LANGUAGE LEARNING AND THE CHOMSKYAN REVOLUTION

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*0. Introduction**

There seems to be a common belief among language teaching theoreticians[1] that the possibility of a contribution from transformational grammar to second language teaching is negligible, not to say non-existent. This belief seeems to be grounded on the alleged opinion of Chomsky himself that the teaching of languages will not benefit from the findings of the theoretical linguist, as expressed, for example, in the following statements: "I am, frankly, rather skeptical about the significance, for the teaching of languages, of such insights and understanding as have been attained in linguistics and psychology" (Chomsky 1966b:52); "it is difficult to believe that either linguistics or psychology has achieved a level of theoretical understanding that might enable it to support a "technology" of language teaching" (Chomsky 1966b:52); "it should serve as a warning to teachers that suggestions from the "fundamental disciplines" must be viewed with caution and skepticism" (Chomsky 1966b:53). I want to argue here that this generalised impression of the irrelevance to language teaching of Chomskyan theories of language, of which transformational grammar is but a formalisation at an abstract theoretical level, is ill-founded. The contention of this paper is indeed that the Chomskyan revolution in linguistics has clear and crucial repercussions in the area of language learning and language teaching which the theorist can only ignore to his cost.

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[1] I am using the expression "language teaching theoretician" in preference to the more usual one "applied linguist" on the basis that his endeavour is one of constructing theoretical models of language teaching rather than, as the second label would suggest, "applying" the findings of the discipline called "linguistics".

Furthermore, these repercussions will not so much be found in the technical formulations of transformational grammar but within the general context of Chomsky's doctrine of language and of man. What follows is an attempt to unfold this particular conception of the human being and of language as one of his crucial endowments in order to show where and how it interacts with second language learning, thus hopefully dispelling the current misconception referred to at the beginning.

1. The audio-lingual method

1.1 In order to fully appreciate the import of my claim, it is crucial to realise the extent to which current language teaching practice is still founded on the tenets of both taxonomic linguistics and S — R psychology. The correlation between language teaching methodology and those particular brands of linguistics and psychology becomes transparent on analysing the basis of the audio-lingual method, still of wide popularity and use at schools and universities.[2] According to Wilga Rivers, there are four basic assumptions in this method, as follows:

1. "Foreign-language learning is basically a mechanical process of habit formation, so that 'habits are strengthened by reinforcement'; 'foreign-language habits are formed most effectively by giving the right response, not by making mistakes'; and language is "behavior" and... behavior can be learned only by inducing the student to "behave" ";
2. "Language skills are learned more effectively if items of the foreign language are presented in spoken form before written form";
3. "Analogy provides a better foundation for foreign-language learning than analysis";
4. "The meanings which the words of a language have for the native speaker can be learned only in a matrix of allusions to the culture of the people who speak that language" (Rivers 1964:19—22).

The emphasis is clearly behaviouristic. Language is viewed as a set of habits, built up through reinforcement of right responses. Spoken language is seen as the primary form of language, particularly appropriate for the process of habit formation, written language deriving from the spoken form. Language is learned through drilling, the habits thus formed then extended by analogy to other contexts and situations. Finally, language is culture-bound, and cannot be learned divorced from the content given to it by the particular community where it is spoken. We will now see how these assumptions are embodied in many of the materials being presently used for language teaching.

[2] I am aware that, as well as supporters, the audio-lingual method has strong detractors, both in Europe and in America. Despite the good intentions of many, however, many of its features constantly reappear under various disguises. It is this creeping pervasion that justifies the central role given to this method in the present paper.

1.2 First, I suggest we look at one of the classics in the field of audio-lingual methods, the *A-L M*. The following is taken from the teacher's manual for German level three: "As a first step in beginning work on a new unit, the Basic Sentences should be presented orally in class. The classroom presentation is for the purpose of establishing accurate pronunciation and intonation... Then the sentences ahould be assigned as homework. They should be studied well enough so that there is no question concerning meaning when work on the reading selection and drills is begun"; "Structure drills are intended to help the students internalize the grammatical patterns of German by means of extensive practice with sentences and exercises that exemplify the patterns. The drills are essentially habit-forming exercises. They give the student various opportunities to manipulate items in a group of sentences to the point where he can make the necessary grammatical changes automatically"; "Part-choral or full-choral responses may be used for reinforcement. The pace should be kept fast; errors in pronunciation and intonation, as well as grammatical errors, should be corrected immediately, and the student should repeat the corrected line"; "Generalizations in each unit provide an explanation and summary of the structures illustrated and drilled... Every effort has been made to establish and clarify important points of contrast between the structure of English and that of German" (A-L M: 5—7). The audio-lingual philosophy is well represented here: priority of the spoken over the written word, S—R procedures for the setting up of habits, extensive drilling to be done at a fast pace, reinforcement of the right responses and immediate amendment of the incorrect ones, all geared to building up automatic reflexes to certain (grammatical) cues, not different in quality to the bar-pressing activity of the rat in the 'functional unity' made up of chained responses in Skinner's operant conditioning, as will be seen below.[3] A more recent work, the *Ealing introductory course in Spanish*, a method intended to cater for adult learners, especially those "whose business is something other than language and who may, in fact, have no particular gift for learning one" (Ealing: xi), follows essentially the same path. The first step is a presentation dialogue, which "serves to present

[3] Hilgard (1958:104), gives the following table to represent the functional unit of the rat's activity in the Skinner box:

Operant Number	Discriminative Stimulus	Response of the Rat
1	Visual bar	Rising
2	Tactual bar	Pressing
3	Apparatus noise	Lowering
4	Visual pellet	Seizing

The substitution of language correlates in the case of the audio-lingual method of language teaching is straightforward enough. Notice, moreover, the seeming reduction in complexitity in the case of language.

contextually the new words and language patterns to be taught in the unit" although "formal analysis of the patterns comes later..., *after* practice" (their emphasis, IMR). "In the course of this practice, teachers will vary in their use of the printed text" but "is it probably advisable to ensure that the dialogue is heard before it is read" — "Though a judicious amount of reading may, in the case of an alphabetic language, help a person to identify more easily what he hears, the auditory and oral experience remains the essential one for most students of language. The length of the time-lag between listening and reading may vary, but a time-lag there must surely be". "The structure drills are intended to systematize and generalize forms that have so far in the unit been learnt only as meaningful particularities... The laboratory practice must be done thoroughly and the student must be asked to correct his errors immediately they are made. The repetition of a mistake only engraves it on the mind. It is not enough for the student to realize his mistake. He must practise the correct form several times ... It is difficult to see how language can be internalized and made habitual without some amount of artificial drilling". "If the inductive method is followed, the teacher will avoid giving *a priori* rules, but rather lead the student to generalize from the particularities contained in the frames... It is important to remember that the function of grammatical knowledge is to organize and control. It has little to do with the assimilation of language and can never be a substitute for practice" (Ealing: xiv—xvii). I have quoted at length to leave no room for doubt as to the nature of the method, since it is precisely this very nature that makes the Chomskyan contribution particularly important.

