

LANGUAGE ACQUISITION

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FORMS OF LANGUAGE ACQUISITION

Over the course of several years every child normally learns a language - his *first or native language*. This process appears to take place without any obvious effort, on the side, so to speak, until resulting in fluent command. There are exceptions, those children whose biologically engendered language capability (aptitude) is limited whether centrally or peripherally and the famous "enfants sauvages" whose social prerequisites for language acquisition are lacking. As a rule, however, a child at elementary school age is capable of expressing himself or herself fluently. The acquisition of the written language only influences certain elements of the command of a language at later stages. After puberty language acquisition develops only slightly, although in certain areas, such as lexical acquisition, it never ends. First language acquisition is therefore primary in two respects: it is the first language acquired and as a rule the most important language acquired.

But many learn not only one language, but two or even more languages, and accomplish this either simultaneously so that one must speak of *first languages* instead of *first language* or with a certain delay. Depending on how long this delay is, the acquisition of the first language can be further along in its development; under certain circumstances (most assuredly after puberty) it can be considered complete(d). According to whether a language is present or not, one differentiates between *first* and *second* language acquisition although the difference is often blurred. Second language acquisition is regarded as requiring considerably more effort than first language acquisition and is not just achieved, so to speak, on the side; it seldom leads to total mastery, although this is not completely out of question.

But our taking for granted of a child's language acquisition obscures just how amazing this process really is. No animal is capable of achieving anything remotely comparable to it, and all attempts, such as teaching chimpanzees sign language, have been about as successful as teaching man to fly: chimpanzees' brains are simply not made for this, just as the human body is not constructed for flight. Just what is this inborn language capability of man? How does it allow for a child to

discover a structure in the flood of noise coming from his environment and bombarding his ears from the cradle onward, only then to modulate noise himself to be understood correctly by others? And what are the reasons behind the fact that, although adults still maintain this ability to learn, they are as a rule less successful in applying it?

These are the principal questions underlying language acquisition research and determining the work in this field at the Institute. The work is conducted on both first and second language acquisition and is as a rule cross-linguistic. Before turning to a few of these research projects individually, it would be helpful to gain a general idea of the nature of language acquisition and the issues involved.

COMPONENTS OF LANGUAGE ACQUISITION

Language acquisition is a very complex process which, even with a child, extends over many years, and whose course and outcome is determined by a series of interacting factors. All individual differences aside, three major components must be present. The learner must possess a particular language acquisition capacity stored in his brain - a *language processor*; he must have extensive access to the language to be learned, that is, the learner must receive a certain *input* from his social environment to which he can apply his language learning capacity; and there must be a reason, a *motivation*, to apply the language processor to this input.

How the language processor works at a particular moment depends on two conditions: on certain biological determinants and the knowledge available at that time:

