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The Natural Order Hypothesis vs. Foreign Language Teaching

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The Natural Order Hypothesis predicts that features of L1 (first language) grammar are learned by children in a sequence predetermined by innate universal processes of acquisition. The possibility that a natural order influences second language acquisition has received considerable interest (see, for example, Bailey, Madden and Krashen 1974, Dulay and Burt 1974, Dulay, Burt and Krashen 1982). Also, the distinction hypothesized between L2 learning (conscious learning) and acquisition (subconscious learning) has received rather wide interest (cf. Krashen 1976, 1981, 1982).

If the Natural Order Hypothesis is assumed valid for a second language, and the learning/acquisition distinction taken as a dichotomy where learning does not contribute to acquisition, then the sum total of these two positions can militate against planned, formal classroom practice where the order of L2 material is not determined by a postulated universally natural order and where initial learning is typically conscious. (But cf., for example, Horner 1987 for a suggestion of a transfer between learned and acquired knowledge and Schmidt (forthcoming) on the role of consciousness; on the question of the influence of instruction on language learning, see also the volume Chandron 1988).

In fact it has been suggested that formal instruction is detrimental to, or somehow interferes with, acquisition of a new language. This claim is found, for example, in Felix (1981), which will be reviewed here, and its data reinterpreted, in the hope of showing that Felix's conclusions arise from a bias towards the Natural Order Hypothesis and that universal processes of acquisition are not necessarily evident in the data.

Before doing so, it will be necessary to offer an alternative view which will cover Felix's data as well as many features of other cases of L2 learning (very young ages; informal or naturalistic learning) as, for example, in Cazden, Cancino, Rosansky and Schumann (1975) and in the discussion in Hatch (1983). It is hoped that the suggestions here will also strike language teachers as more familiar and realistic. That view is summarized in three

statements—which can be taken by researchers as hypotheses to be tested.

Three Hypotheses

Hypothesis (1): In the acquisition of L2 expressions (words and multiple-word segments), meaning and form develop somewhat independently, but interacting in a way by which increases in proficiency with form contribute to better understanding of meaning.

Learning words and whole sequences of words (all to be referred to as “expressions” here) characterizes especially the first steps in L2 learning and is a prerequisite to rule-governed innovation (to be considered below). Learning an expression entails grasping its meaning fully and becoming thoroughly familiar with its form (its phonology, morphology, and, for a multiple-word sequence, its syntax). Successful acquisition of meaning is manifested in the *appropriate use* of an expression, while familiarity with form means (here) *proficient use*, ranging from a recognition ability (in listening, primarily) up to an articulate and correct fluency in speaking. Recognition, for its part, can range from a mere identifying of the expression as a unit, up to a detailed perception of its internal structure; speaking can range from faulty to fluent, etc.

That meaning and form are acquired somewhat each at its own pace is seen in situations like the following, often noted among L2 students:

(1) An expression may be understood and fluently used while its internal grammatical structure is still unnoticed (as in cases of word morphology and phrases heard often).

(2) The form of an expression may be very familiar—to the point of an articulate productive fluency even—while its meaning is only vaguely (or even erroneously) understood, as indicated by inappropriate uses of the expression.

(3) On the other hand, the meaning of an expression may be very well understood, whereas familiarity with its form is still restricted to a listening or reading proficiency.

It can be said that L1 learners show developments similar to (1) and (2)—as is described in, for example, Bowerman (1982) and Chapman (1978); see also discussion by Gathercole (1988). However, the L1/L2 similarities here need not imply common processes of acquisition as according to the Natural Order Hypothesis. In the case of L2, (1), (2) and (3) can be

due to *planned* formal instruction. Fluency prior to a clear grasp of meaning or usage may result from audiolingual programs, whereas listening or reading approaches lead to a delay in full productive fluency—in some cases an intended delay.

The suggestion that increased proficiency leads to better understanding of meaning is based on informal experiments, personal experience, studies in L1 acquisition (cf. especially Clark 1982), and cases of generally using expressions before understanding them well (cf. Blank 1974) or while still confusing them in the speech of others (cf., for example, Tyack & Ingram 1977, p. 219, and discussion by Gathercole 1988 p. 410), all suggesting some role for speaking in the development of understanding.