Before proceeding with an exposition of Chomsky's theories of language, however, it will be well to look back at the basic assumptions of audio-lingual theoreticians and give a brief summary of several general criticisms which can be levelled against such an approach. To this end, I shall follow Rivers's (1964) overview.

1.3 The first assumption is that language learning takes place by habit formation through response reinforcement. Furthermore, "in order to be learned a response must be performed", and "the response is learned more effectively when it is immediately rewarded". It follows that this kind of learning "'makes no pretense of being communication'", i.e. "it is limited to the outward manifestations of verbal behavior, as is consistent with a strict behavioristic position". Also, the process "is continued to the point of saturation or automatic performance" (Rivers 1964:31). In Skinner's operant conditioning the emission of the response must precede its reinforcement. However, "he does not attempt to explain how the response comes to be emitted in the first place" (Rivers 1964:33), a difficult question and even more so in the case of second language learning, where in the absence of a stimulus no spontaneous response seems at all possible. From this point of view, second language learning

seems to approach classical conditioning. "Yet foreign-language acquisition cannot be fitted into a pure classical conditioning paradigm either, because in this type of learning the original response which is conditioned is a natural response to a natural (unconditioned) stimulus" (Rivers 1964:33). The internal consistency of the theory thus appears irreconcilable with its audio-lingual application. Also, the simple sufficiency of the performance of the response, without any pretence of being communication, comes under attack in Mowrer's learning theory, where "the occurrence of a response does not depend... upon similarity between present and past objective situations, but on whether the response 'produces response-related stimuli which have 'cathexis' relevant to the organism's current *needs*'" (his emphasis, IMR) (Rivers 1964:34). Because the cathexis may well be related to the teacher or the general communicative use of the foreign language, impersonal drilling (such as in the language laboratory) may be irrelevant to the learning process, regardless of frequency. Experiments carried out by Katona within a Gestalt framework "showed that material was better retained for longer periods when it was learned with understanding and that new problems were solved with much greater facility", i.e. "learning with understanding... leads to transposition, a Gestalt concept, where 'the elements are changed, but the whole-qualities, the essence, the principle are preserved in recollection... and we may apply them under changed circumstances'" (Rivers 1964: 47—48). The added possibility of mechanical drilling becoming a dreaded drudgery needs no special emphasis here.

The view that language is behaviour and that behaviour is learned by behaving also has obvious cracks. So far we have not accounted for the emergence of the behaviour in the first place. Behaviour happens when the student feels sufficiently motivated to behave, and motivation is yet another concept which remains unaccounted for in behaviouristic S—R psychology. Rivers gives McGeoch and Irion's definition of motivation: "'A motive or motivating condition is any condition of the individual which initiates and sustains his behaviour, orients him toward the practice of a given task, and which defines the adequacy of his activities and the completion of the task'". She cites Lambert's findings that "'two independent factors underlie the development of skill in learning a second language: an intellectual capacity and an appropriate attitudinal orientation toward the other language group coupled with a determined motivation to learn the language'" (Rivers 1964:81). Intimately linked to motivation are other emotional factors which already appear in Lambert's quote. First, the sociological attitude which favours integration into the group speaking the target language. Second, the psychological attitude that enables the learner to regress to a stage in his psychic development superseded long ago, i.e. a stage where there is a mismatch between needs (both physical and psychic) and possibilities of expression, a gap which results in a feeling of inadequacy and dependency, difficult to cope with by an adult

who is otherwise treated as such and has to face up to the responsibilities inherent to his age and status. This is why, in Rivers's words, "the small child needs the security and encouragement of a warm and loving atmosphere in order to develop verbal fluency, and the student of the foreign language needs to feel at ease with his teacher if he is to be able to imitate and assimilate the language adequately". Also, "in a recent analysis of the factors involved in foreign-language learning ability, Pimsleur, Stockwell, and Comrey emphasized this aspect. They concluded that in establishing adequate criterion tests for achievement in oral-aural skills entirely new factors will have to be included, and that 'among such new factors the personality of student and the characteristics of the teacher are those which appear most promising and are most in need of research attention'" (Rivers 1964:95).

The idea of the priority of the spoken over the written form stems from the belief in a natural order in language acquisition supposedly present when learning the native tongue: listening, speaking, reading, writing. But, as Rivers points out, even if this were the case for first language acquisition, it does not follow that the same order must be preserved for foreign-language learning: "the first and most obvious difference is that the infant learning his native language is at the same time discovering the possibilities of his own organs and exploring his environment. So, for the infant, physical maturation, the formation of concepts, and the development of the forms of speech of his community are taking place simultaneously" (Rivers 1964:101). Also, while "the infant has a tremendous desire to communicate", "the high-school student... must limit and restrict himself", since "his efforts at communication in the foreign language are frequently thwarted by his lack of knowledge, and he must be willing to return in spirit and in production to an earlier stage of learning" (Rivers 1964:102—3). Besides these theoretical objections there are more pragmatic ones bearing on the magnitude of the task imposed on the student who is deprived of the support provided by the written word. This is the conclusion arrived at from studies of organization of perception: "Hebb has drawn the conclusion that there are three kinds of perceptual unity... The third kind of unity is "identity", which is "defined... as referring to the properties of association inherent in a perception". In this case, a figure is seen as falling into a certain category, that is, as being similar or dissimilar to other figures. "The object that is perceived as having identity is capable of being associated readily with other objects or with some action, whereas the one that does not have identity is recalled with great difficulty or not at all, and is not recognized or named easily". In the case of language, as reported by G. Miller, "the stage of "identity"..., where the hearer can distinguish the pattern in what he is hearing, associate it with other patterns or with active responses, and recall it with ease, comes as a result of a much more complicated process than that involved in mere hearing" (Rivers 1964:106—7).

Redundancy and predictability, as used in information theory, seem in effect to play a major role in the understanding of language, thus highlighting a fundamental shortcoming of a strict adherence to the principle of priority of the spoken form when the learner lacks the necessary background which would allow him to operate from within the system.

