INTERLANGUAGE

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L'article démontre que nous trouvons les facteurs pertinents du processus de l'apprentissage de la deuxième langue grâce à un examen comparé de trois systèmes linguistiques productifs, lesquels sont (1) la langue maternelle de l'élève, (2) la compétence de l'élève dans la deuxième langue, sa langue intermédiaire *(Interlanguage)*, et (3) le système de la langue cible. Finalement les processus sont décrits qui sont responsables de la différence entre la langue intermédiaire de l'élève et sa compétence voulue dans la langue cible.

Dieser Artikel stellt klar, daß wir die für den Prozeß des Zweitspracherwerbs relevanten Fakten durch die vergleichende Untersuchung von drei produktiven Sprachsystemen erhalten. Diese sind (1) die Muttersprache des Lernenden, (2) die fremdsprachliche Kompetenz des Lernenden, seine Zwischensprache *(Interlanguage)*, (3) das System der Fremdsprache.

Abschließend werden die Prozesse beschrieben, die für die Differenz zwischen der Zwischensprache des Lernenden und der angestrebten Fremdsprachenkompetenz verantwortlich sind.

1. *Introduction*

This paper[1] discusses some theoretical preliminaries for researchers concerned with the linguistic aspects of the psychology of second-language learning. These theoretical preliminaries are important because without them it is virtually impossible to decide what data are relevant to a psycholinguistic theory of second-language learning.

It is also important to distinguish between a teaching perspective and a learning one. As regards the 'teaching' perspective, one might very well write a methodology paper which would relate desired output to known inputs in a principled way, prescribing what has to be done by the teacher in order to help the learner achieve learning. As regards the 'learning' perspective, one might very well write a paper describing the process of attempted learning of a second language, successful or not: teaching, textbooks, and other 'external aids' would constitute one, but only one, important set of relevant variables.

In distinguishing between the two perspectives,[2] claims about the internal structures and processes of the learning organism take on a very secondary character in the teaching perspective; such claims may not even be desirable here. But such claims do provide the *raison d'être* for viewing second-language learning from the learning perspective. This paper is written from the learning perspective, regardless of one's failure or success in the attempted learning of a second language.

In the learning perspective, what would constitute the psychologically-relevant data of second-language learning?[3] My own position is that such data would be those behavioral events which would lead to an understanding of the psycholinguistic structures and processes underlying 'attempted meaningful performance' in a second language. The term 'meaningful performance situation' will be used here to refer to the situation where an 'adult'[4] attempts to express meanings, which he may already have, in a language which he is in the process of learning. Since performance of drills in a second-language classroom is, by definition, not meaningful performance, it follows that from a learning perspective, such performance is, in the long run, of minor interest. Also, behavior which occurs in experiments using nonsense syllables fits into the same category and for the same reason. Thus, data resulting from these latter behavioral situations are of doubtful relevancy to meaningful performance situations, and thus to a theory of second-language learning.

It has long seemed to me that one of our greatest difficulties in establishing a psychology of second-language learning which is relevant to the way people actually learn second languages, has been our inability to identify unambiguously the phenomena we wish to study. Out of the great conglomeration

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2 It is not unfair to say that almost all of the vast literature attempting to relate psycholinguistics to second-language learning, whether produced by linguists or psychologists, is characterized by confusion between 'learning' a second language and 'teaching' a second language. (See also Mackey in Jakobovits, 1970, p. IX.). This confusion applies as well to almost all discussions on the topic one hears. For example, one might hear the term 'psychology of second-language teaching' and not know whether the speaker is referring to what the teacher should do, what the learner should do, or both. This terminological confusion makes one regularly uncertain as to what is being claimed.

3 The answer to this question is not obvious since it is well known that theoretical considerations help point the way to relevant data. See, for example, Fodor (1968, p. 48): "... how we count behaviors and what is available as a description depends in part on what conceptual equipment our theories provide ..."

4 'Adult' is defined as being over the age of 12. This notion is derived from Lenneberg (1967, e.g. pp. 156, 176) who claims that after the onset of puberty, it is difficult to master the pronunciation of a second language since a "critical" period in brain maturation has been passed, and "... language development tends to 'freeze'" (ibid, 156).

of second-language behavioral events, what criteria and constructs should be used to establish the class of those events which are to count as relevant in theory construction? One set of these behavioral events which has elicited considerable interest is the regular reappearance in second-language performance of linguistic phenomena which were thought to be eradicated in the performance of the learner. A correct understanding of this phenomenon leads to the postulation of certain theoretical constructs, many of which have been set up to deal with other problems in the field. But they also help clarify the phenomenon under discussion. These constructs, in turn, give us a framework within which we can begin to isolate the psychologically-relevant data of second-language learning. The new perspective which an examination of this phenomenon gives us is thus very helpful both in an identification of relevant data and in the formulation of a psycholinguistic theory of second-language learning. The main motivation for this paper is the belief that it is particularly in this area that progress can be made at this time.

2. 'Interlanguage' and latent structures

Relevant behavioral events in a psychology of second-language learning should be made identifiable with the aid of theoretical constructs which assume the major features of the psychological structure of an adult whenever he attempts to understand second-language sentences or to produce them. If, in a psychology of second-language learning, our goal is explanation of some important aspects of this psychological structure, then it seems to me that we are concerned in large part with how bilinguals make what Weinreich (1953, p. 7) has called 'interlingual identifications'. In his book *Languages in Contact,* Weinreich discusses — though briefly — the practical need for assuming in studies of bilingualism that such identifications as that of a phoncme in two languages, or that of a grammatical relationship in two languages, or that of a semantic feature in two languages, have been made by the individual in question in a language contact situation. Although Weinreich takes up many linguistic and some psychological questions, he leaves completely open questions regarding the *psychological structure* within which we assume 'interlingual identifications' exist; we assume that there is such a *psychological structure* and that it is *latent* in the brain, activated when one attempts to learn a second language.