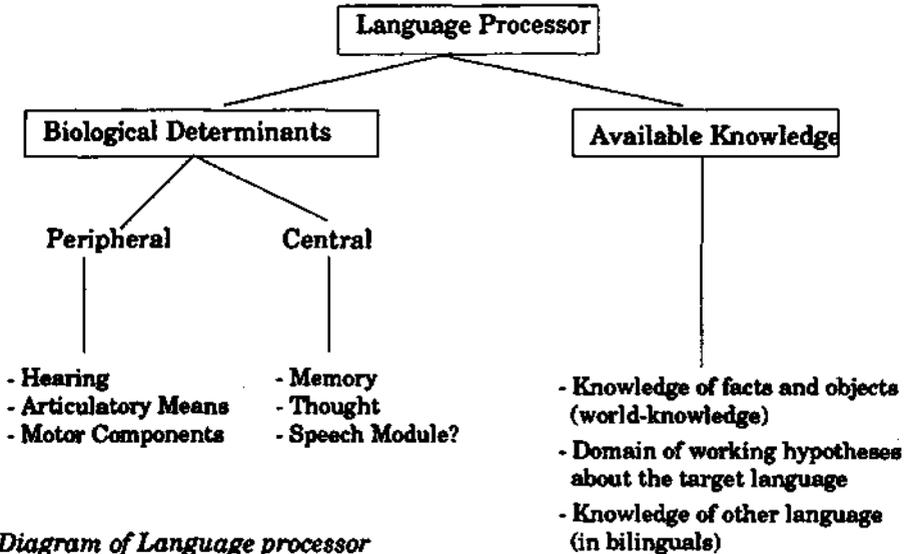


Diagram of Language processor

The biologically provided component of the language processor contains, on the one hand, several peripheral organs (the articulatory apparatus ranging from the larynx to the lips as well as the aural tract), and, on the other hand, parts of the central nervous system - perception, memory and higher cognitive functions. Both components are inborn human capacities. Over the span of a lifetime these capacities change within certain limits and it is these changes that are possibly responsible for the noticeable differences between first and second language acquisition.

The biological determinants set the framework within which language processing can occur. How restricted this framework is, that is, how much is already determined by the biological component is the subject of much controversy - both in regard to the peripheral areas (particularly in the case of sign language) and to those more central. Thus one influential linguistic school of thought, namely the Chomsky school, assumes a large portion of language structure to be inborn and that it is simply activated within the course of language acquisition (see below). Other researchers believe the inborn component to make up only a minute portion of the eventual language mastery.

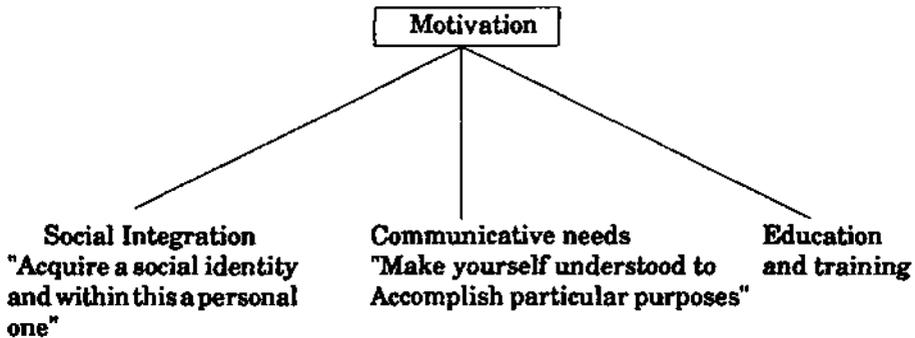
Included in the respective available knowledge of a learner is first of all his total nonlinguistic knowledge, which is fundamental to his ability to interpret correctly elements of a stream of noise from which he ultimately learns. Second comes the more or less restricted knowledge of the target language the learner possesses at any given point: language acquisition is always a cumulative process, in which knowledge expands on previous knowledge. In the case of second language acquisition, this also includes the knowledge of the first language, which can prove to be both a help and a hindrance: The structures of the new language to be learned are perceived on the basis of the already present language and interpreted accordingly. This *cognitive transfer* is yet another source of differences between first and second language acquisition. The manner in which first language acquisition structures certain areas as the expression of space and motion, for example, will be carried over to a second language, provided certain similarities exist between the two languages. The more subtle differences go unnoticed. This is a main source of one of the most salient phenomena in adult second language acquisition: acquisition *fossilizes*, meaning that the learner is no longer receptive to new input, although he is far from mastery of the peculiarities of the target language.

The language processor is at birth the same in all human beings: no one is born with an innate ability to learn just Chinese or Kpella. That we learn a certain language with all its peculiarities stems more from the fact that the social environment of a learner is linked to a certain language and it transmits this language as input for his language processor. This input exists at first in the form of sound waves entering the ear of the learner, that is to say, not in the form of being segmented into words or sentences. This is indeed the first task of the learner, and

if there were only these noise waves at his disposal, he would be in no position to accomplish this task.