To specify the hypothesis further, the following, for example, are ways in which proficiency is expected to contribute to knowledge of meaning: (1) Producing an expression orally, even outside of a meaningful context, raises the ability to recognize the same expression when heard in meaningful contexts, which help clarify the meaning of the expression itself. (2) Using an expression creatively (in a new context) in conversation with a proficient speaker brings a reaction which contributes to understanding appropriate usage (and thereby meaning). (3) The ability to recognize the form of sentences in a discourse heard for the first time and at a natural speed is required for associating their linguistic meanings with other levels of meaning (pragmatic or functional meanings, for example).

Hypothesis (2): In creating new sentences, L2 students deal in vocabulary and familiar phrasings, first of all; and with rules only insofar as necessary.

Many researchers agree that L2 learners construct a personalized grammar to cover the data of language they are exposed to. But to what extent does knowledge of grammar actually enter into a student's performance? It is a familiar impression that L2 learners will learn multiple-word expressions well enough to modify their wording a bit for use in speaking: *I'll have the roast beef* readily becomes *I'll have the steak*. Common sense dictates where content vocabulary should be replaceable, and innovation in this sense need not reflect knowledge of L2 grammar—much less knowledge of *all* grammatical features applying in the new sentence. *I won't have the N* may indicate a knowledge of the rules of negation, or, on the other hand, merely a knowledge of how to negate *will*. Even if we add to this the ability to negate in many other cases as well, it is not clear to the researcher that all are

instances of more general rules known by the learner. On the contrary, there is the impression that students of a foreign language operate with quite *ad hoc* rules, staying very close to the familiar word sequences already learned in, when making up new sentences—as seen when, for example a rule is applied readily and correctly in one instance but not in another. Familiarity through listening and speaking will leave automatic, as it were, a sequence like *he + is* (vs. *are*), often used. But what will come of *None of the hobbits ... is? are?* We expect wavering and some errors. Theoretically, a common rule applies. In practice, successful performance will come of experience with the very phrases in question—and we may doubt about the extent to which the theoretical rule is known. (It is supposed, of course, that L2 development in a learner leads in the direction of more objective and more abstract rules.)

Insofar as it is true that students' innovations cannot be taken as a direct indication of grammatical structures known, the order of grammar development will be very difficult to verify. Conversely, development should not be measured in rules alone. Knowledge of vocabulary and unit-like word sequences is a huge area of L2 which may out-live grammar as a problem in approaching proficiency.

Though we cannot identify precisely the rules students are operating with, an “order of development” will be seen (as reflected in students' speech) in the following very general terms: (1) a growing number of words and word sequences (expressions); (2) innovative modifications of these expressions; (3) innovative sequencing of the expressions in phrases and sentences—where evidence of (1) will be found in correspondence between students' speech and L2 they have been exposed to; and evidence of (2) and (3) in divergence between L2 heard (or read) and students' utterances. Factors influencing the order of acquisition within (1), (2) and (3) are suggested in the third hypothesis.

Hypothesis (3): The order of acquiring L2 expressions and grammatical rules is especially influenced by their perceptibility, which is enhanced by familiarity with L2 and which acts to counter L1 interference.

This statement refers to three crucial factors in L2 acquisition: perceptual salience, L1 negative influence, and previously learned areas of L2. These three are related by saying that objective perceptibility is conditioned by personal L1 and L2 experience and knowledge—one aspect of the general human tendency to perceive anything (the real world, a foreign culture,

etc.) in terms of what is personally familiar (cf. Sell 1988a). For example, the phonology of utterances heard will be perceived with a bias towards L1 phonology until L2 phonology grows more familiar. But familiarization itself is dependent on *accurate* perception of L2 phonology. L1 bias will tend to present repeated *inaccurate* perception, and, to the extent it does, listening will not contribute to acquisition of phonology. Conversely, as L2 familiarity develops, L1 interference recedes (discussed in Sell 1988b).