The belief that in foreign-language learning analogy is to be preferred to analysis, the third basic assumption of the audio-lingual approach, does not seem easy to be upheld either, once account is taken of the common opacity of surface structures and the imperative need for the learner to perceive the relations which underlie them. This must, in fact, be taken into account by any theoretician of language learning, the advocates of the audio-lingual method included. What sets the latter apart, however, is the claim that 'analogy' alone is sufficient to enable the learner to disentangle the complexities of surface structure. What this 'analogy' would consist of remains, to a large extent, a mystery, not to say a terminological vacuity. It must be recalled at this stage that the whole of transformational grammar is essentially a spelling out of that very 'analogy', invested with quasi-mystical properties in some brands of psychology. Even if the idea of analogy were to be given some substance, the banning of analysis would not ensure. On the contrary, it could be argued that analysis may further the operation of the faculty of analogy, and as such it should be promoted. Rivers quotes an example from Politzer which clearly illustrates the deficiencies of a 'purely analogic' approach, due to the misleading character of the pattern when devoid of the understanding of the function. Both *je vais à l'université* and *je vais à l'école* can be pronominalised into *j'y vais*, but *je parle à mon ami* cannot become *j'y parle*. The obvious generalisation is that *y* can only depend on *vais* (or verbs of movement). This, however, is disproved by *je pense à la leçon* turning into *j'y pense*. As Rivers points out, "if the student has been guided purely by sound, he will not have been able to decide that *à something* was involved and not *à somebody*. If he has made this decision, then he has made a discrimination and analysis has begun to enter in. If he does not make such discriminations, generalization of sound patterns will lead him into many false analogies" (Rivers 1964 : 118). Also, "an important human characteristic which the method of analogy does not seem to take into account is the individual's desire to understand what he is doing", and "both the functionalist and Gestalt theorists... have taken seriously this human desire to know what one is doing" (Rivers 1964 : 120). This omission on the part of the behaviourist seems to stem from his primary concern with animal behaviour, more specifically, with rat lever-pressing and pigeon pecking. We shall be looking at the dangers of extending the results thus obtained to the sphere of human behaviour, including language behaviour, when we concern ourselves with Chomsky's general critique of Skinner's theory of language in the next

section. The conclusion, which can be drawn from all this, is that, as Rivers puts it, "a short explanation of what is being practised will... result in the student's focussing on those elements in the pattern which he most needs to learn, instead of casting around in his mind for some mnemonic device of rhythm or grouping which will help him remember the sound pattern. This accords well with the Gestalt principles of familiarity and set. If the student is actively looking for some element in the pattern, he is more likely to find it and remember it than if he is not alert to it" (Rivers 1964 : 124).

Finally, the assumption that meaning and culture are inextricably bound together, with all its Whorfian overtones, should not be carried too far. Taken literally, the Whorfian hypothesis is incompatible with second language learning. If given a weaker reading, the principle becomes difficult to preserve. As we shall see later, a Chomskyan framework allows for the penetration of a culture, including a foreign culture, in the same way that there is no basic obstacle to break into a language, native or foreign. Setting apart the obvious connections between a language and some aspects of the physical setting where it is spoken, the relations between the language and the culture are anything but essential. For one thing, cultural changes need not be accompanied by language changes, i.e. the language need not follow the culture in its historical evolution. In the same way, at the level of individual psychology, it is perfectly possible for an individual to gain access to a certain language while maintaining his loyalty to a different culture as such. The conflict, if at all, might emerge from a clash in group belonging, i.e. at a sociological, rather than purely cultural, level. After all, it has happened in history that a whole community changes its language, without it producing any tangible modification in the culture. Maybe what is intended falls more in the domain of semantics than in the area of culture proper. From this point of view, it is obvious that languages do differ at the level of linguistic semantics, as they do in their syntax or their phonology. It does not follow, however, that in order to better learn the phonology a native cultural environment is needed. On the other hand, it may well be true that the phonology of a language is learned more efficiently if viewed as a whole, as a gestalt, i.e. if approached from within. The same might obtain for the syntax and there is no reason to believe that the semantics ought to be different. A realistic rephrasing of the audio-lingual tenet would thus be that the meaning of the words in a foreign language is best learned when given in the full semantic context provided by that language. But the linguistic semantics of a language is clearly distinct from the culture of the people where that language is spoken. Further to this, the ultimate meaning of a word, especially in its connotative aspects, is safely confined to the sphere of individual privacy, and there is no linguistic reason to attempt to rescue it out of it. What we are dealing with at this level might well have to do with culture rather than language, e.g. emotional reactions

to words as well as actions, but precisely for this reason it can and must be kept separate from the actual language learning process, methodologically at least.

2. *Learning theories — behaviourism and innateness*

2.1 After the examination of some of the features of what, I would contend, is still one of the most common approaches to language teaching, if often under various disguises, i.e. the audio-lingual method, we can now go back to the beginning and pose again the question of what contribution Chomsky's insights into language can make to the field of second language learning with which we are concerned here. The first aspect of this contribution which I propose to examine lies in his strong opposition to behaviourist psychology and taxonomic linguistics, of which the audio-lingual approach is an offshoot. We shall therefore look at Chomsky's criticism of these two doctrines. If I manage to convey to the reader some of the sense put by Chomsky in the argumentation, the first step in the process will be completed. Having thus cleared the ground, we can then proceed to build anew and consider some of the more positive aspects of the Chomskyan doctrine.

2.2 Given a certain organism, O, in a certain domain, D, we may enquire about the nature of the learning theory that would account for O's behaviour in D. We can represent the problem as the determination of the internal structure of a blackbox, for a known input and output. Two basic positions are possible here. First, the input can be taken to be the environmental stimuli at a particular time T, plus O's past experience E, and the output the observed behaviour of O at T. The contents of the blackbox, i.e. the learning theory LT for O in D, would consist of "purely combinatorial devices for putting together items from experience", "machinery for instituting associative bonds", "enumerative techniques of inductive generalization from frequently repeated instances of contiguously occurring items in experience" (Katz, *Philosophy of language*, p. 241, quoted in Chomsky and Katz 1974:2), and the like. Alternatively, O's experience alone can be the input, the output consisting in a cognitive state CS. The internal constitution of the blackbox, i.e. LT(O, D), will now be considerably more complex, and will at least comprise a setting of the cognitive domain D, a pretheoretical characterisation of the data by O in D (that is, O's 'experience' in D), and the determination of the nature of the cognitive structure CS (cf. Chomsky 1976: 15). Given the second standpoint, the complexity of the chain relating experience to behaviour is increased. Experience plus stimuli alone does not account for behaviour. Instead, a mentalistic component cognitive in character, CS, is brought in, alongside a mechanism that, given CS, allows for the generation of behaviour. This is the 'rationalist' position, which contrasts with the former view, exemp-

lificatory of empiricist and behaviouristic doctrines. It is no secret where Chomsky's sympathies lie: "an attempt... to study directly the relation of behaviour to past and current experience is doomed to triviality and scientific insignificance" (Chomsky 1976:17). This is the first step in the argument being developed here.