If one locked a learner, regardless of age, in a room and bombarded him with Chinese, day and night, for weeks or even years, he would still not learn the language. One requires the accompanying information provided by gestures and actions, the whole situational context with whose help it gradually becomes possible to isolate single segments from the stream of noise and to meaningfully interpret them. *This problem of analysis* is basically a particular case of sound or word recognition (see the preceding article in this issue). Adults are no less suited to this than children: though as a rule they see and hear more poorly than children, they know more, and therefore it is no more difficult for them to interpret gestures, actions, and the like, and thus to analyze the input as a whole. This provides no major source of differences between first and second language acquisition.

It is such a source of differences, however, that provides the third central component of language acquisition, the type of impetus to start the whole process rolling, and ideally, to keep pushing it onward to total mastery. There are essentially three such reasons: first, the necessity for social integration; second, specific communicative needs, and third, the more or less developed desire to educate oneself.



Motivation diagram

The third reason is mostly applicable to classroom language learning situations; it plays only a minor role in the natural processes of language acquisition. Most important are the other two reasons. In children above all the first factor comes into effect, whether for the first or the second language. They are programmed to assume a social identity, and this means that it is of primary concern to speak as is spoken in that particular social environment. The driving force behind their language acquisition can be expressed through the maxim: "Become (with a few individual characteristics) like the others in your group!", or perhaps: "Acquire a

social identity and within this a personal one!" Adults, on the other hand, as in the case of foreign workers, whose acquisition is the object of much research at the Institute, already possess a relatively rigid social identity, and conforming to the new society would put this identity in jeopardy. In various studies it could be shown that this fear can create an enormous obstacle to language acquisition. Adults have, in comparison with children, clearly outlined communicative needs, which can vary greatly from person to person. For their language acquisition one can more appropriately apply the maxim: "Make yourself understood to accomplish particular purposes!" For this cleverly applied vocabulary and thematic structure adapted to the knowledge of the particular hearer matters more than perfect pronunciation and idiomatic phrases, which make speech sound authentic native speakerlike. This difference in the orientation of the impetus is another fundamental reason why the language of children often *sounds* more perfect than that of adult learners.

Biological and social factors always play a considerable role in the process of language acquisition. Their relative shares in this process are viewed differently in linguistics research. Nativist approaches, in which input from the social environment merely possesses the function of triggering acquisition, exist in direct opposition to the social-interactive approaches, which estimate the inborn biological component to be only minor. The Institute's research program attempts to avoid extreme positions, to take both biological and social factors into account, although individual projects may lean more in one direction than the other. Overall the question of the relative roles of biological and social factors is treated as a collection of unsolved problems to which a solution can only be found empirically.

SOME RESULTS

It is not the learner's intention to learn particular structural rules essential to a particular language. Rather, he would like to be able to express himself and understand what others have expressed. For this he must learn certain rules; but this is the means, not the end. Language acquisition research can not be content with studying how the learner gradually learns particular elements of the formal system of a language such as the vocabulary, inflectional forms or syntax. Rather it must be clarified, first, how the ability develops to transform certain cognitive meanings in a given situational context into a stream of sound (or written characters) such that the hearer (or reader) can correctly interpret them, and second, how he can correctly interpret a stream of sound on the basis of other information available to him (*linguistic context*). What belongs to this category is the ability to express certain fundamental cognitive categories, such as *space, time, conditionality, possession*. Therefore a significant amount of the research program at the Institute is devoted to the development of this ability.

