native speaker of Turkish. The *description* and *selection* stages of contrastive analysis are fulfilled in the chart of Turkish and English consonants (Subuktekin 1975:33) in Table 8–1. (Bowen's [1975] phonemic symbols are used here for simplified reading.)

By "mapping" one language onto the other, you can engage in the process of *contrasting* the systems—the third of Whitman's procedures. The following six statements will suffice for a superficial contrast:

1. English /t/, /d/, and /n/ are alveolar; the corresponding consonants in Turkish are dental.
2. English has interdental fricatives /th/ and /dh/; Turkish does not.
3. English has a velar nasal /ng/; Turkish does not.
4. English has a velar glide /w/; Turkish does not.
5. Turkish has palatal /K/, /G/, and /L/ which do not occur in English.
6. From a phonetic viewpoint, English /r/ and Turkish /r/ are of very different natures.

Next, the *prediction* procedure can be accomplished by subjecting the above contrastive description to a hierarchy of difficulty:

0. Of no difficulty will be all those consonants that do not appear in the six contrastive statements above. We will assume such consonants bear one-to-one correspondence.
1. No apparent instance of coalescence, unless items in Level 2 below might be so analyzed.
2. Palatal stops /K/ and /G/ and palatal /L/ are absent in English.
3. English alveolar consonants /t/, /d/, and /n/ will have to be reshaped by the Turkish speaker from Turkish dental counterparts.
4. English consonants /th/, /dh/, /ng/, and /w/ are new to the Turkish speaker. Also American English /r/ is phonetically virtually new.
5. No apparent instance of a split.

The contrastive analysis procedure has identified and contrasted selected features of the two languages and predicted basically three levels of difficulty.

TABLE 8-1. Turkish and English consonants (English consonants are underlined)

		BILABIAL	LABIO-DENTAL	INTER-DENTAL	DENTAL	ALVEOLAR	PALATAL	VELAR	GLOTTAL
Stops	*vl*	p p			t	t	K	k k	
	vd	b b			d	d	G	g g	
Fricatives	*vl*		f f	th		s s	sh sh		h h
	vd		v v	dh		z z	zh zh		
Affricates	*vl*					ch ch			
	vd					j j			
Nasals		m m			n	n		ng	
Laterals						l l	L		
Glides						r r	y y	w	

The procedure is not without glaring shortcomings. For one thing, the process illustrated above is oversimplified. Subtle phonetic distinctions between phonemes have been ignored. Phonological environments and allophonic variants of phonemes have been overlooked. For example, Sebuktekin (1975) noted that Turkish /v/ has an allophone /w/ which occurs between some vowels in Turkish. Therefore, English /w/ would probably not present a fourth level of difficulty to a Turkish learner of English. With attention to such details you might, on the one hand, find it most difficult to use the hierarchy as prescribed and yet on the other hand find that more than three levels of difficulty can be defined. Surely, for example, the Turkish speaker will find varying degrees of difficulty within Level 4.

Other problems with the model are apparent. It is very difficult, even with six categories, to determine exactly which category a particular contrast fits into. For example, is learning the English /r/ really a case of learning an entirely new item? Phonetically that is the case. But in the underlying structures of the two languages the American English /r/ and the Turkish /r/ have very similar distributions and phonemic value. Moreover, the English learner can indeed substitute the Turkish /r/ in English and be understood. The latter is an argument for placing the /r/ contrast into Level 3 rather than 4. Yet intuitively we know that learning the English /r/ may be the most difficult item phonetically for learners from many backgrounds to master. Should not the /r/, therefore, be assigned the fifth degree of difficulty? In such a question lies a hint of some of the subjectivity of "scientific" hierarchies of difficulty.

Moderating the Contrastive Analysis Hypothesis

The problems touched on above only begin to hint at the tentativeness of the Contrastive Analysis Hypothesis. The attempt to *predict* difficulty by means of contrastive analysis is what Ronald Wardhaugh (1970) called the *strong version* of the CAH, a version that he believed was quite unrealistic and impracticable. Wardhaugh noted (p. 125) that "at the very least, this version demands of linguists that they have available a set of linguistic universals formulated within a comprehensive linguistic theory which deals adequately with syntax, semantics, and phonology." He went on to point out the difficulty (p. 126), already noted, of an adequate procedure, built on sound theory, for actually contrasting the forms of languages: "Does the linguist have available to him an over-all contrastive system within which he can relate the two languages in terms of mergers, splits, zeroes, over-differentiations, under-differentiations, reinterpretations, and so on . . . ?" And so, while many linguists claimed to be using a scientific, empirical, and theoretically justified tool in contrastive analysis, in actuality they were operating more out of mentalistic subjectivity.

Wardhaugh noted, however (p. 126), that contrastive analysis has intuitive appeal, and that teachers and linguists have successfully used "the best linguistic knowledge available . . . in order to account for observed difficulties in second language learning." He termed such observational use of contrastive analysis the *weak version* of the CAH. The weak version does not imply the *a priori* prediction of certain fine degrees of difficulty. It recognizes the significance of interference across languages, the fact that such interference does exist and can explain difficulties, but it also recognizes that linguistic difficulties can be more profitably explained *a posteriori*—after the fact. As learners are learning the language and errors appear, the teacher can utilize their knowledge of the target and native languages to understand sources of error. Clearly, gross predictions can be made by observation and intuition and experience, but a language is made up of hundreds of thousands of items, and it is impossible to predict difficulty beyond some very glaring phonological differences between two languages. In fact, it is really *only* in the phonological component of language that contrastive analysis is mildly successful. In early stages of second language acquisition, learners produce the sounds of a foreign language in fairly consistent patterns, largely because pronunciation is a *psychomotor* skill and, with its reliance on muscular coordination, is a factor of more predictable interference. Syntactic, semantic, or lexical interference is far less predictable, since "cognitive coordination" (thinking, processing, storing, recalling, and the like), in all its tremendous variability, becomes more of a factor than muscular coordination. While one might *expect* a French speaker who is beginning to learn English to say "I am in New York since January," the *prediction* that a learner will make that error is a gamble. But if a learner then makes that error, a contrastive analysis of present-perfect usage in English with its French counterpart will reveal the source of the error.

The most convincing criticism of the strong version of the CAH was offered by Whitman himself, who with Kenneth Jackson (Whitman and Jackson 1972) undertook to test empirically the practicability of the Contrastive Analysis hypothesis. The predictions of four separate contrastive analyses (including that of Stockwell, Bowen, and Martin 1965) were applied to a 40-item test of English grammar to determine, *a priori,* the relative difficulty of the test items for speakers of Japanese. The test was administered to 2500 Japanese learners of English who did not know, of course, the predictions of the contrastive analyses. The results of the test were compared with the predictions. Whitman and Jackson found no support for the predictions of the contrastive analyses so carefully worked out by linguists! They concluded (p. 40) that "contrastive analysis, as represented by the four analyses tested in this project, is inadequate, theoretically and practically, to predict the interference problems of a language learner." While it is of interest to note that the Whitman and Jackson study was performed on *grammar,* which I have already pointed out to be less predictable than phonology, nevertheless the Contrastive

Analysis hypothesis—which purported to apply to any aspect of two languages—was found to be inadequate.