The closest thing in the literature to the concept *latent psychological structure* is the concept of *latent language structure* (Lenneberg, 1967, especially pp. 374—379) which, according to Lenneberg, (a) is an already formulated arrangement in the brain, (b) is the biological counterpart to universal gram-

mar, and (c) is transformed by the infant into the *realized structure* of a par-
ticular grammar in accordance with certain maturational stages. For the pur-
poses of this paper, I will assume the existence of the latent language structure
described by Lenneberg; I shall further assume that there exists in the brain
an already formulated arrangement which for most people is different from
and exists in addition to Lenneberg's latent language structure. It is important
to state that with the latent structure described in this paper as compared to
Lenneberg's, there is no genetic time table;[5] there is no direct counterpart to
any grammatical concept such as 'universal grammar'; there is no guarantee
that this latent structure will be activated at all; there is no guarantee that
the latent structure will be 'realized' into the actual structure of any natural
language (i.e. there is no guarantee that attempted learning will prove suc-
cessful), and there is every possibility that an overlapping exists between this
latent language acquisition structure and other intellectual structures.

The crucial assumption we are making here is that those adults who 'suc-
ceed' in learning a second language so that they achieve native-speaker
'competence' have somehow reactivated the *latent language structure* which
Lenneberg describes. This absolute success in a second language affects, as
we know from observation, a small percentage of learners — perhaps a
mere 5 %. It follows from this assumption that this 5 % go through very differ-
ent psycholinguistic processes than do most second-language learners and that
these successful learners may be safely ignored — in a counterfactual sense[6] —
for the purposes of establishing the constructs which point to the psycholog-
ically-relevant data pertinent to most second-language learners. Regarding
the study of the latter group of learners (i. e. the vast majority of second-
language learners who fail to achieve native-speaker competence), the notion
of 'attempted learning' is independent of and logically prior to the notion of
'successful learning'. In this paper, we will focus on attempted learning by
this group of learners, successful or not, and will assume that they activate a
different, though still genetically determined structure (referred to here as
the *latent psychological structure*) whenever they attempt to produce a sen-
tence in the second-language, that is whenever they attempt to express mean-
ings, which they may already have, in a language which they are in the
process of learning.

This series of assumptions must be made, I think, because the second-lan-
guage learner who actually achieves native-speaker competence cannot pos-

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5 First pointed out by Harold Edwards.

6 See Lawler and Selinker (forthcoming) where the relevance of counterfactuals to a theory
   of second-language learning is taken up.

sibly have been taught this competence, since linguists are daily — in almost every generative study — discovering new and fundamental facts about particular languages. Successful learners, in order to achieve this native-speaker competence, must have acquired these facts (and most probably important principles of language organization) *without* having explicitly been taught them.[7]

Regarding the ideal second-language learner who will *not* 'succeed' (in the absolute sense described above) and who is thus representative of the vast majority of second-language learners, we can idealize that from the beginning of his study of a second language, he has his attention focused upon one norm of the language whose sentences he is attempting to produce. With this statement, we have idealized the picture we wish to sketch in the following ways:[8] the generally accepted notion 'target language' (TL), i.e. the second-language the learner is attempting to learn, is here restricted to mean that there is only one norm of one dialect within the interlingual focus of attention of the learner. Furthermore, we focus our analytical attention upon *the only observable data to which we can relate theoretical predictions:*[9] the utterances

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7 Chomsky (1969, p. 68) expresses a very similar view:

"... it must be recognized that one does not learn the grammatical structure of a second language through 'explanation and instruction', beyond the most elementary rudiments, for the simple reason that no one has enough explicit knowledge about this structure to provide explanation and instruction."

Chomsky gives as a detailed example a property which is clearly central to grammar: that of nominalization (Chomsky, 1969, pp. 68 and 52—60). I see no point in repeating Chomsky's detailed arguments which clearly show that a successful learner of English as a second language could not have learned to make the judgments Chomsky describes through 'explanation and instruction'.

8 We have also idealized out of our consideration differences between individual learners, which makes this framework quite incomplete. A theory of second-language learning that does not provide a central place for individual differences among learners *cannot* be considered acceptable. See Lawler and Selinker (forthcoming) for a discussion of this tricky question in terms of profiles of idealized learners who differ one from the other with respect to types of linguistic rules and types of meaningful performance in a second language.

9 There has been a great deal of misunderstanding (personal communication) of this point. I am not taking an antimentalist position here. Neither am I ruling out on an a-priori basis perceptual studies in a second language. However, the reader should be aware that in addition to the usual problems with determining whether a subject perceives or understands an utterance, the analyst in the interlingual domain cannot rely on intuitive grammatical judgments since he will gain information about another system, the one the learner is struggling with, i.e. the TL. (For a similar methodological problem in another domain, see Labov, 1969, p. 715). Another, and perhaps the most important, argument against perceptual interlingual studies is that predictions based upon them are not test-

which are produced when the learner attempts to say sentences of a TL. This set of utterances for *most* learners of a second language is not identical to the hypothesized corresponding set of utterances which would have been produced by a native speaker of the TL had he attempted to express the same meaning as the learner. Since we can observe that these two sets of utterances are not identical, then in the making of constructs relevant to a theory of second-language learning, one would be completely justified in hypothesizing, perhaps even *compelled* to hypothesize, the existence of a separate linguistic system[10] based on the observable output which results from a learner's attempted production of a TL norm. This linguistic system we will call 'interlanguage' (IL).[11] One of the main points of this paper is the assumption that predictions of behavioral events in a theory of second-language learning should be primarily concerned with the linguistic shapes of the utterances produced in ILs. Successful predictions of such behavioral events in meaningful performance situations will add credence to the theoretical constructs related to the latent psychological structure discussed in this paper.