More generally, acquisition is seen here as commencing in perception: the perception of word boundaries and word sequences for acquisition of vocabulary, and perception of grammatical and phonological features as expressed in the wording of utterances heard. In this sense, acquisition of a feature of L2 grammar is quite on a parallel with vocabulary learning, which relies upon experience with a word in various contexts. The grammar of negation, for example, will find expression in various ways: *no, not, n't, never, neither, nor, non, un-, in-, etc.*, and according to rules of distribution within sentence word order or within words themselves. Hearing these signals *accurately* in many utterances is the first condition for generalizing on their distribution and for eventual acquisition of rules to guide productive innovation.

According to this view of perceptibility as conditioned by both L1 and L2, it is predicted that, on the whole (i.e. apart from otherwise targeted instruction and individual-specific factors like motivation), students' speech will show, for example, the following sequences of development:

(1) Innovation with a rule will be preceded by use of expressions in which the rule applies; this is because familiarity through perception brings learning of expressions directly and learning of rules only indirectly, *through* expressions.

(2) Where a meaning can be signaled in various ways, the more salient signals will tend to be used first—for example, intonation before word order (e.g. in *yes/no* questions); free morphemes before bound morphemes (e.g. *not important* before *unimportant*; cf. also Krashen 1977). This of course refers to cases of innovation, discounting repetitive use of an expression which happens to contain a less salient signal.

More directly in favor of formal L2 instruction, the following are also predicted (or easily observed by teachers and researchers):

(3) Without special training, short and typically unstressed words (e.g. many function words in English) will tend to be omitted, for they will have been perceived less in many of the utterances heard.

(4) Without special training, reduced forms of pronunciation (e.g. in English) will remain a long-term problem of recognition and production.

An Example Study

Felix (1981) describes the performance of 10- to 11-year-old German children in an audiolingual English program and concludes that formal instruction operates in a negative way, in opposition to a natural human ability to learn languages. The course was geared to control the students' speaking closely, allowing virtually no spontaneous talk—an extreme version of audiolingualism, it would appear. (For convenience, these students will be referred to as "students"; L1 learners and L2 learners in naturalistic (uncontrolled) situations will be called "learners"—though without the intention of accepting a dichotomy which Felix seems to subscribe to.) The study set out to determine (1) whether students' utterances in a controlled classroom situation betray structural similarities with L2 learners which suggest similar acquisition processes (in spite of controls); (2) whether there are sequences in structures learned that indicate a similar development between the two types of learners; and (3) whether there is evidence of systematic language development apart from controls imposed by the teacher. The students' speech is studied for four areas of English: negation, interrogation, sentence types, and pronouns; data is provided and interpreted by Felix. In the following summary, my own reinterpretations of the data are added.

Negation

In the area of sentence negation, it is observed that L1 and L2 learners acquire "*no* before *not* before *do + not*"—a similar development also noted in some other languages. Furthermore, when learners first begin to use negatives with sentences, they place the negative operator outside the sentence, generally before the sentence. In Felix's group, students

quickly learned to use *yes* and *no* appropriately but, for two months, committed serious errors in short answers with elliptic sentences (ranging from 43% of errors in the first week):

Teacher: Is it a dog?

Student: Yes, it isn't.

Teacher: Is there a seat for Britta?

Student: Yes, there isn't.

Teacher: Is there a flag in Peter's room?

Student: No, there is.

Teacher: Can you see a sofa in Peter's room?

Student: No, I can.

Since elliptic sentences develop relatively late for L1 and L2 learners, Felix feels that the students were "forced to learn" the structures prematurely. As a result, they tended to avoid these structures when they could, and when asked to use them, selected at random "any one structure from the relevant repertoire."