While Wardhaugh (1970) called for a "period of quiescence" for the CAH, Oller and Ziahosseiny (1970) hinted at a compromise between the strong and weak versions of the hypothesis. They proposed a *moderate* form of the CAH on the basis of a rather intriguing study of spelling errors. They found that for learners of English as a second language, English spelling proved to be more difficult for people whose native language used a Roman script (for example, French, Spanish) than for those whose native language used a non-Roman script (Arabic, Japanese). The strong form of the CAH would have predicted that the learning of an entirely new writing system (Level 4 in the hierarchy of difficulty) would be more difficult than reinterpreting (Level 3) spelling rules. Oller and Ziahosseiny found the opposite to be true and reasoned that knowledge of one Romanized system made it more difficult, not less, to acquire another Roman spelling system. They concluded that the strong form was too strong and the weak form too weak, but that a moderate version that centers on the nature of human learning, and not just on the contrast between two languages, has more explanatory power.

That moderate version of the CAH was technically defined as follows (p. 186): "The categorization of abstract and concrete patterns according to their perceived similarities and differences is the basis for learning; therefore, wherever patterns are minimally distinct in form or meaning in one or more systems, confusion may result." In other words, the learning of sounds, sequences, and meanings will be the most difficult where the most subtle distinctions are required either between the target language and native language or within the target language itself. In the case of their research on spelling English, there were more *differences* between non-Roman writing and Roman writing, but learners from a non-Roman writing system had to make fewer *subtle* distinctions than did those from the Roman writing system. We have all experienced learning an entirely new game or skill perhaps more easily than one that is somewhat similar to a skill already learned previously. The principle at work is common in human learning: interference can actually be greater when items to be learned are more similar to existing items than when items are entirely new and unrelated to existing items.

Oller and Ziahosseiny's moderate version put the CAH into some perspective. They rightly emphasized the generalizing nature of human learning. It is common to overgeneralize to the extent that minimal differences are overlooked; at the same time gross differences—because of their saliency—are often more easily perceived and stored in memory. Greater differences do not always result in greater learning difficulty. Such a perspective underscores the significance of *intra*lingual errors, which are as much a factor in second language learning as *inter*lingual errors. The forms within one language are often perceived to be minimally distinct in comparison to the vast distinctions

between the native and target language, yet those intralingual factors can lead to some of the greatest difficulties.

The CAH in its strong form was, as Wardhaugh predicted, quietly laid to rest—if even with the cautious hope that someday, when the tools of linguistic and cultural analysis are perfected, we would then revive this methodology that did not deliver to language teachers the last word in applied linguistics. Meanwhile, teachers of foreign languages and researchers in second language acquisition were rightfully dissatisfied with too weak a version of contrastive analysis that only lent an explanation to certain errors after the fact. This state of professional anomie was somewhat soothed by moderate forms of the CAH that enabled us to get a larger picture of the nature of human learning and to understand a number of factors contributing to learning and forgetting.

Markedness and Universal Grammar

Fred Eckman (1977) proposed a useful method for determining directionality of difficulty. His Markedness Differential Hypothesis (otherwise known as *markedness* theory) accounted for relative degrees of difficulty by means of principles of universal grammar. Celce-Murcia and Hawkins (1985:66) sum up markedness theory:

> It distinguishes members of a pair of related forms or structures by assuming that the marked member of a pair contains at least one more feature than the unmarked one. In addition, the unmarked (or neutral) member of the pair is the one with a wider range of distribution than the marked one. For example, in the case of the English indefinite articles (*a* and *an*), *an* is the more complex or marked form (it has an additional sound) and *a* is the unmarked form with the wider distribution.

Eckman (1981) showed that marked items in a language will be more difficult to acquire than unmarked, and that degrees of markedness will correspond to degrees of difficulty. Rutherford (1982) used markedness theory to explain why there seems to be a certain order of acquisition of morphemes in English: marked structures are acquired later than unmarked structures.

More recently, the attention of some second language researchers has expanded beyond markedness hypotheses alone to the broader framework of linguistic universals in general (see Eckman 1991, Carroll and Meisel 1990, Comrie 1990, Gass 1989). Some of these arguments focus on the applicability of notions of *universal grammar* (UG) to second language acquisition (White 1990, Schachter 1988, among others). "Rules" that are shared by all languages comprise this UG. Such rules are a set of limitations or *parameters* (Flynn 1987) of language. Different languages set their parameters differently, thereby creating the characteristic grammar for that language. The hope is that by discovering innate linguistic principles that govern what is possible in human languages, we may be better able to understand and describe contrasts between

native and target languages and the difficulties encountered by adult second language learners. Research on UG has only just barely begun to identify such universal properties and principles, but it is nevertheless an avenue of some promise.

Markedness theory and UG perspectives provide a more sophisticated understanding of difficulty in learning a second language than we had previously from the early formulations of the CAH. But describing and predicting difficulty amidst all the variables of human learning is still an elusive process. As is the case with virtually every problem in linguistic analysis, our scientific methodological capacities are currently inadequate to give a complete account.

Interlanguage

The CAH stressed the interfering effects of the first language on second language learning and claimed, in its strong form, that second language learning is primarily, if not exclusively, a process of acquiring whatever items are different from the first language. Such a narrow view of interference ignored the *intralingual* effects of learning, among other factors. In recent years researchers and teachers have come more and more to understand that second language learning is a creative process of constructing a system in which learners are consciously testing hypotheses about the target language from a number of possible sources of knowledge: limited knowledge of the target language itself, knowledge about the native language, knowledge about the communicative function of language, knowledge about language in general, and knowledge about life, human beings, and the universe. The learners, in acting upon their environment, construct what to them is a legitimate system of language in its own right—a structured set of rules that for the time being provide order to the linguistic chaos that confronts them.

By the late 1960s, second language learning began to be examined in much the same way that first language learning had been studied for some time: learners were looked on not as producers of malformed, imperfect language replete with mistakes but as intelligent and creative beings proceeding through logical, systematic stages of acquisition, creatively acting upon their linguistic environment as they encounter its forms and functions in meaningful contexts. By a gradual process of trial and error and hypothesis testing, learners slowly and tediously succeed in establishing closer and closer approximations to the system used by native speakers of the language. A number of terms have been coined to describe the perspective which stresses the legitimacy of learners' second language systems. The best known of these terms is *interlanguage,* a term that Selinker (1972) adapted from Weinreich's (1953) term "interlingual." Interlanguage refers to the separateness of a second language learner's system, a system that has a structurally intermediate status between the native and target languages. Nemser (1971) referred to the same

general phenomenon in second language learning but stressed the successive approximation to the target language in his term *approximative system*. Corder (1971:151) used the term *idiosyncratic dialect* to connote the idea that the learner's language is unique to a particular individual, that the rules of the learner's language are peculiar to the language of that individual alone. While each of these designations emphasizes a particular notion, they share the concept that second language learners are forming their own self-contained linguistic systems. This is neither the system of the native language nor the system of the target language, but instead falls between the two; it is a system based upon the best attempt of learners to provide order and structure to the linguistic stimuli surrounding them. The interlanguage hypothesis led to a whole new era of second language research and teaching and presented a significant breakthrough from the shackles of the contrastive analysis hypothesis.

The most obvious approach to analyzing interlanguage is to study the speech and writing of learners, or, what has come to be called *learner language* (James 1990). Production data is publicly observable and is presumably reflective of a learner's underlying competence—production competence, that is. Comprehension of a second language is more difficult to study since it is not directly observable and must be inferred by overt verbal and nonverbal responses, by artificial instruments, or by the intuition of the teacher or researcher. It follows that the study of the speech and writing of learners is largely the study of the errors of learners. "Correct" production yields little information about the actual interlanguage system of learners, only information about the target language system that learners have already acquired. Therefore, our focus in the rest of this chapter will be on the significance of errors in learners' interlanguage systems, otherwise known as *error analysis*.