It follows from the above that the only observable data from meaningful performance situations we can establish as relevant to interlingual identifications are: (1) utterances in the learner's native language (NL) produced by the learner; (2) IL utterances produced by the learner; and (3) TL utterances produced by native speakers of that TL. These three sets of utterances or behavioral events are, then, in this framework, the psychologically-relevant data of second-language learning, and theoretical predictions in a relevant psychology of second-language learning will be the surface structures of IL sentences.

By setting up these three sets of utterances within one theoretical framework, and by gathering as data utterances related to specific linguistic structures in each of these three systems, (under the *same* experimental conditions, if possible) the investigator in the psychology of second-language learning can begin to study the psycholinguistic processes which establish the knowledge which underlies IL behavior. I would like to suggest that there are five central

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able in 'meaningful performance situations' (see definition above); a reconstruction of the event upon the part of the learner would have to be made in a perceptual interlingual study. Such difficulties do not exist when predictions are related to the shape of utterances produced as the result of the learner attempting to express in the TL meanings which he may already have.

10 Notions of such separate linguistic systems have been developed independently by Jakobovits (1969) and Nemser (1971).

11 The notion 'interlanguage' is introduced in Selinker (1969).

processes (and perhaps some additional minor ones), and that they exist in the latent psychological structure referred to above. I consider the following to be processes *central* to second-language learning: first, *language transfer;* second, *transfer-of-training;* third, *strategies of second-language learning;* fourth, *strategies of second-language communication;* and fifth, *overgeneralization of TL linguistic material.* Each of the analyst's predictions as to the shape of IL utterances should be associated with one or more of these, or other, processes.

3. *Fossilization*

Before briefly describing these psycholinguistic processes, another notion I wish to introduce for the reader's consideration is the concept of *fossilization,* a mechanism which is assumed also to exist in the latent psychological structure described above. Fossilizable linguistic phenomena are linguistic items, rules, and subsystems which speakers of a particular NL will tend to keep in their IL relative to a particular TL, no matter what the age of the learner or amount of explanation and instruction he receives in the TL.[12] I have in mind such fossilizable structures as the well-known 'errors': French uvular /r/ in their English IL, American English retroflex /r/ in their French IL, English rhythm in the IL relative to Spanish, German *Time-Place* order after the verb in the English IL of German speakers, and so on. I also have in mind less well known 'non-errors' such as Spanish monophthong vowels in the IL of Spanish speakers relative to Hebrew, and Hebrew *Object-Time* surface order after the verb in the IL of Hebrew speakers relative to English. Finally, there are fossilizable structures that are much harder to classify such as some features of the Thai tone system in the IL of Thai speakers relative to English. It is important to note that fossilizable structures tend to remain as potential performance, reemerging[13] in the productive performance of an IL even when seemingly eradicated. Many of these phenomena reappear in IL performance when the learner's attention is focused upon new and difficult intellectual subject matter or when he is in a state of anxiety or other excitement, and strangely enough, sometimes when he is in a state of extreme relaxation. Note that the claim is made here that, whatever the cause, the well-observed phenomenon of 'backsliding' by second-language

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12 Gillian Brown has pointed out (personal communication) that we should worke here towards a dynamic model where fossilization would be defined relative to various, perhaps arbitrary, chronological agegroups.
13 John Laver has helped me to clarify this point.

learners from a TL norm is not, as has been generally believed, either random or toward the speaker's NL, but toward an IL norm.[14]

A crucial fact, perhaps the most crucial fact, which any adequate theory of second-language learning will have to explain is this regular reappearance or reemergence in IL productive performance of linguistic structures which were thought to be eradicated. This behavioral reappearance is what has led me to postulate the reality of fossilization and ILs. It should be made clear that the reappearance of such behavior is not limited to the phonetic level. For example, some of the subtlest input information that a learner of a second language has to master regards subcategorization notions of verbal complementation. Indian English as an IL with regard to English[15] seems to fossilize the 'that complement' or *V that* construction for all verbs that take sentential complements. Even when the correct form has been learned by the Indian speaker of English, this type of knowledge is the first he seems to lose when his attention is diverted to new intellectual subject matter or when he has not spoken the TL for even a short time. Under conditions such as these, there is a regular reappearance of the 'that complement' in IL performance for all sentential complements.

4. *Five Central Processes*

It is my contention that the most interesting phenomena in IL performance are those items, rules, and subsystems which are fossilizable in terms of the five processes listed above. If it can be experimentally demonstrated that fossilizable items, rules, and subsystems which occur in IL performance are a result of the NL, then we are dealing with the process of *language transfer;* if these fossilizable items, rules, and subsystems are a result of identifiable items in training procedures, then we are dealing with the process known as the *transfer-of-training;* if they are a result of an identifiable approach by the learner to the material to be learned, then we are dealing with *strategies*

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14 Several people have pointed out (personal communication) that, in this paragraph, there appears to be a connection solely between fossilization and errors. This connection is not intended since it turns out that 'correct' things can also reemerge when thought to be eradicated, especially if they are caused by processes other than language transfer.

15 Keith Brown (personal communication) has argued that the sociolinguistic status of the 'languages' or 'dialects' called Indian English, Filipino English, West African English, West African French, and so on, places them in a different category from that of the IL situation which I have been describing. From the sociolinguistic point of view this argument might be justified, but I am concerned in this paper with a psychological perspective and the relevant idealizations seem to me to be identical in all of these cases.

of second-language learning; if they are a result of an identifiable approach by the learner to communication with native speakers of the TL, then we are dealing with *strategies of second-language communication;* and, finally, if they are a result of a clear overgeneralization of TL rules and semantic features, then we are dealing with the *overgeneralization of TL linguistic material.* I would like to hypothesize that these five processes are processes which are *central* to second-language learning, and that each process forces fossilizable material upon surface IL utterances, controlling to a very large extent the surface structures of these utterances.