The second has to do with the question of the constancy of the function LT(O, D), given the variability of O and D. That is, will LT', for O'=humans, and D'=language, be the same as LT", for O"=rats, and D"=maze-running? Or, in other words, do humans learn language basically in the same way as rats learn maze-running? The behaviourist's answer to this question will characteristically be an affirmative one. Now, given the fact that the audio-lingual approach is grounded in behaviouristic assumptions, we can imagine the proponent of this language-teaching method describing rat maze-running as a mechanical process of habit formation, and prescribing the elicitation of right responses and their reinforcement as the most effective method of habit formation, alongside with the precept that, maze-running being behaviour, it can only be learned by inducing the rat to behave. These, it must be remembered, are some of the basic tenets of the behaviourism-rooted audio-lingual methodology. If anything, their transposition to the domain of maze-running by rats makes them gain in credibility. But, after all, this should not be surprising, account taken of the fact that the transfer has only restored them to their original ground, as will be seen presently. For Chomsky, on the other hand, "even the crudest considerations suffice to show that there is no hope of reaching a positive answer to this question (of the invariance of LT for any O, D)" (Chomsky 1976 : 18). Rats and men might be roughly comparable in maze-running, but they are absolutely incomparable in language-learning. Indeed, man's capacity for language seems to have no match in any other species.

2.3 Skinner's theories of behaviour originate in the animal experimental laboratory and are basically confined to two organisms and two domains, viz. rat lever-pressing and pigeon pecking, all happening in a specially designed box which came to be called the Skinner box (cf. Hilgard 1958: 82). Skinner is confident that the results thus obtained can be extended to other spheres of behaviour, including human behaviour. Chomsky, naturally, disagrees. We shall concentrate on two aspects of this disagreement — the dispute over the legitimacy of the terminological shift, and the evidence from the biological sciences.

It is a relatively straightforward matter to define notions such as 'stimulus', 'response', 'reinforcement', etc. within the limited confines of the Skinner box, especially suitable for the control of variables. When these concepts are transferred to real life, however, problems arise. First, lawfulness of behaviour will be difficult, often impossible, to prove: "in the present

state of our knowledge, we must attribute an overwhelming influence to ill-defined factors of attention, set, volition, and caprice" (Chomsky 1959 : 551). A possible way out would be the principled exclusion of behaviour recalcitrant to prove lawful. But this includes the largest proportion of actual behaviour, and we would end up back with the conditions which obtain in the experimental laboratory. To avoid this barren state of affairs, Skinner highlights the rigour of his laboratory findings, but then takes them out of context, and by metaphorical extension transposes them to life outside the box. Chomsky remarks that "this creates the illusion of a rigorous scientific theory with a very broad scope, although in fact the terms used in the description of real-life and of laboratory behaviour may be mere homonyms, with at most a vague similarity of meaning" (Chomsky 1959 : 552).

In the laboratory, stimuli are related to responses by smooth reproducible curves. In real life, however, the situation is other. For instance, in the face of the stimulus 'Dutch painting' (i.e., the actual visual experience of a Dutch painting hanging on the wall) the response is not necessarily "Dutch" (i.e., the string of sounds which make up this word), but it may well be "clashes with the wallpaper" or a thousand others. To this Skinner would retort that the stimulus for the latter expression is not the Dutch painting, but some other one which remains unidentified. But it then follows that, as Chomsky puts it, "we cannot predict verbal behaviour in terms of the stimuli in the speaker's environment, since we do not know what the current stimuli are until he responds. Furthermore, since we cannot control the property of a physical object to which an individual will respond, except in highly artificial cases, Skinner's claim that his system... permits the practical control of verbal behaviour is quite false" (Chomsky 1959 : 553). So in real life most stimuli must remain unknown. Or, perhaps, thinking in terms of stimuli and responses and other Skinnerian concepts does not repay the effort. For the question of the identification of responses in the case of verbal behaviour is also a thorny one. Linguists have occupied themselves for centuries in a (hitherto not entirely successful) attempt to isolate grammatical units at the levels of semantics, syntax and phonology. Skinner's approach completely glosses over the issue. In laboratory conditions, 'response' can be identified, from the very setting of the experiment, as the activities of rat bar-pressing or pigeon spot pecking. But in language nothing is so simple, and the idea of 'extrapolating' from rat bar-pressing to human verbal behaviour makes no sense.

In the same vein, 'reinforcement' is given central instrumental status in child language learning, as well as in adult creative literary or artistic behaviour. Here again, this is a rigorous concept when construed in the context of the experimental laboratory, where "the operation of reinforcement is defined as the presentation of a certain kind of stimulus in a temporal relation with either a stimulus or response. A reinforcing stimulus is defined as such by

its power to produce the resulting change (in strength). There is no circularity in this: some stimuli are found to produce the change, others not, and they are classified as reinforcing and nonreinforcing accordingly" (Skinner, *Behavior of organisms*, p. 62; quoted in Chomsky 1959 : 556—7). But it also fails when transported to life outside the Skinner box. First, it is not the case that only drive reduction accounts for learning. There is evidence that other factors, such as novelty and curiosity, also play an active role. Thus rats will explore a novel maze and will perform better than another group not given that opportunity on subsequent trials when a food reward has been introduced. Second, ethologists attach especial importance to imprinting, i.e., the imitation of certain types of behaviour by the young animal when exposed to it during certain chronological 'critical periods' of its life (as Thorpe has reported with regard to song-learning by birds). Third, the role of training (and thus reinforcement) in child language learning is practically non-existent. Much the opposite, the data to which the child is exposed are usually fairly degenerate in character — ungrammatical sentences, false starts, changes of course in mid-way, unfinished sentences, etc. The attempts by some (usually middle-class) parents to 'teach' the language to their children are doomed to failure out of sheer physical impossibility — George Miller has worked out that it would take 100,000,000,000 centuries to utter all the admissible twenty-word sentences of English, the estimated age of the earth being only 10,000,000,000 years (vd. Miller 1964 : 30). Also, it is a well-known fact that the children of immigrant parents have no difficulty in picking up the language of their host community with utter perfection, in contrast with the serious obstacles encountered by their parents, who usually keep the mother tongue for the purpose of intra-family communication (cf. Chomsky 1959 : 560 ff.). Finally, the attempt to account for the conduct of the artist or the writer in terms of reinforcement by the community resolves itself in terminological vacuity. Ordinary language expressions are clothed in quasi-scientific nomenclature, but no conceptual upgrading ensues. *Is reinforced by* paraphrases *wants to*, so that *he plays a certain type of music because he wants* (*likes*, etc.) *it* becomes *he plays a certain type of music because he finds it reinforcing to do so. Response strength* or *probability of emission* really stand for words like *interest, intention* or *belief*. Otherwise, if, along with Skinner, we define the process of confirming an assertion in science as one of "generalizing additional variables to increase its probability" and its strength (cf. Skinner, *Verbal behavior*, p. 425—9; quoted in Chomsky 1959:556), we will conclude that "the degree of confirmation of a scientific assertion can be measured as a simple function of the loudness, pitch and frequency with which it is proclaimed, and that a general procedure for increasing its degree of confirmation would be to train machine guns on large crowds of people who have been instructed to shout it" (Chomsky 1959 : 556). Similarly, the