Error Analysis

Human learning is fundamentally a process that involves the making of mistakes. Mistakes, misjudgments, miscalculations, and erroneous assumptions form an important aspect of learning virtually any skill or acquiring information. You learn to swim by first jumping into the water and flailing arms and legs until you discover that there is a combination of movements—a structured pattern—that succeeds in keeping you afloat and propelling you through the water. The first mistakes of learning to swim are giant ones, gradually diminishing as you learn from making those mistakes. Learning to swim, to play tennis, to type, or to read all involve a process in which success comes by profiting from mistakes, by using mistakes to obtain feedback from the environment and with that feedback to make new attempts which successively more closely approximate desired goals.

Language learning, in this sense, is like any other human learning. We have already seen in the second chapter that children learning their first lan-

guage make countless "mistakes" from the point of view of adult grammatical language. Many of these mistakes are logical in the limited linguistic system within which children operate, but by carefully processing feedback from others such children slowly but surely learn to produce what is acceptable speech in their native language. Second language learning is a process that is clearly not unlike first language learning in its trial-and-error nature. Inevitably learners will make mistakes in the process of acquisition, and indeed will even impede that process if they do not commit errors and then benefit in turn from various forms of feedback on those errors.

Researchers and teachers of second languages soon came to realize that the mistakes a person made in this process of constructing a new system of language needed to be analyzed carefully, for they possibly held in them some of the keys to the understanding of the process of second language acquisition. As Corder (1967:167) noted: "A learner's errors . . . are significant in [that] they provide to the researcher evidence of how language is learned or acquired, what strategies or procedures the learner is employing in the discovery of the language."

Mistakes and Errors

In order to analyze learner language in a proper perspective, it is crucial to make a distinction between *mistakes* and *errors*, technically two very different phenomena. A mistake refers to a performance error that is either a random guess or a "slip," in that it is a failure to utilize a known system correctly. All people make mistakes, in both native and second language situations. Native speakers are normally capable of recognizing and correcting such "lapses" or mistakes, which are not the result of a deficiency in competence but the result of some sort of breakdown or imperfection in the process of producing speech. These hesitations, slips of the tongue, random ungrammaticalities, and other performance lapses in native-speaker production also occur in second language speech.

Such mistakes must be carefully distinguished from *errors* of a second language learner, idiosyncrasies in the interlanguage of the learner that are direct manifestations of a system within which a learner is operating at the time. Dulay and Burt (1972) referred to errors as "goofs," defined in an earlier work—*The Gooficon* (Burt and Kiparsky 1972:1)—as "an error . . . for which no blame is implied." Put in another way, an error is a noticeable deviation from the adult grammar of a native speaker, reflecting the interlanguage competence of the learner. If a learner of English asks, "Does John can sing?" he is probably reflecting a competence level in which all verbs require a pre-posed *do* auxiliary for question formation. He has committed an error, most likely not a mistake, and an error which reveals a portion of his competence in the target language.

Can you tell the difference between an error and a mistake? Not always. If, on one or two occasions, for example, an English learner says "John cans sing," but on other occasions says "John can sing," it is difficult to determine whether "cans" is a mistake or an error. If, however, further examination of the learner's speech reveals such utterances as "John wills go," "John mays come," and so forth, with very few instances of correct third-person singular usage of modal auxiliaries, you might then conclude that "cans," "mays," and other such forms are errors indicating that the learner has not distinguished modals from other verbs, though perhaps—because of the few correct instances—she is on the verge of making the necessary differentiation between the two types of verbs in her systematic conception of the second language. You can thus appreciate the subjectivity of determining the difference between a mistake and an error in learner speech. That undertaking always bears with it the chance of a faulty assumption on the part of a teacher or researcher.

The fact that learners do make errors and that these errors can be observed, analyzed, and classified to reveal something of the system operating within the learner, led to a surge of study of learners' errors, called *error analysis*. Error analysis became distinguished from contrastive analysis by its examination of errors attributable to *all* possible sources, not just those which result from negative transfer of the native language. Error analysis easily superseded contrastive analysis, as we discovered that only *some* of the errors a learner makes are attributable to the mother tongue, that learners do not actually make all the errors that contrastive analysis predicted they should, and that learners from disparate language backgrounds tend to make similar errors in learning one target language. Errors—overt manifestations of learners' systems—arise from several possible general sources: interlingual errors of interference from the native language, intralingual errors within the target language, the sociolinguistic context of communication, psycholinguistic or cognitive strategies, and no doubt countless affective variables.

Errors in Error Analysis

There is a danger in too much attention to learners' errors. While errors are indeed revealing of a system at work, the classroom foreign language teacher can become so preoccupied with noticing errors that the correct utterances in the second language go unnoticed. In our observation and analysis of errors—for all that they do reveal about the learner—we must beware of placing too much attention on errors and not lose sight of the value of positive reinforcement of clear, free communication. While the diminishing of errors is an important criterion for increasing language proficiency, the ultimate goal of second language learning is the attainment of communicative fluency in a language.

Another shortcoming in error analysis is an overstressing of production data. Language is speaking *and* listening, writing *and* reading. The compre-

hension of language is as important as production. It so happens that production lends itself to analysis and thus becomes the prey of researchers; but comprehension data is equally important in developing an understanding of the process of second language acquisition.

Jacqueline Schachter (1974) and others (see Kleinmann 1977) have shown in research that error analysis fails to account for the strategy of *avoidance*. A learner who for one reason or another avoids a particular sound, word, structure, or discourse category may be assumed incorrectly to have no difficulty therewith. Schachter found, for example, that it was misleading to draw conclusions about relative-clause errors among certain English learners; native Japanese speakers were largely avoiding that structure and thus not manifesting nearly as many errors as some native Persian speakers. The absence of error therefore does not necessarily reflect nativelike competence since learners may be avoiding the very structures that pose difficulty for them.

Finally, error analysis can keep us too closely focused on specific languages rather than viewing *universal* aspects of language. Gass (1984) recommended that researchers pay more attention to linguistic elements that are common to all languages. The interlanguage systems of learners may have elements that reflect neither the target language nor the native language but rather a universal feature of some kind. Such assertions are in keeping with the bioprogramming theories referred to in Chapter Two. But there are problems, of course, with the search for universal properties of learner's errors. "It is not at all clear in any precise way when the influence of the universal will appear in the interlanguage of learners rather than a violation of it based on influence from either the source or target language" (Celce-Murcia and Hawkins 1985:66).

We do well, therefore, in the analysis of learners' interlanguage errors, to engage in "performance analysis"—or perhaps more simply, "interlanguage analysis" (Celce-Murcia and Hawkins 1985:64), a less restrictive concept that places a healthy investigation of errors within the larger perspective of the learner's total interlanguage performance. While a significant portion of this chapter deals with error analysis, let us nevertheless remember that production errors are only a subset of the overall performance of the learner.

Identifying and Describing Errors

One of the common difficulties in understanding the linguistic systems of both first and second language learners is the fact that such systems cannot be directly observed. They must be inferred by means of analyzing production and comprehension data. What makes the task even thornier, however, is the *instability* of learners' systems. Systems are in a constant state of flux as new information flows in and, through the process of subsumption, causes existing structures to be revised. Repeated observations of a learner will often reveal

apparently unpredictable or even contradictory data. In undertaking the task of performance analysis, the teacher and researcher are called upon to infer order and logic in this unstable and variable system.