Combinations of these processes produce what we might term entirely fossilized IL competences. Coulter (1968) presents convincing data to demonstrate not only *language transfer* but also a *strategy of communication* common to many second-language learners. This strategy of communication dictates to them, internally as it were, that they know enough of the TL in order to communicate. And they stop learning.[16] Whether they stop learning entirely or go on to learn in a minor way, e.g. adding vocabulary as experience demands [Jain (1969) insists they must] is, it seems to me, a moot point. If these individuals do not also learn the syntactic information that goes with lexical items, then adding a few new lexical items, say on space travel, is, I would argue, of little consequence. The important thing to note with regard to the evidence presented in Coulter (1968) and Jain (1969) is that not only can entire IL competences be fossilized in individual learners performing in their own interlingual situation,[17] but also in whole groups of individuals, resulting in the emergence of a new dialect (here Indian English), where fossilized IL competences may be the normal situation.

We will now provide examples of these processes. The examples presented in section 3 are almost certainly the result of the process of *language transfer.* A few examples relating to the other processes should suffice for this paper.

4.1 *Overgeneralization of TL rules* is a phenomenon well-known to language teachers. Speakers of many languages could produce a sentence of the following kind in their English IL:

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16 To describe this situation, Jain (1969) speaks of *functional competence.* Corder (1967) using the term *transitional competence* focuses on the provisional aspect of developing 'competence' in a second language. Both these notions owe their existence in the first place, to Chomsky's (1965) notion of linguistic competence which is to be distinguished from actual linguistic performance.

17 An 'interlingual situation' is defined as a specific combination of NL, TL, and IL.

> (1) What did he intended to say?[18]

where the past tense morpheme -*ed* is extended to an environment in which, to the learner, it could logically apply, but just does not. The Indian speaker of English who produces the collocation *drive a bicycle* in his IL performance, as in (2):

> (2) After thinking little I decided to start on the *bicycle* as slowly as I could as it was not possible to *drive* fast.

is most probably overgeneralizing the use of *drive* to all vehicles (Jain, 1969, pp. 22 & 24; but see footnote 26 here). Most learners of English quickly learn the English rule of contraction which forms things like *the concert's* from *the concert is*, but then these learners may overgeneralize this rule to produce sentences like:

> (3) Max is happier than Sam's these days.

in their English IL. Though this sentence is hypothetical, it illustrates an earlier point. The learner of English who produces contractions correctly in all environments must have learned the following constraint *without* 'explanation and instruction', since this constraint was discovered only recently: "contraction of auxiliaries . . . cannot occur when a constituent immediately following the auxiliary to be contracted has been deleted," e.g. 'happy' in (3) (Lakoff, in press). Dozens of examples of overgeneralization of TL rules are provided in Richards (1970).

4.2 The *transfer-of-training* is a process which is quite different from language transfer (see Selinker, 1969) and from overgeneralization of TL rules. It underlies the source of a difficulty which Serbo-Croatian speakers at all levels of English proficiency regularly have with the *he/she* distinction, producing in their English IL *he* on almost every occasion wherever *he* or *she* would be called for according to any norm of English. There is no language transfer effect here since, with regard to animateness, the distinction between *he* and *she* is the same in Serbo-Croation as it is in English.[19] According to a standard contrastive analysis then there should be no trouble. It seems to be the case that the resultant IL form, in the first instance, is due directly to the *transfer-of-training;* textbooks and teachers in this interlingual situation almost always present drills with *he* and never with *she*. The extent

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18 This sentence and sentences like it were in fact produced consistently by a middle-aged Israeli who was *very* fluent in English.

19 I am indepted to Wayles Browne (personal communication) for clarification of this point.

of this fossilization can be seen with respect to speakers of this IL over the age of 18, who even though they are consciously aware of the distinction and of their recurrent error, in fact, regularly produce *he* for both *he* and *she*, stating that they feel they do not need to make this distinction in order to communicate.[20] In this case, then, the fossilizable error is due originally to a type of *transfer-of-training* and later to a particular *strategy of second-language communication.*

4.3 Concerning the notion 'strategy' little is known in psychology about what constitutes a strategy; and a viable definition of it does not seem possible at present. Even less is known about strategies which learners of a second language use in their attempt to master a TL and express meanings in it. It has been pointed out[21] that learner strategies are probably culture-bound to some extent. For example, in many traditional cultures, chanting is used as a learning device, clearly relating to what is learned in these situations. Crucially, it has been argued[22] that strategies for handling TL material evolve whenever the learner realizes, either consciously or subconsciously, that he has no linguistic competence with regard to some aspect of the TL. It cannot be doubted that various internal strategies[23] on the part of the second-language learner affect to a large extent the surface structures of sentences underlying IL utterances. But exactly what these strategies might be and how they might work is at present pure conjecture. Thus, one can only roughly attribute the source of the examples presented herein to one or another strategy.

One example of a *strategy of second-language learning* that is widespread in many interlingual situations is a tendency on the part of learners to reduce the TL to a simpler system. According to Jain (1969, pp. 3 & 4), the results of this strategy are manifested at all levels of syntax in the IL of Indian speakers of English. For example, if the learner has adopted the strategy that all verbs are either transitive or intransitive, he may produce IL forms such as:

4) I am feeling thirsty.

or

(5) Don't worry, I'm hearing him.

and in producing them seems to have adopted the further strategy that the realization of the category 'aspect' in its progressive form on the surface is always with -*ing* marking (for further discussion, see Jain, 1969, p. 3 ff.).