THE EXPRESSION OF CONCEPTUAL CATEGORIES

All languages possess the possibility of expressing where a particular object is located and how its position changes. While the underlying concept of space is most likely the same or similar in all human beings, its encoding varies considerably from language to language. Contrastive language studies therefore allow the isolation of the relative portion of universal cognitive development from the input and language-specific portion of a particular language. Some of the earliest child language expressions are words such as *in*, *off*, *out*, *on* used in the sense of *put in*, *take off*, etc. One could assume that these words directly reflect concepts based on the sensorimotor development of the child; it conforms with the widely held idea that child language acquisition is more strongly determined by universal semantic and cognitive categories than by the specific language of the learning environment with all its idiosyncrasies. This can be tested using languages in which spatial relations and motion in space are very differently encoded, such as Korean and English. When an object is placed in a particular position in relation to another, what this position is must be accurately marked in most Indo-European languages; one differentiates accordingly between *put in*, *put on*, *put next to*, etc. The Korean word *kkita* encompasses all of these possibilities and leaves them undifferentiated; instead one must differentiate between the object being in close or loose contact with another object, that is, the differentiation is not *in*, *on*, *on top of*, etc. but "stuck to vs. loose". A detailed longitudinal study of two English and four Korean children showed that they were already sensitive to this differing categorization in their earliest utterances relevant to this distinction. There is no reason to assume that their sensorimotor experience is different; it is therefore the specific semantic structure of the respective input that asserts itself from the outset, and not universal principles of cognitive development. This is substantiated in error correction and self-correction behavior in further language development: they focus completely on the individual language-specific categorization. This contradicts many widely held assumptions.

A significant characteristic of spatial reference (as with all of human language) is its *context dependence*: Expressions as *here*, *there*, *left*, *right*, refer to different things according to the position of the speaker or hearer and the direction they are looking. Two main cases are differentiated, *deixis* and *anaphora* (see also the article by Levelt: Language Production). With the former the contextual information provided by the situation, especially visual context (*here*, *left*) is required, with the latter what was previously said (as in the German *daruber*, *hintendran*). Second Language learners have mastered the principles of context dependence. Children must develop them. How this occurs has been the object of many studies, partially in authentic situations (route descriptions), partially under experimental conditions using a model city, as depicted below.

It could be shown that reference to place first takes place using topological

expressions as *at*, *to*, etc. They are nondeictic, but at the same time limited to things visible. Deictic expressions occur as soon as the child refers to locations he can not see, while depending heavily on motor representations with the aid of hand, arm and body motion. Linguistically the deictic expressions are only weakly anchored, that is, they are only seldom used for locations that particularly stand out (*behind the church*, *to the left of the post office*). This occurs first in the last stage (at about age ten), during which the dependence on the visual context in the use of deictic expressions strongly decreases. In other words, the deictic expressions are tied less to the seen than to the said; they are becoming increasingly anaphoric.

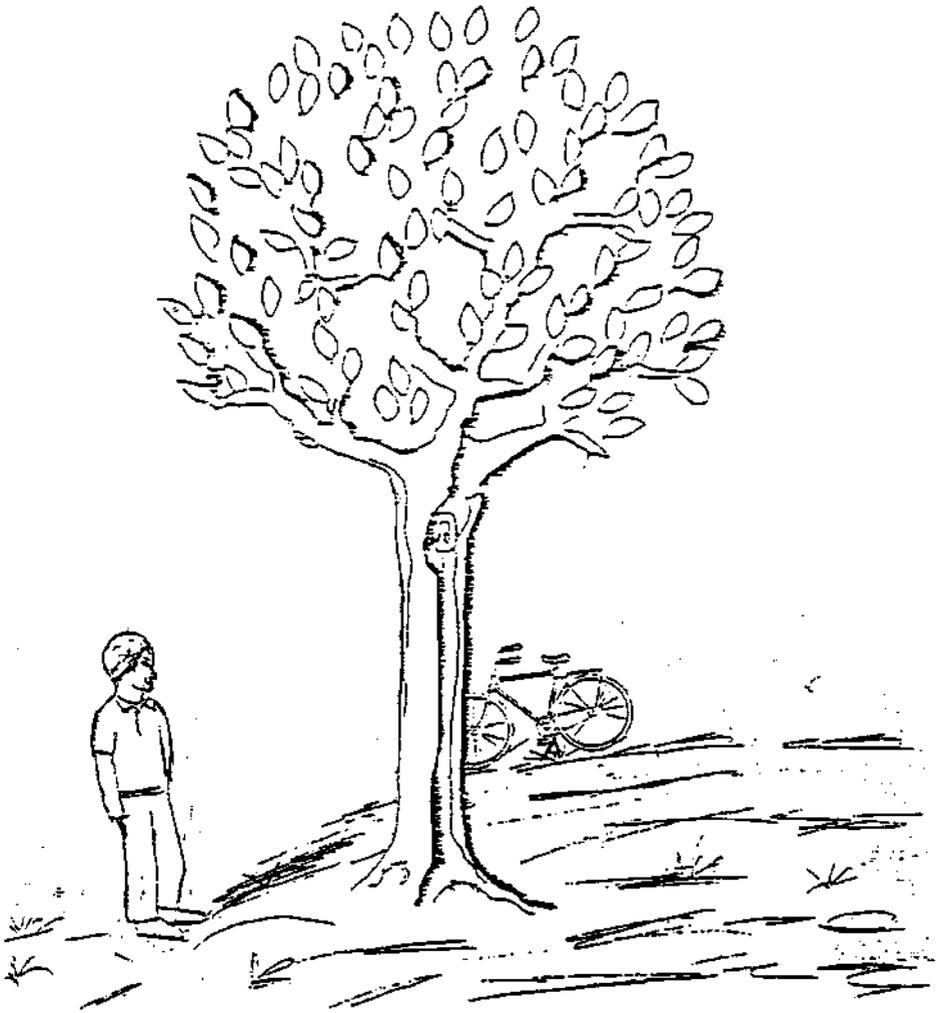
These findings agree with those of another study, in which four-to-five-year-olds were required to describe miniature living rooms. Here the younger children were incapable of expressing the spatial relations in a linear order of utterances with front-back relations; the anchoring to certain outstanding places was missing, and the descriptions contained hardly any hierarchical structure. The youngest simply listed everything they saw; the eight-year-olds employed prepositions of location, and only the ten-year-olds used deictic expressions (prepositions of dimension and adverbs).