The first step in the process of analysis is the identification and description of errors. Corder (1971) provided a model for identifying erroneous or idiosyncratic utterances in a second language. That model is schematized in Figure 8–1. According to Corder's model, any sentence uttered by the learner and subsequently transcribed can be analyzed for idiosyncrasies. A major distinction is made at the outset between "overt" and "covert" errors. Overtly erroneous utterances are unquestionably ungrammatical at the sentence level. Covertly erroneous utterances are grammatically well-formed at the sentence level but are not interpretable within the context of communication. Covert errors, in other words, are not really covert at all if you attend to surrounding discourse (before or after the utterance). "I'm fine, thank you" is grammatically correct at the sentence level, but as a response to "Who are you?" it is very obviously an error. A simpler and more straightforward set of terms, then, would be "sentence level" and "discourse level" errors.

Corder's model in Figure 8–1 indicates that, in the case of both overt and covert errors, if a plausible interpretation can be made of the sentence then one should form a reconstruction of the sentence in the target language, compare the reconstruction with the original idiosyncratic sentence, and then describe the differences. If the native language of the learner is known, the model indicates using translation as a possible indicator of native language interference as the source of error. In some cases, of course, no plausible interpretation is possible at all, and the researcher is left with no analysis of the error (OUT_3).

Consider the following examples of idiosyncratic utterances of learners, and let us allow them to be fed through Corder's procedure for error analysis:

1. Does John can sing?
   - A. NO
   - C. YES
   - D. Can John sing?
   - E. Original sentence contained pre-posed *do* auxiliary applicable to most verbs, but not to verbs with modal auxiliaries, OUT_2
2. I saw their department.
   - A. YES
   - B. NO (context was in a conversation about living quarters in Mexico)
   - C. NO
   - F. YES, Spanish.

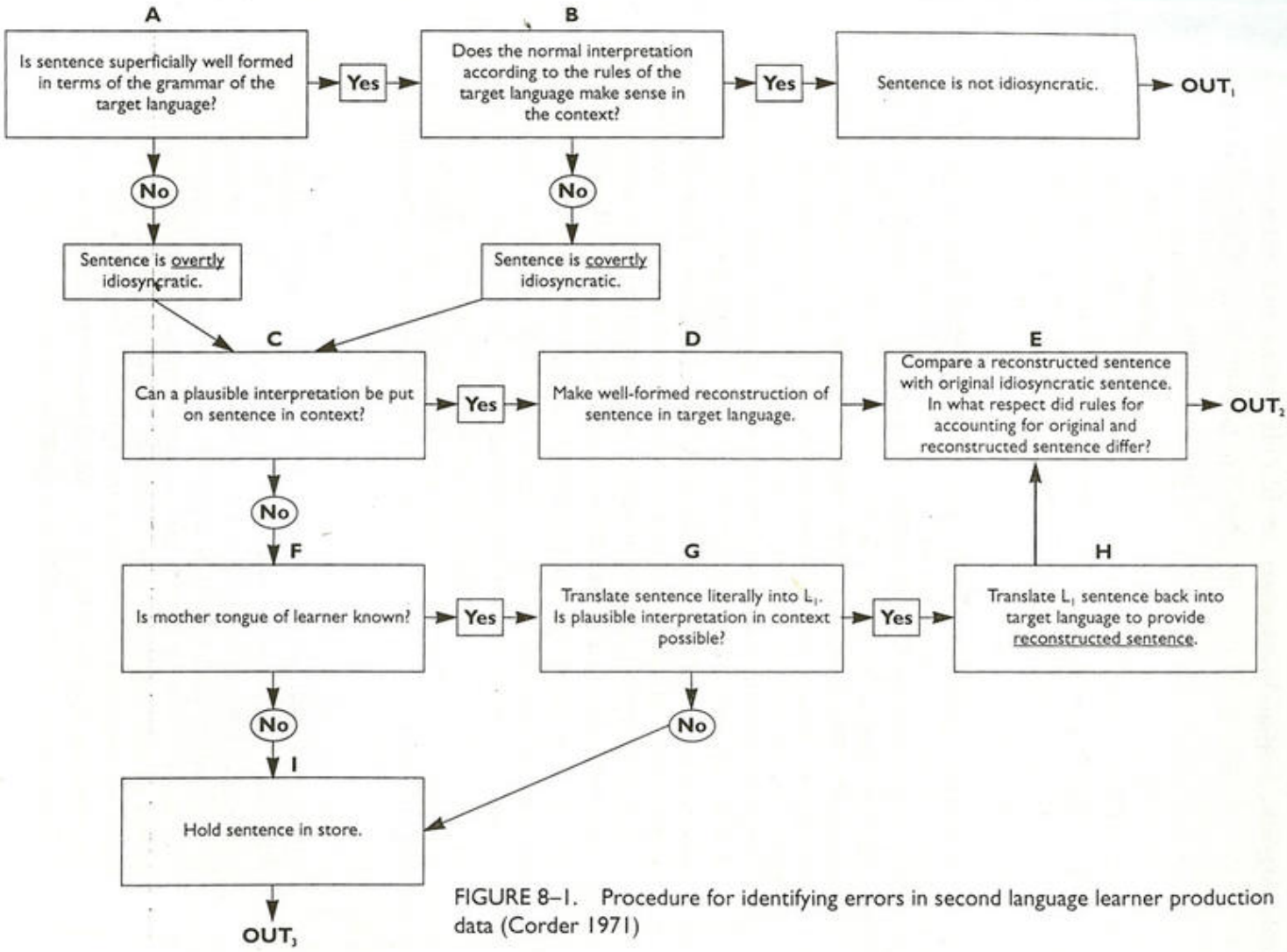

FIGURE 8–1. Procedure for identifying errors in second language learner production data (Corder 1971)

G. Yo vi su departamento. YES
H. I saw their apartment.
E. *Departamento* was translated to false cognate *department*. OUT_2

3. The different city is another one in the another two.
   A. NO
   C. NO
   F. YES, Spanish.
   G. No plausible translation or interpretation.
   I. No analysis. OUT_3

It can be seen that the model is not complicated and represents a procedure that teachers and researchers might intuitively follow. However, once an error is identified, the next step is to describe it adequately, something the above procedure has only begun to accomplish.

A number of different categories for description of errors have been identified in research on learner language (for an overview, see Lennon 1991):

1. The most generalized breakdown can be made by identifying errors of addition, omission, substitution, and ordering, following standard mathematical categories. In English a *do* auxiliary might be added (Does can he sing?), a definite article omitted (I went to movie), an item substituted (I lost my road), or a word order confused (I to the store went). But such categories are clearly very generalized.
2. Within each category, *levels* of language can be considered: phonology or orthography, lexicon, grammar, and discourse. Often, of course, it is difficult to distinguish different levels of errors. A word with a faulty pronunciation, for example, might hide a syntactic or lexical error. A French learner who says "[zhey] suis allé à l'école" might be mispronouncing the grammatically correct "je," or correctly pronouncing a grammatically incorrect "j'ai."
3. Errors may also be viewed as either *global* or *local* (Burt and Kiparsky 1974). Global errors hinder communication; they prevent the hearer from comprehending some aspect of the message. For example, "Well, it's a great hurry around," in whatever context, may be difficult or impossible to interpret. Local errors do not prevent the message from being heard, usually because there is only a minor violation of one segment of a sentence, allowing the hearer/reader to make an accurate guess about the intended meaning. "A scissors," for example, is a local error. The global-local distinction is discussed in the vignette at the end of this chapter.