Reinterpretation: If we look more closely, the replies are not random. The majority of them were correct from the first week (this alone is remarkable); *yes* and *no*, perceptually salient (easily heard and therefore learned early) are accurately used; the word following *yes* or *no* occurs in the question and can be retained by the students momentarily, and it is more easily *perceived* for occurring early in the question. Only the final word or contraction is mistaken—a problem that correlates with an objective perceptual difficulty with learning contractions (e.g. *is it* and *isn't* can be confused). Even still, the elliptic sentence following *yes* or *no* is well formed in itself. Obviously the students had practiced and learned these forms; but their understanding of meaning lagged behind. The errors need not be ascribed to natural learning processes; they arise from an overload of too many English language problems at once. (At the same time, this close familiarity with form will enable the students to recognize the expressions when they come up in listening material; their usage will be noted, and their meaning better understood with some time.)

It is next pointed out that the students tended to use *no* instead of *not* or *n't* (*It's no my comb*). This suggests to Felix the operation of natural acquisitional processes, since the error could not have arisen from habit formation as there was no such model for the students

to hear.

Reinterpretation: *No* is more easily perceived than *n't* (it contains a vowel; it is used in isolation or at the start of utterances; it often receives stress) and is therefore more familiar and easily called up for speaking. The students have innovated erroneously, combining two or three familiar expressions (expressions, not structures: *no, It's, my comb*) because of their *familiarity*, not from the dictates of inborn processes.

In the case of main verb negation, the students were asked to reply in the negative to questions like *Does Mary eat apples?—Mary doesn't eat apples*. Errors were of the following type:

- (1) Doesn't she eat apples.
- (2) Doesn't the people watch the lion
- (3) Doesn't I drink a cup of tea.
- (4) Don't my father smoke the pipe.

where negative statements are intended: *She doesn't eat apples*, etc. Felix sees these errors as part of a natural developmental tendency to place the negative morpheme outside (before) a sentence, suggesting also that *don't* and *doesn't* are taken by the students as free variants of *not* or *no* rather than compositions of *do/does* and *not* (as is said may be the case for L2 learners).

Reinterpretation: Word order rules for answers (*She doesn't...*) gave way to the questions just heard (*Does she...*), the word order of which is still fresh in the memory – actual words and utterances heard are directly perceptible; word order rules are not. (It is a wonder that the teacher let this exercise continue. Quick substitution drills could have preceded so as to familiarize the students with the word order, rather than confuse them with question word order from the start.)

Interrogation

Next, on the development of interrogatives, tendencies common to L1 and L2 learners are pointed out: the use of intonation alone to mark questions at first (*You want eat?*) and omission of word order inversion at first (*What she is doing?*). Since some of the students'

early questions (21% of yes/no questions; 43% of WH questions), showed the same type of errors, Felix implies that these errors, too, are due to similar developmental processes.

Reinterpretation: Everything here correlates with *perception* of form as influencing the order of acquisition. Intonation is one of the most easily perceived aspects of a foreign language. There must have been modeling of yes/no questions for the students to hear; the intonation would quickly be noted, and subsequently used, by the students. The perception of word order, like everything we experience, will be influenced by what is familiar: in this case, by what has already been practiced in the language course, i.e. the word order of statements: familiar word order is used after the WH word (*What + they are picking?*). (Seen positively the errors indicate that formal training has succeeded in familiarizing the students with statement word order; now they need practice with questions.)

Sentence types

The third area studied showed that for five weeks the students confused three sentence types in 24% of their answers:

- copular sentences: It's a N.
The knife is on the tray.
- existential there: There's a N in NP.
- auxiliary can: I can see Mike.

as shown by the examples:

- Teacher: Can you see a sofa in Peter's room?
- Student: Yes, there is.
- Teacher: Is there a sofa in Peter's room?
- Student: Yes, I can.
- Teacher: Is there a knife on Bill's tray?
- Student: Yes, it is.
- Teacher: Is it a blue flag?
- Student: No, I can't.

Felix speculates that the strategy students resorted to was a "behavioristic trial and error

procedure” since their answers are “not guided by any structural knowledge.”