expression *controls* can be interpreted as a paraphrase of *denotes* or *refers to*, as in the case of the proper noun *Eisenhower* uttered in the absence of the corresponding stimulus control (notice that the probability of use of proper nouns does not increase with the presence of the corresponding stimulus; a case limit is that of the speaker's own name) (cf. Chomsky 1959 : 553).

2.4 The evidence from the biological sciences confirms the illegitimacy of the terminological shift. As the ethologist Tinbergen, cited by Chomsky, comments, "we may now draw the conclusion that the causation of behavior is immensely more complex than was assumed in the generalizations of the past. A number of internal and external factors act upon complex central nervous structures. Second, it will be obvious that the facts at our disposal are very fragmentary indeed" (Tinbergen, *The study of instinct*, 74; quoted in Chomsky 1959 : 548, fn. 1). In the field of verbal behaviour, Eric Lenneberg has forcibly put forward the thesis of species-specificity of human language. Innately determined behaviour can be meaningfully distinguished from behaviour which is contingent on environmental circumstances. Thorpe has reported of a hand-reared tawny owl which pounces upon an imaginary prey after being hand fed, despite the fact that it totally lacks hunting experience. On the other hand, Skinner has conditioned a rat into "purchasing" tokens to be then dropped into a food-dispensing machine. As Lenneberg remarks, a series of steps have been here put together artificially, by the work of man. They make no more sense to the rat (at any level) than that which results from their mere random chaining. The rat's behaviour is thus environmentally contrived, and can be accounted for within the framework of Skinner's model. But what the owl shows is not determination by the environment. Rather, it gives evidence of the existence of an innate releasing mechanism with nil participation of the trainer (cf. Lenneberg 1967 : 196 ff.). The claim being put forward here is that human verbal behaviour has more in common with the pouncing of the owl than with the "purchasing" of the rat. This is indeed the position taken up by Lenneberg and by Chomsky.

Lenneberg proposes four criteria to distinguish innately determined behaviour, such as -obviously- walking or -allegedly- language, from behaviour which is culturally bound, such as writing: variation within the species, history within the species, existence of inherited predispositions, and presumption of specific organic correlates (vd. Lenneberg 1964 : 583 ff.). We shall examine them in turn.

It is plain that there is no intra-specific variation for walking, but there can be, and there actually is, for writing (various equally successful writing systems coexist happily). On the surface, language appears infinitely varied. Indeed, the emphasis of taxonomic linguistics can be found here, carried by Whorf to the bitter end of making thought absolutely contingent on the mother tongue. However, a more careful analysis will reveal the underlying

unity of all human languages, crystallised in what is known as language universals. Language universals might appear as trivially obvious to the untrained observer, but a second thought will clearly reveal that there is no logical necessity for their existence. For example, all languages present phonemisation, but one can very easily imagine a language where this would not be the case. Or syntactic transformations in all languages are structure dependent operations, although, here again, there is no a priori reason why this should be so (a structure independent transformation would be one that, for instance, preposed the last word in a string to form a question, so that *John can* would become *can John*?, and *John can call his sister up* would be transformed into *up John can call his sister*?). Language universals are the formal correlates of neurophysiological functions specific to humans, a manifestation of what Lenneberg calls "cognitive function", i. e., "certain cerebral functions that mediate between sensory input and motor output" (Lenneberg 1967 : 372), characterised as species-specific and intra-species ubiquitous.

So language sides with walking, but not with writing, with respect to the first of Lenneberg's criteria. The situation is similar regarding the question of history within the species, and no further comment will be necessary here. As for the third criterion, existence of inherited predispositions, this is obviously the case for walking, but not for writing. While "permanent and customary gait cannot be taught or learned by practice if the animal is not biologically constituted for this type of locomotion" (Lenneberg 1964 : 584), there is no evidence of innate predisposition for writing, which has to be taught — illiteracy is common and bears no relation to intelligence or any other psychological trait. Here too, the appearances of language are deceptive. Contrary to the popular belief that language is taught (and we have already seen some reasons why this can just not be the case), Lenneberg presents evidence from language pathology that indicates the presence of inherited innate predispositions for language acquisition. In a school for the deaf where the teaching of any sign language was deliberately avoided, he found that "all the children, without exception, communicated behind the teacher's back by means of "self-made" signs" (Lenneberg 1964 : 589). Also, he mentions the case of a severely handicapped child, unable to vocalise upon command, who nonetheless showed good comprehension of such complex English sentences as *take a pencil and cross out all A's in this book, look behind the tape-recorder and find a surprise, point at all pictures of things to eat*, etc. Lenneberg adds: "he would even nod yes or no correctly when asked about situations that were spatially and temporally removed". And he concludes: "this is discrimination learning but on a plane that requires a much more intricate understanding and sensory organization than the simple association of an object and a sign" (Lenneberg 1964 : 590).