4. Finally, Lennon (1991) suggests that two related dimensions of error, *domain* and *extent* should be considered in any error analysis. Domain is the rank of linguistic unit (from phoneme to discourse) that must be taken as context in order for the error to become apparent, and extent is the rank of linguistic unit that would have to be deleted, replaced, supplied, or reordered in order to repair the sentence. Lennon's categories help to operationalize Corder's overt-covert distinction discussed above. So, in the example just cited above, "a scissors," the domain is the phrase, and the extent is the indefinite article.

Stages of Interlanguage Development

There are many different ways to describe the progression of linguistic development that learners manifest as their attempts at production successively approximate the target language system. Indeed, learners are so variable in their acquisition of a second language that stages of development defy description. Borrowing some insights from an earlier model proposed by Corder (1973), I have found it useful to think in terms of four stages, based on observations of what the learner does in terms of errors alone.

The first is a stage of *random errors,* a stage that Corder called "presystematic," in which the learner is only vaguely aware that there is some systematic order to a particular class of items. The example in the previous section, "The different city is another one in the another two," surely comes out of a random error stage in which the learner is making rather wild guesses at what to write. Inconsistencies like "John cans sing," "John can to sing," and "John can singing," said by the same learner within a short period of time, might indicate a stage of experimentation and inaccurate guessing.

The second, or *emergent,* stage of interlanguage finds the learner growing in consistency in linguistic production. The learner has begun to discern a system and to internalize certain rules. These rules may not be "correct" by target language standards, but they are nevertheless legitimate in the mind of the learner. This stage is characterized by some "backsliding," in which the learner seems to have grasped a rule or principle and then regresses to some previous stage. Generally the learner is still, at this stage, unable to correct errors when they are pointed out by someone else. Avoidance of structures and topics is typical. Consider the following conversation between a learner (L) and a native speaker (NS) of English:

L: I go New York.
NS: You're going to New York?
L: [doesn't understand] What?

NS: You will go to New York?
L: Yes.
NS: When?
L: 1972.
NS: Oh, you went to New York in 1972.
L: Yes, I go 1972.

Such a conversation is reminiscent of those mentioned in Chapter Two where children in first language situations could not discern any error in their speech.

A third stage is a truly *systematic* stage in which the learner is now able to manifest more consistency in producing the second language. While those rules inside the head of the learner are still not all "well-formed," they are more internally self-consistent and, of course, they are more closely approximating the target language system. The most salient difference between the second and third stage is the ability of learners to correct their errors when they are pointed out—even very subtly—to them. Consider the English learner who described a popular fishing-resort area.

L: Many fish are in the lake. These fish are serving in the restaurants near the lake.
NS: [laughing] The fish are serving?
L: [laughing] Oh, no, the fish are served in the restaurants!

A final stage, which I will call the *stabilization* stage in the development of interlanguage systems, is akin to what Corder (1973) called a "postsystematic" stage. Here the learner has relatively few errors and has mastered the system to the point that fluency and intended meanings are not problematic. This fourth stage is characterized by the learner's ability to self-correct. The system is complete enough that attention can be paid to those few errors that occur and corrections made without waiting for feedback from someone else. It is at this point that learners can stabilize too fast, allowing minor errors to slip by undetected, and thus manifest *fossilization* of their language, a concept that will be defined and discussed later in this chapter (see Selinker and Lamendella 1979).

Lest you be tempted to assume that all learner language is orderly and systematic, a caveat is in order. A great deal of attention has been recently given to the *variability* of interlanguage development (Littlewood 1981, Tarone 1988, James 1990, Ellis 1987). Just as native speakers of a language vacillate between expressions like "It has to be you," and "It must be you," learners also exhibit variation, sometimes within the parameters of acceptable norms, sometimes not. Some variability in learner language can be explained by what Gatbonton (1983) described as the "gradual diffusion" of incorrect forms of language in

emergent and systematic stages of development: first, incorrect forms coexist with correct, then, the incorrect are expunged. Context has also been identified as a source of variation. In classrooms, the type of task can affect variation (Tarone and Parrish 1988). And variability can be affected, in both tutored and untutored learning, by the exposure that a learner gets to norms. In short, one simply must expect a good proportion of interlanguage data to fall beyond our capacity for systematic categorization.

It should also be made clear that the four stages of systematicity outlined above do not describe a learner's total second language system. We would find it hard to assert, for example, that a learner is an emergent stage, globally, for all of the linguistic subsystems of language. One might be in a second stage with respect to, say, the perfect-tense system, and in the third or fourth stage when it comes to simple present and past tenses. Nor do these stages, which are based on error analysis, adequately account for sociolinguistic, functional, or nonverbal strategies, all of which are important in assessing the total competence of the second language learner. Finally, we need to remember that production errors alone are inadequate measures of overall competence. They happen to be salient features of second language learners' interlanguage and present us with grist for error-analysis mills, but *correct* utterances deserve our attention, and especially in the teaching-learning process, deserve positive reinforcement.

Sources of Error

Having examined procedures of error analysis used to identify errors in second language learner production data, our final step in the analysis of learner speech is that of determining the *source* of error. Why are certain errors made? What cognitive strategies and styles or even personality variables underlie certain errors? While the answers to these questions are somewhat speculative in that sources must be inferred from available data, in such questions lies the ultimate value of interlanguage analysis in general. By trying to identify sources we can begin to arrive at an understanding of how the learner's cognitive and affective self relates to the linguistic system and to formulate an integrated understanding of the process of second language acquisition.

Interlingual Transfer

The beginning stages of learning a second language are characterized by a good deal of interlingual transfer from the native language, or, interference. In these early stages, before the system of the second language is familiar, the native language is the only linguistic system in previous experience upon which the learner can draw. We have all heard English learners say "sheep" for "ship," or "the book of Jack" instead of "Jack's book"; French learners may say,

"Je sais Jean," for "Je connais Jean," and so forth. All these errors are attributable to negative interlingual transfer. While it is not always clear that an error is the result of transfer from the native language, many such errors are detectable in learner speech. Fluent knowledge of a learner's native language of course aids the teacher in detecting and analyzing such errors; however, even familiarity with the language can be of help in pinpointing this common source.

The learning of a *third language* (and subsequent languages) provides an interesting context for research. Depending upon a number of factors including the linguistic and cultural relatedness of the languages and the context of learning, there are varying degrees of interlingual interference from both the first and second language to the third language, especially if the second and third languages are closely related or the learner is attempting a third language shortly after beginning a second language.

Intralingual Transfer

One of the major contributions of error analysis was its recognition of sources of error that extend beyond just interlingual errors in learning a second language. It is now clear that intralingual transfer (within the target language itself) is a major factor in second language learning. In Chapter Four we discussed overgeneralization, which is the negative counterpart of intralingual transfer. Researchers (see especially Taylor 1975) have found that the early stages of language learning are characterized by a predominance of interference (interlingual transfer), but once learners have begun to acquire parts of the new system, more and more intralingual transfer—generalization within the target language—is manifested. This of course follows logically from the tenets of learning theory. As learners progress in the second language, their previous experience and their existing subsumers begin to include structures within the target language itself.