Reinterpretation: In this case, the replies are correctly formulated in themselves (*Yes* + affirmative), but used inappropriately as answers to the questions. This would occur if the wording of the questions were not yet familiar enough to be perceived in detail—which is altogether likely if the students had had no opportunity to *produce* questions like these in speaking formats (drills of substitution or transformation, for example), as we can assume was the case. Still, it is interesting that, over the five first weeks, even in this case formal instruction resulted in 76% correct answers.

Pronouns

The fourth issue dealt with is pronouns. It is reported that typical errors by L2 learners are (1) using one pronoun to replace others not yet learned, or (2) ignoring formal distinctions of number, gender, case, etc. The L2 students, for their part, are said to have used all pronouns indiscriminately for the first three weeks. It is supposed that the students were “forced” to use pronouns “at a time when... they were not yet ready for them”. As further evidence of this, subsequent avoidance of pronouns is noted.

Reinterpretation: Pronouns are simple in form but abstract (widely applying) in meaning, and considerable exposure and experience is needed to arrive at their appropriate usage. But the use of pronouns does not depend on prior development of any specific structures, morphological or syntactic. Rather, well planned instruction will see to a more gradual build-up of the pronouns themselves. Any student can learn to understand and use “*I*” in a brief sentence the very first day of class, and *you* in a later class, etc. It was lack of planning in this way that led to trying to present all personal and possessive pronouns to 10- and 11-year-olds in three weeks. There is no “time” when students are “ready for” or “not ready for” pronouns as if they arrived in some monolithic way, and one is not “forcing” students when practicing only *I/you* in meaningful exchanges.

A Natural Order of Instruction

Learning the meaning and form of vocabulary and multiple-word expressions (i.e. becoming proficient in their fluent, accurate and appropriate use) cannot be severed from exercising the natural language activities of speaking and listening, nor from creative language use in realistic ways. Grasping fully the meaning of a phrase or a sentence entails sooner or later, a grasp of its grammatical structure; and modifying it or adding to it to create new sentences requires an even wider knowledge of L2 grammar. Further, creating language appropriate to the situation, which communicates intended meanings acceptably, will be, as it were, a goal of learning L2.

All these areas interact, but each can be focused on in turn in teaching. Learning, for example, the meaning and form of expressions cannot be done absolutely simultaneously. In either listening or speaking, attention may be focused on content, or sentence meaning, or features of grammar—hardly on two or three areas at once.

On the other hand, neither meaning nor form can be left unattended for long periods of time. An exaggerated emphasis on listening as a methodology, for example, to the exclusion of speaking and innovation for months will tend to leave only a nebulous familiarity with much of the grammar while familiarizing the students with vocabulary usage and meaning. Conversely, extreme (behavioristic) versions of audiolingual drill sends structural familiarity too far in advance of learning meaning and accepted usage.

Common sense must reign of course. Within the flexibility of ways to learn form and meaning and rules for innovation, efficient formats can be planned. For this it is practical to specify stages which may interact for L2 acquisition, as a guide in planning instruction.

On the basis of the three hypotheses above, and in the expectation that they will hold up under a wide range of data, the following assumptions are made which affect planning L2 instruction:

Assumption (1): Rules must be exercised productively to be acquired fully. This statement is somewhat at odds with the Comprehension Approach to L2 acquisition and with Krashen's hypotheses. For example, Winitz (1981) maintains that much of L2 grammar must be understood (through extensive listening comprehension) before specific grammatical features can be used correctly in speaking—apparently assuming that rules are being learned when content is being understood. Newmark (1981) argues against speaking as the basic

method for learning since speaking never exceeds competence and will not in itself result in learning. That may be the case if the knowledge of a rule is seen only as present-or-absent, with no shades or stages between—as reflected in stages of proficiency, for example. But in fact it is not all that clear yet just what “knowledge of a rule” means. In any case, it is assumed here that a learner who cannot apply a rule correctly in his own speaking does not “know” the rule fully. A receptive (or recognition) ability is not a full acquisition.

Further, it is assumed here that productive and creative use of rules requires *practice*: applying rules in innovating speaking.