Another important means of spatial reference is *linearization*. Route descriptions as well as living room descriptions follow, as a rule, a *tour strategy*: The individual locations are successively introduced as though one were walking the path described (route descriptions), or the gaze follows the path through the room described (room descriptions). The hearer can derive the relations from the sequence. In the youngest (age four) such linearization options are almost completely lacking; the strategy of the gaze following a path does not yet exist; this appears first in the six-to-ten-year-olds. The additional strategy of grouping things of the same function together, which is occasionally employed by adults, is first enlisted by ten-year-olds.

Although context dependence functions similarly in all languages, there are a few characteristic differences. There are some languages with no *left-right* differentiation, that is, the body orientation plays no role. Where this body orientation and differentiation does play a role, it can often be reversed, if one describes the position of object A relative to object B:

In English the position of the bike would be described as *behind the tree*, in Hausa, however, as "in front of the tree". The idea behind it is that the speaker is looking still farther in the same direction, that is, the bike is still in front of him (the so-called *alignment strategy*); in English and many other languages the direction of gaze is turned around (*facing strategy*). Children do not know which strategy their language follows. In a study of the language acquisition of Chinese children it was shown that they at first consistently follow an alignment strategy, although Chinese, as English follows a facing strategy. Only at the age of approximately three do they begin to follow the orientation observed in their language. This can be interpreted to mean that children are at first not capable of

assuming the facing position, but retain their perspective as much as possible.



"Bicycle" Illustration

Less obvious, but no less interesting is the development of the category of

possession. Possessivity can be expressed by a variety of means in individual languages, e.g. through possessive pronouns (*my ball*), through genitive attributes (*father's ball*), or through particular verbs (*have*), among others. These means are not necessarily interchangeable, but express where relevant specific and often very subtle contrasts in meaning, such as between *alienable* and *inalienable* possession (*my ball* - *my nose*), between *animate* and *inanimate* owner, to name a few. A child must therefore not only learn the various concepts of possessivity as well as their available means of expression, as possessive pronouns, but also acquire the contrasts marked by certain alternative expressions.