Negative intralingual transfer, or overgeneralization, has already been illustrated in such utterances as "Does John can sing?" Other examples abound—utterances like "He goed," "I don't know what time is it," and "Il a tombé." Once again, the teacher or researcher cannot always be certain of the source of an apparent intralingual error, but repeated systematic observations of a learner's speech data will often remove the ambiguity of a single observation of an error.

The analysis of intralingual errors in a corpus of production data can become quite complex. For example, in Barry Taylor's (1975:95) analysis of English sentences produced by ESL learners, just the class of errors in producing the main verb following an auxiliary yielded nine different types of error:

1. Past tense form of verb following a modal
2. Present tense *-s* on a verb following a modal

3. *-ing* on a verb following a modal
4. *are* (for *be*) following *will*
5. Past tense form of verb following *do*
6. Present tense *-s* on a verb following *do*
7. *-ing* on a verb following *do*
8. Past tense form of a verb following *be* (inserted to replace a modal or *do*)
9. Present tense *-s* on a verb following *be* (inserted to replace a modal or *do*)

And of course these are limited to the particular data that Taylor was analyzing and are therefore not exhaustive within a grammatical category. Moreover, they pertain only to errors of overgeneralization, excluding another long list of categories of errors that he found attributable to interlingual transfer. Similarly, Jack C. Richards (1971:185–187) provided a list of typical English intralingual errors in the use of articles (see Table 9–1). These are not exhaustive either but only exemplary of some of the errors one commonly encounters in English learners from disparate native language backgrounds. Both Taylor's and Richards's lists are restricted to English, but clearly their counterparts exist in other languages.

Context of Learning

A third major source of error, though it overlaps both types of transfer, is the context of learning. "Context" refers, for example, to the classroom with its teacher and its materials in the case of school learning or the social situation in the case of untutored second language learning. In a classroom context the teacher or the textbook can lead the learner to make faulty hypotheses about the language, what Richards (1971) called "false concepts" and what Stenson (1974) termed "induced errors." Students often make errors because of a misleading explanation from the teacher, faulty presentation of a structure or word in a textbook, or even because of a pattern that was rotely memorized in a drill but not properly contextualized. Two vocabulary items presented contiguously—for example, *point at* and *point out*—might in later recall be confused simply because of the contiguity of presentation. Or a teacher may out of some ignorance provide incorrect information—not an uncommon occurrence—by way of a misleading definition, word, or grammatical generalization. Another manifestation of language learned in classroom contexts is the occasional tendency on the part of learners to give uncontracted and inappropriately formal forms of language. We have all experienced foreign learners whose "bookish" language gives them away as classroom language learners.

The social context of language acquisition will produce other types of errors. The sociolinguistic context of natural, untutored language acquisition

TABLE 8–2. Typical English Intralingual Errors in the Use of Articles (From Richards 1971:187)

1.	OMISSION OF *THE*	
(a)	before unique nouns	Sun is very hot Himalayas are . . .
(b)	before nouns of nationality	Spaniards and Arabs . . .
(c)	before nouns made particular in context	At the conclusion of article She goes to bazaar every day She is mother of that boy
(d)	before a noun modified by a participle	Solution given in this article
(e)	before superlatives	Richest person
(f)	before a noun modified by an *of-phrase*	Institute of Nuclear Physics
2.	*THE* USED INSTEAD OF ∅	
(a)	before proper names	The Shakespeare, the Sunday
(b)	before abstract nouns	The friendship, the nature, the science
(c)	before nouns behaving like abstract nouns	After the school, after the breakfast
(d)	before plural nouns	The complex structures are still developing
(e)	before *some*	The some knowledge
3.	*A* USED INSTEAD OF *THE*	
(a)	before superlatives	a worst, a best boy in the class
(b)	before unique nouns	a sun becomes red
4.	*A* INSTEAD OF ∅	
(a)	before a plural noun qualified by an adjective	a holy place, a human beings, a bad news
(b)	before uncountables	a gold, a work
(c)	before an adjective	. . . taken as a definite
5.	OMISSION OF *A*	
	before class nouns defined by adjectives	he was good boy he was brave man

can give rise to certain dialect acquisition that may itself be a source of error. Corder's term *idiosyncratic dialect* applies especially well here. For example, a Japanese immigrant lived in a predominantly Mexican-American area of a city in the United States, and his interlanguage was a rather interesting blend of Mexican-American English and the standard English to which he was exposed in the university.

Communication Strategies

In Chapter Five, communication strategies were defined and related to learning styles. Learners obviously use production strategies in order to enhance getting their messages across, but at times these techniques can themselves become a source of error. Once an ESL learner said, "Let us work for the well done of our country." While it exhibited a nice little twist of humor, the sentence had an incorrect approximation of the word "welfare." Likewise, word coinage, circumlocution, false cognates (from Tarone 1981), and prefabricated patterns can all be sources of error.

Fossilization

It is a common experience to witness in a learner's language various erroneous features that persist despite what is otherwise a fluent command of the language. This phenomenon is ordinarily manifested phonologically in "foreign accents" in the speech of many of those who have learned a second language after adolescence. We also commonly observe syntactic and lexical errors persisting in the speech of those who have otherwise learned the language quite well. The relatively permanent incorporation of incorrect linguistic forms into a person's second language competence has been referred to as *fossilization*. Interestingly enough, the internalization of incorrect forms takes place by means of the same learning processes as the internalization of correct forms, but we refer to the latter, of course, as "learning." So, fossilization should not be viewed as some sort of terminal illness, in spite of the forbidding metaphor that depicts an unchangeable situation, etched in the stone of time. A better metaphor might be something like "cryogenation"—the process of freezing matter at very low temperatures; we would then have a picture of a situation that could be reversed, given some warmth, of course!

How do items become fossilized? Until recently there was little attempt to grapple with the cognitive or affective dimensions of fossilization. But now fossilization can be seen as consistent with the laws of human learning. Vigil and Oller (1976) provided a formal account of fossilization as a factor of positive and negative affective and cognitive feedback. They noted that there are two kinds of information transmitted between sources (learners) and audiences (in this case, native speakers): information about the *affective* relationship between source and audience, and *cognitive* information—facts,

suppositions, beliefs. Affective information is primarily encoded in terms of kinesic mechanisms—gestures, tone of voice, facial expressions—while cognitive information is usually conveyed by means of linguistic devices—sounds, phrases, structures, discourse. The feedback learners get from their audience can be either positive, negative, or neutral. Illustrations of different types of feedback were given by Vigil and Oller (p. 286):

AFFECTIVE FEEDBACK

POSITIVE: "I like it" (more of the same)
NEUTRAL: "Waiting . . ." (reaction undecided)
NEGATIVE: "I don't like it" (try something else)

COGNITIVE FEEDBACK

POSITIVE: "I understand" (message and direction are clear)
NEUTRAL: "Still processing . . ." (undecided)
NEGATIVE: "I don't understand" (message and/or direction are not clear)

Various combinations of the two major types of feedback are possible. For example, an audience can indicate positive affective feedback ("I affirm you and value what you are trying to communicate") but give neutral or even negative cognitive feedback to indicate that the message itself is unclear. Vigil and Oller astutely observe that negative affective feedback, regardless of the degree of cognitive feedback, will likely result in the abortion of future attempts to communicate. This is, of course, consistent with the overriding affective nature of human interaction: if people are not at least affirmed and their communication valued, there is little reason for communication. So, one of the first requirements for meaningful communication, as has been pointed out in earlier chapters, is an affective affirmation of the other person.