Finally, regarding the presumption of specific organic correlates, the

fourth criterion, this is not even necessary in the case of gait, because we *know* what the organic correlates are. For writing, on the other hand, there is no evidence of any specific organic correlate, as there is no hint of innate predisposition either: "a child's contact with written documents or with pencil and paper does not ordinarily result in automatic acquisition of the trait" (Lenneberg 1964 : 584). But in the case of language such evidence seems to exist. First, language is environment-independent. This is not to say that the language that the child learns will be at variance with the one he hears in his immediacy (e.g., the child who grows up in a French-speaking environment *will* learn French rather than Hausa), nor does it imply that language can emerge in the total absence of any environmental linguistic experience (e.g., wolf children are languageless). Rather, what is meant is that language acquisition will proceed regardless of any possible less-than-ideal circumstances, or even in the presence of negative efforts from the environment to prevent it. Second, both the onset and the developmental history of language seem to be fixed. This feature is not unique to human verbal behaviour. Gesell and associates report that both gait and upright position are acquired through a series of steps which typically occur at a particular time in a particular fashion. Similarly, Grohmann's experiments show that the flying ability of pigeons 'matures' independently of the availability of opportunities to exercise it (cf. Lenneberg 1964 : 591—2). Compare these findings with the case of clearly acquired behaviours, such as waving goodbye or writing, both positively requiring environmental initiative. In language, Lenneberg remarks, "all children go through identical phases in the process of acquiring speech... All attempts to make the child string up the words that he is known to use singly will fail until he reaches a certain stage of maturation. When this is attained, the combining of words seems to be quite automatic... Other aspects of language exhibit a similar developmental constancy" (Lenneberg 1964 : 594).

During the course of man's maturation, cognitive processes and capacities become spontaneously differentiated, leading, in the case of language, to a state that Lenneberg calls 'language-readiness'. When this happens, the organism is ready to 'resonate' when acted upon by the environment, so that "exposure to adult language has an excitatory effect upon the actualization process much the way a certain frequency may have an excitatory effect upon a specific resonator" (Lenneberg 1967 : 378). The organism requires language from the environment as it requires food for nourishment, but both food and language are broken down in accordance with the particular characteristics of the organism and incorporated in a form adequate for the organism to process: "the information on how the organs are to be structured does not come in the food but is latent in the individual's own cellular components" (Lenneberg 1967 : 375). The state of language-readiness does not come about

out of sudden change, but is the result of progressive differentiation: "physiological (and, therefore, cognitive) functions assume characteristics and specificities much the way cells and tissues do during ontogeny" (Lenneberg 1967: 376). Thus language is not a cultural product. On the contrary, "the individual is seen as functioning by virtue of his own power supply, so to speak; he constructs language by himself (provided he has the raw material to do it with)" (Lenneberg 1967 : 378). Language cannot be artificially conditioned, as a rat can be trained into token-purchasing. The form of human language cannot be shaped at will by the experimenter, but is genetically programmed in each human being. Man is therefore no freer to take or leave language than he is to have arms or eyes, or to be bipedal or centipedal. If this is so, the equation of man's language learning capacity with maze-running conditioning in rats (i.e., the suggestion that LT(M, L) equals LT(R, M'), for M=man, L=language, R=rat, and M'=maze-running) nears absurdity. With it go its language-teaching applications, and the proponent of the audio-lingual methodology sees the ground removed from beneath his feet.

2.5 The evidence that language is not taught can be brought into the dispute about the problem of acquisition of knowledge that has occupied philosophers for centuries. Indeed, as Chomsky and his associates have repeatedly pointed out, language provides a specially privileged ground for the testing of such theories.[4] The fundamental question is, in the words of Bertrand Russell, the following one: "how comes it that human beings, whose contacts with the world are brief and personal and limited, are nevertheless able to know as much as they do know?" (Russell, *Human knowledge*, 5; cited in Chomsky 1976 : 5). Historically, two basic answers have been given, viz. those usually known under the names of empiricism and rationalism. Note that, although doubtlessly a variety of brands can be found within each current, nevertheless the fictional unity of each of the two movements is a methodologically justified and desirable construct: "it is historically adequate as well as heuristically valuable to distinguish these two very different approaches to the problem of acquisition of knowledge. Particular empiricist and rationalist views can be made quite precise and can then be presented as explicit hypotheses about acquisition of knowledge..." (Chomsky 1965: 52). That is to say, "empiricism and rationalism are theories about the character of theories about the acquisition of knowledge. One can think of these general approaches as metatheories" (Chomsky and Katz 1974 : 3). The dividing line runs down the conception of the nature of the cognitive

[4] Chomskyans, therefore, side with the Port-Royal grammarians against Malebranchians in taking a positive stance on the problem of the theoretical determination of the innate structures which account for man's possession of language. Malebranchians, on the contrary, see no hope for the development of such an explanatory theory (vd. Bracken 1973: 236).

structures of man. For the empiricist, the mind is a blank tablet ready to register the impressions it receives from the environment via the senses. The rationalist, on the other hand, believes the mind to be endowed with a rich set of innate principles which form the basis of all knowledge. In the classical Antiquity, Aristotle, an empiricist, put forward the idea that, using Chomsky's words, "the world is structured in a certain way and... the human mind is able to perceive this structure, ascending from particulars to species to genus to further generalization and thus attaining knowledge of universals from perception of particulars" (Chomsky 1976 : 5). Plato, an extreme representative of rationalism, invests essences with pre-existence in an actual 'world of ideas'. Note that the issue cannot be decided on the grounds of simplicity. To assert that the empiricist theory is intrinsically simpler than the rationalist doctrine, on the basis of the degree of complexity of the mind's internal structure, would be anything but easy to justify. On the other hand, "it is difficult to see on what rational grounds an empiricist theory can be shown to be "simpler" than, let us say, a pure reminiscence theory, which might also be characterized in a quite definite way, and held, irrelevantly, to be "simpler" in that it minimizes the role of learning" (Chomsky 1969d : 261). 'Scientific objectivity' does not seem to stand in the way of rationalist thought, as Lenneberg remarks: "Organisms are links in a chain of reaction called *life*. All living forms derive from this event and carry within them its principle; life itself is an innate principle of organism... The discovery and description of innate mechanisms is a thoroughly empirical procedure and is an integral part of modern scientific enquiry" (Lenneberg 1967 : 393). We shall now briefly review some of the contributions of philosophical thinking to the problem of innateness of mental structures in man. In doing so, the biological evidence looked at above will be strengthened, if at a more speculative level, and the issue further clarified.