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20 Reported by George McCready (personal communication).

21 Ian Pearson (personal communication).

22 Elaine Tarone (personal communication).

23 That is, what Corder refers to as the learner's "built-in syllabus" (Corder, 1967).

Coulter (1968) reports systematic errors occurring in the English IL performance of two elderly Russian speakers of English, due to another strategy which seems also to be widespread in many interlingual situations: a tendency on the part of second-language learners to avoid grammatical formatives such as articles (6), plural forms (7), and past tense forms (8):

(6) It was Ø nice, nice trailer, Ø big one. (Coulter, 1968, p. 22)

(7) I have many hundred *carpenter* my own. (ibid, p. 29)

(8) I *was* in Frankfort when I *fill* application. (ibid, p. 36)

This tendency could be the result of a *learning strategy* of simplification, but Coulter (1968, p. 7 ff.) attributes it to a *communication strategy* due to the past experience of the speaker which has shown him that if he thinks about grammatical processes while attempting to express in English meanings which he already has, then his speech will be hesitant and disconnected, leading native speakers to be impatient with him. Also, Coulter claims that this *strategy of second-language communication* seemed to dictate to these speakers that a form such as the English plural "was not necessary for the kind of communicating they used" (ibid, p. 30).

Not all of these strategies, it must be pointed out, are conscious. A subconscious *strategy of second-language learning* called "cue-copying" has been experimented with by Crothers and Suppes (1967, p. 211) on Americans learning Russian morphological concepts. This "copy the cue" strategy is most probably due to what they call "probability matching", where the chance that the learner will select an alternative morphological ending related to the cue noun is not random. Crothers and Suppes do not provide examples of the result of this strategy in meaningful performance situations; an example would be the *r* at the end of words like *California* and *saw* which foreign students of English who have had teachers from the Boston area regularly reproduce in their English IL.

4.4 To conclude this section, it should be pointed out that beyond the five so-called *central* processes, there exist many other processes which account to some degree for the surface form of IL utterances. One might mention *spelling pronunciations*, e.g. speakers of many languages pronounce final -*er* on English words as [ɛ] plus some form of *r*; *cognate pronunciation*, e.g. English *athlete* pronounced as [atlit] by many Frenchmen whether or not they can produce [θ] in other English words;[24] *holophrase learning* (Jain, 1969), e.g. for *half-an-hour* the Indian learner of English may produce

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24 Example from Tom Huckin (personal communication).

one and half-an-hour; hypercorrection, e.g. the Israeli who in attempting to get rid of his uvular fricative for English retroflex [r] produces [w] before front vowels, 'a vocalization too far forward';[25] and most assuredly others such as long exposure to signs and headlines which according to Jain (1969) affect by themselves the shape of English IL utterances of Indians, or at least reinforce more important processes such as *language transfer*.

5. *Problems with this perspective*

There are certainly many questions one might wish to ask regarding the perspective presented so far in this paper; I shall attempt to deal with five (5.1—5.5). The reader should bear in mind that we are here calling for the discovery, description and experimental testing of fossilizable items, rules and subsystems in interlanguages and the relating of these to the above-mentioned processes — especially to the central ones. What seems to be most promising for study is the observation concerning fossilization. Many IL linguistic structures are *never* really eradicated for most second-language learners; manifestations of these structures regularly reappear in IL productive performance, especially under conditions of anxiety, shifting attention, and second-language performance on subject matter which is new to the learner. It is this observation which allows us to claim that these psycholinguistic structures, even when seemingly eradicated, are still somehow present in the brain, stored by a fossilization mechanism (primarily through one of these five processes) in an IL. We further hypothesize that interlingual identifications uniting the three linguistic systems (NL, IL, and TL) psychologically, are activated in a latent psychological structure whenever an individual attempts to produce TL sentences.

5.1 The first problem we wish to deal with is: can we always unambiguously identify which of these processes our observable data is to be attributable to? Most probably not. It has been frequently pointed out (personal communication) that this situation is quite common in psychology. In studies on memory, for example, one often does not know whether one is in fact studying 'storage' or 'retrieval'. In our case, we may not know whether a particular constituent IL concatenation is a result of language transfer or of transfer-of-training or, perhaps, of both.[26] But this limitation need not deter us, even

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25 Example from Briana Stateman (personal communication).

26 The *drive a bicycle* example given in section 4 may, in fact, fit this situation (see Jain, 1969, p. 24).

if we cannot always sort things out absolutely. By applying the constructs suggested in this paper, I believe that relevant data can be found in the very many second-language-learning situations around us.

5.2 The second problem is: how can we systematize the notion *fossilization* so that from the basis of theoretical constructs, we can predict which items in which interlingual situations will be fossilized? To illustrate the difficulty of attempting to answer this question, note in the following example the non-reversibility of fossilization effects for no apparent reason. According to a contrastive analysis, Spanish speakers should have no difficulty with the *he/she* distinction in English, nor should English speakers have any difficulty with the corresponding distinction in Spanish. The facts are quite different, however: Spanish speakers do, indeed, regularly have trouble with this distinction, while the reverse does not seem to occur with English learners of Spanish.[27] Unlike the Serbo-Croatian example mentioned above, in this case there is no clear-cut explanation why Spanish speakers have trouble and English speakers do not. In cases such as these, it may turn out that one process, e.g. language transfer or transfer-of-training, overrides other considerations, but the stating of the governing conditions may prove very difficult indeed.