Vigil and Oller's model thus holds that a positive affective response is imperative to the learner's desire to continue attempts to communicate. Cognitive feedback then determines the degree of internalization. Negative or neutral feedback in the cognitive dimension will, with the prerequisite positive affective feedback, encourage learners to "try again," to restate, to reformulate, or to draw a different hypothesis about a rule. Positive feedback in the cognitive dimension will result in reinforcement of the forms used and a conclusion on the part of learners that their speech is well-formed. Fossilized items, then, are those *un*grammatical or *in*correct items in the speech of a learner that gain first positive affective feedback ("I like it") then positive cognitive feedback ("I understand"), reinforcing an incorrect form of language. Learners with fossilized items have acquired them through the same positive feedback and reinforcement with which they acquired correct items.

We need to be careful in interpreting Vigil and Oller's model. While it is most helpful, for example, in understanding models of error correction as we shall see in the vignette to follow at the end of this chapter, there are flaws in attributing such importance to feedback alone. Selinker and Lamendella (1979) noted that Vigil and Oller's model relies on the notion of *extrinsic* feedback, and that there are other factors internal to the learner which affect fossilization. We are not merely a product of our environment. Internal motivating factors, the need for interaction with other people, and innate and universal factors could all account for various instances of fossilization. As teachers, we may, and rightly so, attach great importance to the feedback we give to students, but we must recognize that there are other forces at work in the process of internalizing a second language.

In the Classroom: Error Correction

As the focus of classroom instruction has shifted over the past few decades from an emphasis on language forms to attention to functional language within communicative contexts, the question of the place of error correction has become more and more important. The research on this issue (Long 1988, Lightbown and Spada 1990) suggests that form-focused instruction can indeed increase learner's levels of attainment, but that the "neanderthal" (Long 1988:136) practices (grammatical explanations, discussion of rules, rote practice) of bygone years is clearly not justified. Error treatment and focus on language forms appears to be most effective when incorporated into a communicative, learner-centered curriculum, and least effective when error correction is a dominant pedagogical feature, occupying the focal attention of students in the classroom.

How, then, might one judiciously approach error treatment in the communicative classroom? One of the keys, but not the only key, of course, to successful learning lies in the *feedback* that a learner receives from others, as we have just seen in the Vigil and Oller model above. Figure 8–2 metaphorically depicts what happens in that model.

The "green light" of the affective feedback mode allows the sender to continue attempting to get a message across; a "red light" causes the sender to abort such attempts. (The metaphorical nature of such a chart is evident in the fact that affective feedback does not precede cognitive feedback, as this chart may lead you to believe; both modes can take place simultaneously.) The traffic signal of cognitive feedback is the point at which error correction enters in. A green light here symbolizes noncorrective feedback that says "I understand your message." A red light symbolizes corrective feedback that takes on a myriad of possible forms (outlined below) and causes the learner to make some kind of alteration in production. To push the metaphor further, a yellow light could represent those various shades of color that are interpreted by the learner as falling somewhere in between a complete green light and a red light, causing the learner to adjust, to alter, to recycle back, to try again in some way. Note that fossilization may be the result of too many green lights when there should have been some yellow or red lights.

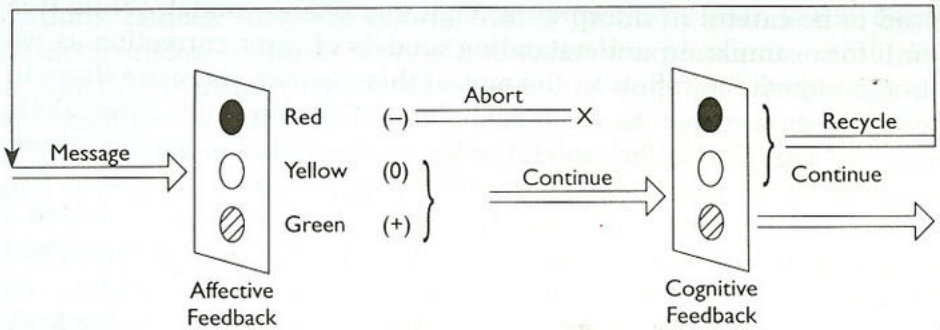

FIGURE 8–2. Affective and cognitive feedback

The most useful implication of Vigil and Oller's model for a theory of error correction is that cognitive feedback must be *optimal* in order to be effective. Too much negative cognitive feedback—a barrage of interruptions, corrections, and overt attention to malformations—often leads learners to shut off their attempts at communication. They perceive that so much is wrong with their production that there is little hope to get anything right. On the other hand, too much positive cognitive feedback—willingness of the teacher-hearer to let errors go uncorrected, to indicate understanding when understanding may not have occurred—serves to reinforce the errors of the speaker-learner. The result is the persistence, and perhaps the eventual fossilization, of such errors. The task of the teacher is to discern the optimal tension between positive and negative cognitive feedback: providing enough green lights to encourage continued communication, but not so many that crucial errors go unnoticed, and providing enough red lights to call attention to those crucial errors, but not so many that the learner is discouraged from attempting to speak at all.

We do well to recall at this point the application of Skinner's operant conditioning model of learning discussed in Chapter Four. The affective and cognitive modes of feedback are *reinforcers* to speakers' *responses*. As speakers perceive "positive" reinforcement, or the "green lights" of Figure 8–3, they will be led to internalize certain speech patterns. Corrective feedback can still be "positive" in the Skinnerian sense, as we shall see below. However, ignoring erroneous behavior has the effect of a positive reinforcer; therefore teachers must be very careful to discern the possible reinforcing consequences of neutral feedback. What we must avoid at all costs is the administration of *punitive* reinforcement, or, correction that is viewed by learners as an affective red light—devaluing, dehumanizing, or insulting their personhood.

Against this theoretical backdrop we can evaluate some possibilities of when and how to treat errors in the language classroom. Long (1977:288) suggested that the question of *when* to treat an error (that is, which errors to provide some sort of feedback on) has no simple answer.

> Having noticed an error, the first (and, I would argue, crucial) decision the teacher makes is whether or not to treat it at all. In order to make the decision the teacher may have recourse to factors with immediate, temporary bearing, such as the importance of the error to the current pedagogical focus

on the lesson, the teacher's perception of the chance of eliciting correct performance from the student if negative feedback is given, and so on. Consideration of these ephemeral factors may be preempted, however, by the teacher's beliefs (conscious or unconscious) as to what a language is and how a new one is learned. These beliefs may have been formed years before the lesson in question.

In a most practical and clearly written article on error correction, Hendrickson (1980) advised teachers to try to discern the difference between *global* and *local* errors, already described earlier in this chapter. Once a learner of English was describing a quaint old hotel in Europe and said, "There is a French widow in every bedroom." The local error is clearly, and humorously, recognized. Hendrickson recommended that local errors usually need not be corrected since the message is clear and correction might interrupt a learner in the flow of productive communication. Global errors need to be corrected in some way since the message may otherwise remain garbled. "I saw their department" is a sentence that would most likely need correcting if the hearer is confused about the final word in that sentence. Many utterances are not clearly global or local, and it is difficult to discern the necessity for corrective feedback. A learner once wrote, "The grammar is the basement of every language." While this witty little proclamation may indeed sound more like Chomsky than Chomsky does, it behooves the teacher to ascertain just what the learner meant here (no doubt "basis" rather than "basement"), and to provide some feedback to clarify the difference between the two. The bottom line is that we simply must not stifle our students' attempts at production by smothering them with corrective feedback.