Assumption (2): A receptive familiarity with rule application should precede productive innovation. It is taken for granted that a “natural order” from receptive to productive proficiency, applies for any given rule to be acquired. And within that order, both receptive and productive abilities will include a progression leading to wider innovation. That is, in the development of receptive proficiency, rule application is first recognized in expressions already familiar and later in new expressions heard; and, to repeat a point made earlier in the paper, a rule is found to occur in familiar expressions being used by the learner before it is used for innovation.

This may seem obvious. However, it should be noted that this view does not contradict cases of production preceding comprehension in L1 acquisition studies mentioned above. In those cases, production of *expressions* was said to precede understanding or recognition of their grammar.

Assumption (3): In the case of adult learners, consciously noting the grammar and phonology of utterances heard accelerates the acquisition of L2 grammar and phonology in general. In other words, conscious learning is recommended—in the sense of attending closely to utterances heard (certainly not in the sense of memorizing rules or generalizations). All the reasons for this assumption cannot be gone into within the scope of this paper. However, it can be mentioned that very proficient L2 users who began their study as adults can trace much of their history as passing from conscious attempts to use L2 vocabulary and grammar to their current unconscious use of both. And, in any case, the view that conscious learning does not transfer to unconscious acquisition has yet to be demonstrated.

To offer more concrete suggestions on L2 instruction planning, the following sequence

of learning activities is one which foments a balanced development of meaning and form acquisition, leading to a knowledge of rules for creative speaking. (Many examples of the formats mentioned, and further explanation, are found in Sell 1987a, 1987b, 1988a, 1988b and 1988c.)

(1) Listening for content: This is the most natural of listening activities in the sense that it is the usual way of listening to the native language, when attention is typically focused on content, not directly on the language used. It is the activity recommended by the Comprehension Approach and by Krashen and others as the basic way of acquiring L2 (where the language heard is sometimes given the unfortunate label “input”).

(2) Perception of wording: The learners listen for the meaning of each sentence (without necessarily trying to remember content) by attending closely to the words used: their internal composition and their sequencing into phrases. This task is most challenging and extremely educational. It is, however, not concrete enough for some learners and may be specified more closely with accompanying writing tasks like partial dictations—for a selection of sentences from a discourse.

(3) Perception of form: The learners listen for features of phonology, morphology and syntax according to tasks which target specific problems of perception, e.g. suprasegmentals, grammatical signals within content vocabulary, the head word in each sentence-subject NP, etc.

(4) Vocal manipulation: The learners practice modifying phrases and short sentences which are already closely familiar from (3), as a first step towards raising the expressions and the rules to a productive proficiency. Audiolingual techniques (substitution, transformation, etc.), if uncoupled from behavioristic psychology, can be limited to the goal of fostering a correct, articulate fluency, at the phrase level especially—relying on other formats (e.g. communicative exchanges) for full-sentence innovation.

(5) Innovative speaking, and conversing in a natural manner which is both linguistically and socially acceptable, are important areas of practice in a language program that naturally follow upon the foregoing—but beyond the topics of this paper. However, it is suggested that errors resulting from student’s creations be kept to a reasonable minimum. Though errors are interesting to some researchers who try to trace L2 development, actually committing

an error is not a contribution to knowledge of L2, much less to proficiency.

Of the five stages outlined, (1), (4) and (5) are familiar in language teaching. (2) and (3) are suggested as extremely helpful in the transition from listening comprehension to speaking, since the sentences used for initial speaking practice have thereby been thoroughly perceived in their wording and, insofar as is expedient, in their grammar. Note also that the perception of wording of (2) leads to perception of grammatical form of (3) somewhat as data (accurately heard) lead to generalizations—so that this perception training fosters faster development of L2 knowledge as well as proficiency.

The sequence outlined in five stages is intended as a flexible suggestion, open to an eclectic approach (though an organized one) which accommodates a wide range of methods or procedures. It is open to a greater or lesser delay in speaking practice, for example, while the tasks of (2) and (3) offer highly active listening during that delay. On the other hand, different stages can be incorporated into a single class period for a motivating variety of exercises.

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