According to Herbert of Cherbury, cited in Chomsky's *Cartesian linguistics*, there are certain "principles or notions implanted in the mind", which are "stimulated by objects", although "no one, however wild his views, imagines that they are conveyed by objects themselves". And Chomsky comments: "By application of these intellectual truths, which are "imprinted on the soul by the dictates of nature itself", we can compare and combine individual sensations and interpret experience in terms of objects, their properties, and the events in which they participate" (Chomsky 1966a : 60). Note the parallelism with Lenneberg. First, certain principles are innate in the mind.[5]

[5] In order to dispel any possible doubts about the basic identity of the "mind" of the rationalist philosopher and the "biological structures" of the modern scientist, it might be well to remind the reader that, as Lenneberg explains, "the tissues of the brain and the rest of the body constitute an organic, interdependent unit". The mind-body

Second, these principles are responsible for the apprehension and representation of reality. Third, stimulation by the environment is essential for the process to take place, although the immediate causation of knowledge must not be attributed to this environmental stimulation. These are recurrent themes all through the Enlightenment and Romantic periods. For Descartes, "there is nothing which was not innate in the mind, except only these circumstances which point to experience — the fact, for instance, that we judge that this or that idea, which we now have present to our thought, is to be referred to a certain extraneous thing, not that these extraneous things transmitted the ideas themselves to our minds through the organs of sense..." (Descartes, *Notes directed against a certain program*; quoted in Chomsky 1966a: 67). Thus "when first in infancy we see a triangular figure depicted on paper, this figure cannot show us how a real triangle ought to be conceived, in the way in which geometricians consider it, because the true triangle is contained in this figure, just as the statue of Mercury is contained in a rough block of wood. But because we already possess within us the idea of a true triangle, and it can be more easily conceived by our mind than the more complex figure of the triangle drawn on paper, we therefore, when we see that composite figure, apprehend not itself, but rather the authentic figure "(Descartes, *Reply to objections V*; quoted in Chomsky 1966a: 68—9). Similar ideas are found in Cudworth, for whom the "intelligible forms by which things are understood or known, are not stamps or impressions passively printed upon the soul from without, but ideas vitally protended or actively exerted from within itself" (Cudworth, *Treatise concerning eternal and immutable morality*; quoted in Chomsky 1966a: 68). In a similar vein, Leibniz asserts: "I cannot admit this proposition: *all that one learns is not innate*. The truths of the numbers are in us, yet nonetheless one learns them, either by drawing them through demonstrative proof (which shows that they are innate), or by testing them in examples, as do ordinary arithmeticians... The senses, although necessary for all our actual knowledge, are not sufficient to give it all to us, since the senses never give us anything but examples, i.e. particular or individual truths... Necessary truths... must have principles whose proof does not depend on examples, nor consequently upon the testimony of the senses, although without the senses it would never have occurred to us to think of them" (Leibniz, *New essays*; cited in Chomsky 1965:50). Among the romantics, Coleridge asks: "Does nature present objects to us without exciting any act on our part, does she present them under all circumstances perfect and as it were ready made?". And he answers: "Such may be the notion of the most unthinking... not only must we have some scheme or general outline of the object to which we could determine to direct

unity manifests itself through both trophic and mechanical relationships (Lenneberg 1967: 4 ff.).

our attention, were it only to have the power of recognizing it..." (quoted in Chomsky 1966a:70). Finally, for Wilhelm von Humboldt "die Erlernung ist... immer nur Wiedererzeugung". More specifically, a language "lässt sich... nicht eigentlich lehren, sondern nur in Gemüthe wecken" (Humboldt, *Über die Verschiedenheit des menschlichen Sprachbaues*; cited in Chomsky 1966a:64). Anticipating modern psychological trends in phonology, he views the in itself amorphous sound chain as taking up a definite shape in accordance with certain patterns which are present in the mind; the word is thus not "ein Abdruck des Gegenstandes an sich, sondern des von diesem in der Seele erzeugten Bildes" (quoted in Chomsky 1966a:70). The similarities between these strands of philosophical thought and their modern scientific counterparts, as represented by Lenneberg, are undeniable.

2.6 The innateness hypothesis, which is at the heart of Lenneberg's biological theory of language, as well as that of the rationalist philosophy that the preceding quotes illustrate, has been summarised by Moravcsik in the following three propositions with regard to the specific case of language: "*i*) given the normal conditions of language acquisition, it must be the case that the process of acquiring a state of mind of having internalized rules of language is accounted for by a structure innate to the human mind; *ii*) this innate structure is a set of innate ideas; *iii*) this set of innate ideas corresponds to a set of non-trivial linguistic universals" (Moravcsik 1969:429). As corresponds to a hypothesis, there is no suggestion here that "concepts (i.e., ideas, IMR) are entities open to examination by introspection or other acts of awareness", that is to say, "concepts within the theory propounded here are theoretical constructs rather than entities open to direct observation" (Moravcsik 1969:432—3).[6] Thus the assignment of a definite structure to the postulated innate ideas is not a feasible task as yet. Allegiance to a form of innateness, therefore, does not entail commitment to either materialism or dualism, since it is compatible with both.

The idea being put forward here, along the lines suggested by Chomsky, is that the existence of a set of innate ideas, in whichever form, makes possible the acquisition of language under the normal conditions of environmental exposure. Thus all children are enabled to learn their mother tongue (a system of remarkable complexity), and to do so in an amazingly short period of time, despite the degenerate nature of the data to which they have recourse and the normal passive attitude of the environment (the irrelevance of certain parental attempts to 'teach' the language has already been commented on). The system of knowledge arrived at by the child is what Chomsky has called 'linguistic

[6] Compare this position with that of Chomsky when talking about formal operations on sentences: "these structures and the operations that apply to "them are postulated as mental entities in our effort to understand what one has learned..."; "there is nothing strange or occult in this move, any more than in the postulation of genes or electrons" (Chomsky 1971: 33).

competence'. Unlike 'performance', constrained by various trivial physical limitations (e.g., the finiteness of memory), 'competence' reflects the ideal knowledge which must be attributed to the fluent speaker of a language to account for his capacity to produce an infinite number of novel grammatical sentences (the limitations contained in 'performance' may, however, prevent a full actualisation of the system of knowledge that constitutes the 'competence'). The plausibility of Chomsky's model of a mind endowed with innate ideas which account for language acquisition appears difficult to question. Chomsky himself comments that "the notion that there may be innate principles of mind that on the one hand make possible the acquisition of knowledge, and on the other determine and limit its scope, suggests nothing that should surprise a biologist" (Chomsky 1971:17). He adds that recent experimental work "suggests that there is a primitive, neurologically given analytic system which may degenerate if not stimulated at an appropriate critical period, but which otherwise provides a specific interpretation of experience, varying with the organism to some extent" (Chomsky 1971:20). However, it is true that despite "glimmerings of understanding of the neurophysiological structures that provide such schemata for interpretation of experience in the case of figures and objects,... the neurophysiology of language remains almost a total mystery" (Chomsky 1971:31). Thus, to dispel the mystery, "the neurologist faces the problem of discovering the mechanisms that determine this schematism, and the biologist the problem of explaining how these developed in the course of human evolution" (Chomsky 1971:44).