In principle, one feels forced to agree with Stephanie Harries (personal communication) who claims that until a theory of second-language learning can answer questions like: "How do I recognize fossilizable structures in advance?" or "Why do some things fossilize and others do not?", all experiments conducted within the framework provided in this paper must be regarded as 'exploratory' in nature. (To put things in more familiar jargon: with regard to *fossilization*, our results are 'descriptive' and not 'explanatory' in nature.) But this task of prediction may prove to be impossible; certainly as Fred Lukoff points out (personal communication) this task, on the face of it, may be even tougher than trying to predict errors in second-language performance — a task notably lacking in success.

The major justification one has for writing about the construct 'fossilization' at this stage of knowledge is that descriptive knowledge about ILs which turns out to suggest predictions verifiable in meaningful performance situations, leads the way to a systematic collection of the relevant data; this task, one which is impossible without this construct, is expected to be relevant to serious theory construction in a psychology of second-language learning.

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27 Example from Sol Saporta (personal communication).

5.3 The third problem to be treated here concerns the apparent difficulty of fitting the following type of question into the idealized domain I have been sketching: how does a second-language-learning novice become able to produce IL utterances whose surface constituents are correct, i. e. 'correct' with respect to the TL whose norm he is attempting to produce? This question finally brings us face-to-face with the notion of 'success' in absolute terms: productive performance in the TL by the second-language learner which is identical to that produced by the native speaker of that TL.[28] We noted this in section 2 so as to exclude from our idealized domain of inquiry those learners of second languages who reactivate[29] the latent language structure that is realized into a native language. In this paper, we are concentrating on attempted learning of a second language, unsuccessful in this absolute sense. Of course, 'success' in second-language learning need not be defined so absolutely. The teacher or the learner can be satisfied with the learner's achieving what has been called 'communicative competence' (see, for example, Jakobovits, 1970, or Hymes, in press). But this is not the issue here. As was

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28 As was pointed out in footnote 7, Chomsky (1969, p. 68) also adds the ability to provide native-speaker-like grammaticality judgments.

29 Note that this reactivation may be the only explanation possible for an individual who learns *any* part of a second language well. In this light, Cheryl Goodenough (personal communication) has objected to the qualitative split between the 5 % who succeed and the rest of all second-language learners. Since in this paper we are not concentrating on success in a second language, as one would in the teaching approach, but on the attempt to isolate the latent psychological structure which determines, for any learner, the system underlying attempted production of a TL norm where the total effect of this output is clearly non-identity to the hypothesized TL norm, then resolution of this issue should not affect the discussion. The importance of isolating this 5 % is the speculation that these individuals may not go through an IL.

Reibel (1969) stresses the role of the latent language structure in second-language learning by suggesting that it is only when second-language learners do the wrong things that they do not "succeed," i.e. "we seek to explain differences between adult learners, not in terms of differences in the innate learning abilities, but rather in terms of the way in which they are applied." (p. 8). Kline (1970) attempts to provide a point of contact between Reibel's views and mine by suggesting that any reorganization of an IL to identity with a TL must use the kinds of capacities and abilities Reibel describes.

A different opposing view to the perspective of this paper has been presented by Sandra Hamlett and Michael Seitz (personal communication) who have argued that, even for the vast majority of second-language learners, there is no already formulated arrangement existing in the brain, but that the latent psychological structure alluded to here is developed, partly at least, by strategies which change up to the age of 12 and remain with an individual for the rest of his life. There seems to be at present no critical empirical test for deciding between these two alternatives.

pointed out in section 1, the emphasis upon what the teacher has to do in order to help the learner achieve successful learning belongs to the 'teaching' perspective, which is not the perspective of this paper. Perhaps the rather curious confusion in the literature of 'learning a second language' with 'teaching a second language' (see footnote 2) can be explained by the failure to see a psychology of second-language learning in terms other than those related to 'success'. For example, typical learning-theory experiments when done in the domain of second-language learning would demand knowledge of where the learner will tend to end up, not where we would like him to end up. Experiments of this type would also demand knowledge of where the second-language learner begins. We would claim that prerequisite to both these types of knowledge are detailed descriptions of ILs — descriptions not presently available to us. Thus, such experiments at present are premature, with the results bound to prove confusing.

Specifically concerning the problem raised in the first sentence of 5.3, it seems to me that this question, though relevant to the psychology of second-language learning, is one that should also not be asked for the present since its asking depends upon our understanding clearly the psychological extent of interlingual identifications. For example, before we can discover how surface constituents in an IL get reorganized to identity with the TL, we must have a clear idea of what is in that IL, even if we cannot explain why it is there. In Selinker (1969) I believe I have shown that within a very limited interlingual situation, the basis from which linguistic material must be *reorganized* in order to be 'correct' has been operationally and unambiguously established. But I have there said nothing about the way in which successful learners do in fact reorganize linguistic material from this particular IL. Here we can speculate that as part of a definition of 'learning a second language', 'successful learning' of a second language for most learners, involves, to a large extent, the *reorganization of linguistic material* from an IL to identity with a particular TL.

5.4 The fourth problem is: (a) what are the relevant units of this hypothesized latent psychological structure within which interlingual identifications exist and (b) is there any evidence for the existence of these units? If the relevant data of the psychology of second-language learning are in fact parallel utterances in three linguistic systems (NL, IL, and TL), then it seems to me reasonable to hypothesize that the only relevant, one might say, 'psychologically real', interlingual unit is one which can be described simultaneously for parallel data in the three systems, and, if possible, for experimentally-induced data in those systems.

Concerning underlying linguistic structure, we should perhaps not be too surprised if it turns out not to matter whose model we need, if an eclectic one will do, or even if such notions as the 'cycle', 'tree pruning', or even 'derivation' prove not to have much relevance. If it is reasonable to assume that the only linguistically-relevant unit of a theory of second-language learning is one which is identified interlingually across three linguistic systems (NL, TL, and IL) by means of fossilization and the processes described in section 4, then it follows that no unit of linguistic theory, as these units are currently conceived, could fit this criterion. More generally, we should state that there is no necessary connection between relevant units of linguistic theory and linguistically-relevant units of a psychology of second-language learning.[30] That this assumption is obviously correct is clear to me; that many linguists will not be convinced is also clear.