The matter of *how* to correct errors gets exceedingly complex. Research on error correction methods is not at all conclusive on the most effective method or technique for error correction. It seems quite clear that students in the classroom generally want and expect errors to be corrected (Cathcart and Olsen 1976). However, some methods recommend no direct treatment of error at all (Krashen and Terrell 1983). In "natural," untutored environments nonnative speakers generally get corrected by native speakers on only a small percentage of errors that they make (Chun et al. 1982); native speakers will attend basically only to global errors and then usually not in the form of interruptions but at transition points in conversations (Day et al. 1984). Balancing these various perspectives, I think we can safely conclude that a sensitive and perceptive language teacher should make the language classroom a happy optimum between some of the overpoliteness of the real world and the expectations that learners bring with them to the classroom.

Error treatment options can be classified in a number of possible ways (see Gaies 1983, Long 1977), but one useful taxonomy is recommended by Bailey (1985), who drew from the work of Allwright (1975). Seven "basic options" are complemented by eight "possible features" within each option (Bailey 1985:111).

BASIC OPTIONS:

1. To treat or to ignore
2. To treat immediately or to delay

3. To transfer treatment [to, say, other learners] or not
4. To transfer to another individual, a subgroup, or the whole class
5. To return, or not, to original error maker after treatment
6. To permit other learners to initiate treatment
7. To test for the efficacy of the treatment

POSSIBLE FEATURES:

1. Fact of error indicated
2. Location indicated
3. Opportunity for new attempt given
4. Model provided
5. Error type indicated
6. Remedy indicated
7. Improvement indicated
8. Praise indicated

All of the basic options and features within each option are conceivably viable modes of error correction in the classroom. The teacher needs to develop the intuition, through experience and solid eclectic theoretical foundations, for ascertaining which option or combination of options is appropriate at given moments. Principles of optimal affective and cognitive feedback, of reinforcement theory, and of communicative language teaching, all combine to form those theoretical foundations.

At least one general conclusion that can be drawn from the study of errors in the interlanguage systems of learners is that learners are indeed creatively operating on a second language—constructing, either consciously or subconsciously, a system for understanding and producing utterances in the language. That system should not necessarily be treated as an imperfect system; it is such only insofar as native speakers compare their own knowledge of the language to that of the learners. It should rather be looked upon as a variable, dynamic, approximative system, reasonable to a great degree in the mind of the learners, albeit idiosyncratic. Learners are processing language on the basis of knowledge of their own interlanguage, which, as a system lying between two languages, ought not to have the value judgments of either language placed upon it. The teacher's task is to value learners, prize their attempts to communicate, and then to provide optimal feedback for the system to evolve in successive stages until learners are communicating meaningfully and unambiguously in the second language.

Suggested Readings

Celce-Murcia and Hawkins (1985) provide a readable summary of contrastive analysis, error analysis, and interlanguage.

For some of the earlier statements, pro and con, on the efficacy of the Contrastive Analysis Hypothesis, you might like to look at *Lado* (1957) and *Banathy, Trager, and Waddle* (1966), who are favorably inclined, and at *Wardhaugh* (1970), who offered a more balanced perspective.

The entire June, 1990 issue of the journal *Studies in Second Language Acquisition* (*White* 1990) was devoted to articles reflecting current research on Universal Grammar. *Birdsong* (1990) also reviewed issues in Universal Grammar.

A great deal of literature on error analysis appeared in the 1970s. Some anthologies are available which almost exclusively deal with topics in error analysis. The best of these are *Oller and Richards* (1973), *Richards* (1974), and *Hatch* (1978b). All three contain pivotal works in second language error analysis. *Corder* (1967), *Selinker* (1972), and *Nemser* (1971) wrote important articles which pioneered error and analysis efforts.

For a current overview of research on learner language, consult the review article by *James* (1990), a comprehensive look at where we have been and where we are in interlanguage research.

One of the themes in this chapter that underlies virtually every question about the role of error in the development of learner language is the effect of classroom instruction. An excellent overview of what we know about this effect is found in *Ellis's* (1990b) book. For a shorter, but nonetheless comprehensive review of the research, look at *Long* (1988).

For an excellent, practically oriented article on error correction in the classroom, consult *Hendrickson* (1980). *Bailey* (1985) summarized research on the effectiveness of error correction. *Lightbown and Spada* (1990) added some important empirical support for the positive effect of error correction on learners' interlanguage development.

Topics and Questions for Study and Discussion

1. Why do you think the Contrastive Analysis Hypothesis received such widespread attention and acceptance in the 1950s? Refer to concurrent linguistic, psychological, and methodological trends to support your response.
2. Try to mimic "typical" accents of a French, German, Japanese, or Latin American person trying to speak English. What features do you adopt in your mimicry? Can you identify those features as a product of interference? In your contact with second language learners try to identify features of speech that are attributable to interference from the native language.
3. Using Whitman's four procedures of contrastive analysis, try to perform a contrastive analysis of a segment of your second language with the corresponding segments in English. The most practical seg-

ment might be the consonant systems of the two languages, or the vowel systems. Grammatical systems could be attempted if just one small slice of the total language pie is carefully defined. Use the six categories described by Prator in order to arrive at a hierarchy of difficulty.

4. Review the *strong* and *weak* versions of the Contrastive Analysis hypothesis. Do you agree with Oller that there should be a *moderate* version? Can you think of instances in learning other skills and subject matter in which this moderate principle holds true?
5. In Chapter Two (page 36), some grammatical universals were listed. Look again at that list and try to think of examples of each that apply both to English and any other language you know. Do the universals hold?
6. Why must the study of the speech of learners inevitably be the study of the *errors* of learners? How does "performance analysis"—in theory, at least—attempt to overcome negative connotations of error analysis? What are some of those negative connotations or dangers?
7. What is the difference between a mistake and an error? How can a foreign language teacher tell the difference between the two in the speech of learners? Why is it important to distinguish between mistakes and errors?
8. What did Corder mean by *overt* and *covert* errors? Why is the terminology misleading? Can you think of examples of common sentence-level and discourse-level errors in your foreign language?
9. If possible, record a few minutes of the conversation of a second language learner. Then select a few sentences that contain errors and transcribe those sentences. Perform an error analysis of those sentences using Corder's procedures for identifying errors in second language speech. If you wish to record and transcribe even more speech, some insights could be gained from the careful examination of another learner's oral production in a conversation. Certain interlanguage rules might be inferred from cross-referencing the data.
10. The learning of a third language is given passing reference on page 214. Cite a specific example of third language learning. What kinds of interlingual transfer might occur? What other factors are present in the context that would need to be considered?
11. Taylor's and Richards' lists of errors are restricted to subsystems of English. Attempt a listing of typical intralingual errors in a language other than English. Share this list with others and try to arrive at a consensus.

12. Fossilization and learning are actually the result of the same cognitive processes at work. Explain this. Then, try to think of factors other than "feedback" that could cause or contribute to fossilization. Once a language form is fossilized, can it ever be corrected?
13. Observe a language class or conversation group and take note of instances of teacher or peer correction of errors. Using Bailey's (1985) list of error correction options (pages 221–222), classify the corrections that were made. Were all corrections equally effective? Did corrections facilitate or impede the "flow" of communication? Justify your judgments.