It was shown that children also encode contrasts not provided for in the language being learned. The source of this data was the longitudinal data of Roger Brown, in which the language acquisition of two English children was carefully recorded over a period of approximately one year; studies were only those cases in which a possession relationship between the child talking (the *I*) and a particular *possessum* was expressed. The child can make reference to himself by means of a name (*Adam's pencil*) or through a possessive pronoun (*my pencil*). The latter is recognized as being substantially more difficult, as the meaning of *my* is context dependent, whereas the meaning of the name is stable: The child must recognize that *my* always refers to the respective speaker. It is therefore assumed that a name is used first and a pronoun only later, but there are differing hypotheses regarding the transition between the two.

The studies showed, however, that the two forms coexist through the first ten months; then the nominal form disappears. What is remarkable is that both forms express a clear functional contrast during the time they coexist, namely between *descriptive* and *volitional*: *Adam's x* is used when the child realizes the relationship of possession; *my x*, on the other hand, when he wants to have *x* (usually a toy). Both children construct a form-function relationship that does not exist in the language being learned and hold on to this quite sensible construction for a long time. This shows that in contrast to still prevalent ideas the language acquisition process does not consist of passively acquiring structures existing in the target language; rather the child constructs his own subsystems, which have their own structure, satisfy certain communicative needs and are only gradually reorganized to resemble the target language norm.

THE ACQUISITION OF SYNTAX

With all the individual differences between languages, their grammar follows certain general principles of syntax and semantics as they were formulated in, for example, Chomsky's *Universal Grammar*. Within the framework of such a theory, first language acquisition is interpreted to be a *parameter setting*, that is, the native universal principles allow a certain amount of leeway, and the child *sets* the parameters according to the respective input, that is, the language of the parents,

sibling, etc. Thus certain languages, as Italian, allow an empty subject, others, as English, normally not (so-called *pro-drop parameter*); the respective setting of parameters correlates with other characteristics, such as possible empty subject with strong verb inflection, free word order and missing expletive subjects. In a comprehensive comparative study of the acquisition of French, German and Hebrew it was attempted to clarify to what extent such a parameter setting actually takes place.

None of the three languages is "pure" in regard to this parameter, that is, under certain differing conditions they require an empty subject and under others not. The children are therefore confronted with what is for them inconsistent input. According to the model of parameter setting subjectless sentences would have to disappear as soon as other features of the parameter were present. This does not apply. The children still use subjectless sentences long after the appearance of finite verbs, for instance German. With French children they disappear by approximately the age of three and a half. With German children only 80% are gone at this age.

These findings are not compatible with a strict model of parameter setting. They can be best interpreted with the following two refinements. First, the development does not consist of a simple establishment (or re-establishment) of the parameter value; rather the area of application of the parameter is gradually reduced. Thus the acquisition of the verb in second position in German eliminates empty subjects in preverb position. Second, the setting of one parameter can influence the setting of another. Thus the somewhat different behavior of German and French children seems to depend on the acquisition of dependent clause structure, which is also parametrically different.

Even more fundamental for syntax acquisition is the question of how children identify grammatical categories as *subject* and *object* at all. In this a prototypical semantic function possessing such categories (i.e. the subject as *agent*, the object as *patient*) could play a central role. Steve Pinker views the construction of phrase structure as taking place with the assistance of inborn *linking rules* ("If a nominal expression refers to a patient, this expression is a direct object"). Similarly Dan Slobin is of the opinion that the various grammatical means are at first employed to mark the semantic role of the various players in typical situations. In all these cases the acquisition of syntax is decisively guided by semantics, or more precisely, the semantics of case roles.

This at first glance very plausible assumption was tested using a detailed longitudinal study of two English children. The canonical sentence structure was supposed to be subject-verb-object (SVO) with S as agent and O as patient. In contrast to the assumption absolutely no positive correlation could be shown between the order SVO and the semantic order agent-verb-object. In one of the two cases there was even a negative correlation. An exact examination of the errors that children make at different acquisition stages in the encoding of certain

semantic roles implied rather than *prototypical associations* between grammatical categories and functional roles begin to develop later. According to this they can not be inborn; in contrast to the opinion of Pinker, Slobin and others, they do not make the acquisition of syntax possible, but are an outcome of this learning process. The question of how children arrive at the fundamental grammatical categories can not be answered by this view.