For evidence of the relevant unit of surface syntactic structure, applying at one and the same time to these three linguistic systems, I refer the reader to experimental evidence appearing in my paper on language transfer (Selinker, 1969). In those experiments subjects responded orally in their native language to questions presented orally in their NL and attempted to respond in English to parallel questions presented in English. The questions came from an interview designed to elicit manifestations of specific types of surface structures in certain syntactic domains. The only experimental instruction given was for each subject to speak in a 'complete sentence'. Replicated results showed that the interlingual unit of surface syntactic structure transferred from NL to IL (*not* to TL) was a unit roughly equivalent to the traditional direct object or to an adverb of place, an adverb of time, an adverb of degree, and so on. I would claim that this unit, a surface constituent labelled the *syntactic string*, has a behavioral unity both in the experimental situation and

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30 It is important to bear in mind that we are here working in the domain of 'interlingual identifications' and thus are in a different counterfactual domain (Lawler and Selinker, forthcoming) than linguists who work in the domain of the "ideal speaker-listener" (Chomsky, 1965). It seems to me that researchers in the psychology of second-language learning are in the analogous position of the language teacher who, Chomsky (1966) admonishes, has the burden of deciding what in linguistics and psychology is relevant to his needs.

Nevertheless, the linguistic status of ILs has still to be determined. One would like to know, for example, whether such things as transformations occur in IL grammars. Watkin (1970) asks whether the rules of IL are of the same general construction or shape as the rules for the same phenomena in the second language, "or are they in a 'recoded' form?". Watkin's data implies the same type of fossilization related to some similarity among rules of different ILs.

in meaningful performance situations,[31] and thus, if the results were repli-cated in other 'interlingual situations' (i.e. other combinations of NL, TL, and IL), would account for a large class of IL events.

With regard to a 'realizational unit', i.e. a syntactic string tied to a specific semantic notion, replicated results from this same series of experiments show that responses concerning a topic such as 'subjects studied in school', as op-posed to other topics such as 'buying and receiving things' and 'seeing movies and parades', affected very drastically the surface concatenation of the above-mentioned strings.[32] This semantic effect on surface syntactic order in an interlingual study, if further replicated in other interlingual situations, would provide very powerful evidence for the transfer of the whole realizational

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31 The surface domain considered was constituent concatenation after the verb. Sample results showed statistically-significant parallel trends for NL (Hebrew) and IL (English) *Object* and *Time* constituents on the one hand and (direct) *Object* and *Adverb* (of degree) on the other. That is, whenever an *Object* constituent and a *Time* constituent occurred after the verb, the statistically-dominant surface order was *Object-Time*, and not the reverse, both concerning NL responses, e.g. (9), and IL responses, e.g. (10):

    (9) raiti [et haseret haze] [lifney švuaim]

       'I saw that movie two weeks ago'

    (10) I met [Mrs. Cosman] [today]

But whenever an *Object* constituent and an *Adverb* constituent occurred after the verb, the statistically-dominant surface order was *Adverb-Object*, and not the reverse, both concerning NL responses, e.g. (11) and IL responses, e.g. (12):

    (11) ani ohev [meod] [sratim] 'I like movies very much'

    (12) I like [very much] [movies]

Importantly, these and all other experimental results were controlled informally by ob-serving speakers of all ages over 12, from this interlingual situation, producing IL utter-ances in meaningful performance situations.

32 That is, when the responses concerned the topic 'subjects studied at school', there occured an almost absolute trend toward both the NL (Hebrew) oder *Place-Object* $_{noun}$ after the verb, e.g. (13), and toward the same IL (English) order of surface constituents, e.g. (14):

    (13) ani roca lilmod [bauniversita] [biologia]

       'I want to study biology at the university'

    (14) I will study [in the university] [biology]

But when the responses concerned topics such as the other two topics mentioned in the text,   there occurred an almost absolute trend toward both the NL order *Object* $_{noun}$ *Place* after the verb, e.g. (15) and toward the same IL order of surface constituents, e.g. (16):

    (15) kaniti [et hašaon] [baxanut]

       'I bought the watch in the store'

    (16) I bought [my watch] [in Tel Aviv]

For further details, see Selinker (1969) sections 3.41 and 3.42.

unit as well as for its candidacy as the unit of realizational structure in interlingual identifications.

Concerning the notion of relevant units on the phonological level, it seems to me that Brière (1968) has demonstrated that for his data there are several relevant units. The relevant units do not always correspond to known linguistic units, but rather would depend on the sounds involved; sometimes the taxonomic phoneme is the unit, but the unit in other cases seems not to be describable in purely linguistic terms. Brière evolved an experimental technique which imitated to a large extent actual methods of teaching advocated by applied structural linguists: listening to TL sounds, attempted imitation, use of phonemic transcription, physiological explanations, and so on. If I may be allowed to reinterpret Brière's data, it seems to me that he has been working, in another interlingual situation, with exactly the three systems we are discussing here, NL, TL, and IL: first, NL utterances which were hypothesized utterances in American English; second, TL utterances which were actual utterances in the 'composite language' Brière set up, each utterance having been produced by a native speaker of French, Arabic, or Vietnamese; third, IL utterances which were actual utterances produced by native speakers of this NL when attempting to produce this particular TL norm. Regarding the sounds /ž/ and /ŋ/ in his TL corpus, the unit identified interlingually across these three systems is the taxonomic phoneme defined distributionally within the syllable as opposed to within the word (Brière, 1968, p. 73). For other sounds the relevant phonological unit of interlingual identifications is not the taxonomic phoneme, but may be based on phonetic parameters some of which, he says, are probably not known (ibid., pp. 73 & 64).

If these units in the domain of interlingual identifications are not necessarily the same units as those in the native-speaker domain, then where do they come from? An interesting bit of speculation about native-speaker performance units is provided by Haggard (1967, p. 335) who states that searching for "*the* unit" in native-speaker speech-perception is a waste of time. Alternative units may be available to native speakers, for example under noise conditions.[33] While other explanations are surely possible for the wellknown fact that noise conditions affect performance in a second language, and sometimes drastically, we can not ignore the possible relevance of Haggard's intriguing suggestion: That alternative language units are available to individuals and that these units are activated under certain conditions. It fits in very well with the perspective outlined in this paper to postulate a new type

33 The fact that Haggard is concerned with alternative units which are inclusive in larger units has no bearing on the issue under discussion in this section.

of psycholinguistic unit, available to an individual whenever he attempts to produce sentences in a second language. This interlingual unit stretches, we hypothesize, across three linguistic systems: NL, IL, and TL, and becomes available to the idealized second-language learner who will not achieve native-speaker competence in the TL, whenever he attempts to express meanings, which he may already have, in a TL he is learning, i.e. whenever he attempts to produce a TL norm. These units become available to the learner only after he has switched his psychic set or state from the native-speaker domain to the new domain of interlingual identifications. I would like to postulate further that these relevant units of interlingual identifications do not come from anywhere; they are latent in the brain in a latent psychological structure, available to an individual whenever he wishes to attempt to produce the norm of any TL.

5.5 The final difficulty with this perspective which we will treat here is the following: how can we experiment with three linguistic systems, creating the same experimental conditions for each, with one unit which is identified interlingually across these systems? I can only refer the reader once again to my own experiments on language transfer (Selinker, 1969) where manifestations of desired concatenations of particular surface syntactic structures were obtained in what, I believe, was an efficient and valid manner. An oral interview technique was used; the purpose of the interview was to achieve a similar framework in the three systems which served the interviewer as a guide in his attempt to elicit certain types of sentences from the subjects. Upon request, I am prepared to make available a transcript of this interview as well as some thoughts for its improvement. Future experimental work, to be undertaken within this perspective, will go toward investigating the kind and extent of linguistic structures amenable to this particular technique.

6. *Summary*

The following are some assumptions which are necessary for research into the linguistic aspects of the psychology of second-language learning and which have been suggested by the above discussion.

1) In a theory of second-language learning, those behavioral events which are to be counted as relevant data are not immediately obvious.

2) These data have to be organized with the help of certain theoretical constructs.

3) Some theoretical constructs relevant to the way in which 'adults' actually learn second languages are: interlingual identifications, native language

(NL), target language (TL), interlanguage (IL), fossilization, syntactic string, taxonomic phoneme, phonetic feature.

4) The psychologically-relevant data of second-language learning are utterances in TL by native speakers, and in NL and IL by second-language learners.

5) Interlingual identifications by second-language learners is what unites the three linguistic systems (NL, TL, and IL) psychologically. These learners focus upon one norm of the TL.

6) Theoretical predictions in a relevant psychology of second-language learning must be the surface structures of IL sentences.

7) Successful second-language learning, for most learners, is the reorganization of linguistic material from an IL to identity with a particular TL.

8) There exist five distinct processes which are central to second-language learning: language transfer, transfer-of-training, strategies of second-language learning, strategies of second-language communication, and overgeneralization of TL linguistic material.

9) Each prediction in (6) should be made, if possible, relative to one of the five processes in (8).

10) There is *no* necessary connection between relevant units of linguistic theory and linguistically-relevant units of a psychology of second-language learning.

11) The only linguistically-relevant unit of a psychology of second-language learning is one which is identified interlingually across the three linguistic systems: NL, TL, and IL.

12) The *syntactic string* is the unit of surface structure transfer and part of the unit of realizational transfer.

13) The *taxonomic phoneme* is, in the case of some sounds, the unit of interlingual phonology, while in other cases no purely linguistic unit seems relevant.

14) There exists a *latent psychological structure*, i.e. an already formulated arrangement in the brain, which is activated whenever an adult attempts to produce meanings, which he may have, in a second language which he is learning.

15) Interlingual identifications, the units mentioned in (12) und (13), and the processes listed in (8) exist in this latent psychological structure.

16) *Fossilization*, a mechanism which also exists in this latent psychological structure, underlies surface linguistic material which speakers will tend to keep in their IL productive performance, no matter what the age of the learner or the amount of instruction he receives in the TL.

17) The fossilization mechanism accounts for the phenomenon of the regular reappearance in IL productive performance of linguistic material which was thought to be eradicated.

18) This latent psychological structure, for most learners, is different from and exists in addition to the *latent language structure* described by Lenneberg (1967, pp. 374—379).

19) These two latent structures differ in the following ways: (a) the latent psychological structure has no genetic time-table; (b) it has no direct counterpart to any grammatical concept; (c) it may not be activated at all; (d) it may never be realized into a natural language; and (e) it may overlap with other intellectual structures.

20) The qualification ('for most learners') in (7) and (18) is necessary, since those adults who seem to achieve native-speaker 'competence', i.e. those who learn a second language so that their 'performance' is indistinguishable from that of native speakers (perhaps a mere 5 % of all learners), have not been taught this performance through 'explanation and instruction' but have somehow reactivated this latent language structure.

21) Since it is assumed that the two structures mentioned in (18) are different and since we know very little about the latent language structure and its activation, then the 5 % mentioned in (20) should be ignored in setting up the idealizations which guide us to the psychologically-relevant data of second-language learning.

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