In the second language acquisition of adults, such as foreign immigrant workers, the learners already possess certain grammatical categories on the basis of their first language. Beyond the very first stage of rudimentary utterances, all second language learners display a system to their utterance structure—they have reached a "basic learner variety". Labeling them with categories such as *subject*, *object*, etc. is inappropriate as these terms are not defined for such use. One could at best use them in the sense of analogies - that unit which would be the subject in a respective target or source language utterance. This conceals that learner varieties follow their own set of rules. These are to be found in the phrase structure, case role semantics, pragmatics, and especially in the distribution of information within an utterance. The basic phrasal pattern is the folio wing (elements appearing in parentheses may be omitted):

A. *Nominal phrase - verb - ((Prepositional phrase) - Nominal phrase)*

This pattern can be extended to include a temporal adverb (in first position) and a local adverb (first or end position). There are two notable exceptions to pattern A: (a) The verb may remain implicit, and (b) with verbs with one argument, the argument may follow, that is, one has verb - nominal phrase. The latter always functions as a *presentational marker*, that is, it always marks the "appearance" of some person or thing. The phrasal limitation expressed in A does not say anything yet about which argument may appear where. This depends on its role characteristics (agent, patient, etc.). One can order the arguments of the verb according to the degree of control they have over other arguments; if one calls the argument with the highest level of control the *controller*, the general semantic principle holds for the utterance.

B. *Controller first*

This principle and the phrasal limitations summarized in A interact with an additional group of principles having to do with *the focus structure* of the utterance. One can imagine it this way: every utterance and also every coherent text answers the (explicit or implicit) question, its *quaestio*. The *quaestio* establishes a set of alternatives, one of which is specified in the answer; the respective portion of the answer is its *focus*, the rest its *topic*. Fully developed languages possess very elaborate means for marking topic and focus. The basic learner variety is, on the other hand, characterized by a very simple principle:

C. Focus last

An (explicit) *quaestio* as *Who is coming?* would require the position *Komm - Peter, come- Peter, vien - Pierre* in the appropriate learner language because Peter is the focus. (Besides C there is another pragmatic principle that plays a role in determining the utterance structure, but which we omit here for simplicity's sake.) The limitations established under A, B and C hold independent of source and target language. As long as no morphological means is present (case markings, verb inflections, etc.) these principles hold without exception, that is, they appear to reflect *universal principles* of utterance structure. These principles can come into conflict with another, for example when the same person in a particular situation in the narrative is both controller and focus; then the appropriate nominal phrase must appear according to B in the first position and according to C in the end position. These cases - avoided by the learners if possible - are especially interesting for the dynamics of language development. Three observations are especially instructive:

1. Multiple attempts and self-corrections often appear in the cases affected by these conflicts of principles, that is, all limitations are still in effect, they simply can not take effect in the same sense. Such cases give a chaotic impression at first; they appear to break every possible rule; but in reality they reflect the effect of certain rules.

2. The preferences of learners in such conflicts depend primarily on the importance given the affected factor in the source language. In Turkish the order of importance is determined heavily by semantic factors, especially role characteristics. This is why Turkish learners "sacrifice" C if necessary, but not B. In Italian, on the other hand, the topic-focus structure is awarded special importance; therefore they would rather give up B or even A when a conflict arises. This explains some of the characteristic differences in the otherwise similar basic learner varieties of the studies learners.

3. Most learners attempt to overcome such problems by employing avoidance strategies, such as intonational marking, doubling of the nominal phrase through the aid of a personal pronoun or something similar. They orient themselves very early to the possibilities offered for these cases in the respective target languages.

In these types of conflicts the elementary structuring possibilities available in principles A, B and C apparently fail; the basic learner variety, which is guided by these and similar principles, proves itself inadequate. Here the learner turns to either possibilities of expression offered by his own language, which he attempts to carry over into the new language, or he feels himself compelled to develop new

alternatives for expressing himself. In the last case he uses primarily as support the input from his social environment, and this pushes his syntax further in the direction of the target language, proving these cases of conflict to be the "germ" of future development.