2.7 Richard Gregory sets himself the task of clarifying the evolutionary origins of language. He feels a bit uneasy about Chomsky's delegation of the enterprise, and he remarks that "Chomsky seems a bit too unconcerned about the origins of his deep structure. He says that it is innate, built into the brains of human babies — and leaves it at that. But to the biologist, this presents the problem: how could this unique structure arise in a mere few thousand years, when other adaptive biological changes are so slow?" (Gregory 1970:243). In effect, "inherited associations take thousands of generations to develop because they do so by the slow tortuous processes of natural selection" (Gregory 1970:242). For example, cows understand the 'signals' that cloud overlaying 'sends' about the coming rain, and they respond to them by lying in the fields. We can imagine that cows who did not lie down when it rained tended to die from the effects of dampness, or something along these lines. Thus cows with the ability to predict rain and react accordingly would have stood the best chances of survival and, therefore, of propagating. But language seems to have emerged from nowhere, and this poses a serious problem to the biologist.

Before we attempt to answer the riddle, let us divert our attention into technology. Gregory remarks that "in the history of technology it is common for an invention developed for one kind of problem to be used to solve a quite

different problem" (Gregory 1970:243). For example, before sending rockets to the moon it had been necessary to spend many centuries of research on mathematics, astronomy, physics, etc. which had been undertaken in absolute ignorance that it would ultimately lead to a selenite expedition (this, incidentally, poses the frightening question[7] of where our present research in the various branches of science is taking us). Now suppose that something similar happened with language, that is to say, that certain structures that were already present in the human mind, where they had developed in the course of millions of years of evolution through natural selection, were carried over to the task of creating language. If this were the case, the problem of the biological origin of language would be in a good stead for receiving a solution. Now Gregory suggests that the structure of language may have been taken over from the 'grammar of vision', i.e. from the way animals structure the world in order to see it. Notice that the parallelisms are remarkable. "The perceptual system makes sense of patterns never previously encountered. We can recognise objects from strange points of view and can deal with unfamiliar objects fairly well". Also, "impossible pictures and objects seem to violate the grammar of vision much as 'furiously sleep ideas green colourless' violates the structure of our language. Much as we read meaning from a printed page in terms of our previous experience of the world, so we read from retinal images the external world of objects and events". Thus, Gregory explains, "the suggestion is that Chomsky's deep structure of language has its roots in the brain's rules for ordering retinal patterns in terms of objects. More specifically, what I am suggesting is that human language has its roots in a takeover operation, in which man cashed in on the long development through which animals became able to classify objects according to an internal grammar, to read reality from their eyes" (Gregory 1970:24). He goes on to cite evidence from recent research about cerebral processes which take place during perception: "Over the last ten years, physiologists have discovered that certain patterns at the eye produce activity in specific cells of the brain... The American physiologists D. Hubel and T. N. Wiesel have identified a number of features of retinal patterns which are selected for the internal language of the brain. What emerges from these studies... is that objects are not pictured, but rather described by selected features of the retinal patterns as represented by the firing of individual brain cells" (Gregory 1970:24). So the proposal does not seem too far-fetched, although there is naturally a long way still to go: "From this work we begin to understand the words of the language of

[7] Frightening not because of reasons necessarily intrinsic to science or to scientists. I agree with Sir Peter Medawar that "there must be very few wicked scientists", but I also agree with him that "there are, however, plenty of wicked philosophers, wicked priests, and wicked politicians" (Medawar 1972 : 87). As it happens, it is not the scientist who controls the consequences of his findings.

perception, but it is far from clear how they are put together. In other words the mechanism of the grammar underlying the perceptual sentences is still hidden from us" (Gregory 1970:24). In any case, the way seems now open for the neurological and biological investigation of language structures. The strongest evidence points at innate mechanisms, as is indeed the case for many other aspects of human behaviour. We may well be nearing a dramatic breakthrough in our understanding of the neurophysiology of language, both in ontogeny and in phylogeny. In these circumstances, insisting on a priori notions of learning by association through simple peripheral processing mechanisms makes very little sense. Men are not rats, but maybe rats also have been unfairly treated by the learning theorist. After all, there is far more to nature than meets the eye. The evidence clearly points in this direction.[8]

3. *Theoretical models of grammar — taxonomic and transformational linguistics*

3.1 The second of Chomsky's attacks on established paradigms is directed against the model of linguistics which he himself has come to call 'taxonomic linguistics'. The charge is two-sided. On the one hand, there is the inability of such a model to handle perfectly legitimate data, as will be seen presently. On the other, taxonomic linguistics has very close links with the behaviouristic approach to learning: "taxonomic linguistics is empiricist in its assumption that general linguistic theory consists only of a body of procedures for determining the grammar of a language from a corpus of data, the form of language being unspecified except insofar as restrictions on possible grammars are determined by this set of procedures" (Chomsky 1965:52). Chomsky views the child's activity in constructing the grammar of a language from the scanty data to which he has access as being essentially similar to that of the scientist engaged in hypothetico-deductive reasoning in the building of scientific theories. In contrast to this approach, taxonomic linguistics can be regarded as a hypothesis of language acquisition based on induction, where the only innate mechanisms are a set of peripheral procedures which process the data and allow for the establishment of associative relations. Thus all the argumentation brought into the issue of innativism versus associationism can be taken over here. I shall not follow this course, however. Instead, I shall concentrate on the second avenue of taxonomic failure, that is, on its deficiencies at the level of formal grammatical explanation.

3.2 A brief excursus might be in order here about the nature of scientific

[8] Stent has noted that "neurological studies have indicated that... information about the world reaches the depths of the mind, not as raw data but as highly processed structures that are generated by a set of stepwise, preconscious informational transformations of the sensory input. These neurological transformations proceed according to a program that pre-exists in the brain" (Stent 1975 : 1055—6).

progress. The idea that science develops by accumulation is still prevailing. In this model, the scientific endeavours of successive generations of scientists come together in a common pool where they live happily alongside each other. It follows from this that the longer a science has been practised or the bigger the number of its practicioners, the better chance of development it will stand. It is a conception that views science, to model on Wittgenstein's visualisation of language, as a city with old medieval quarters, modern geometrically drawn districts, and futurist skyscrapers floating in an ocean of green. So the new generations can build directly on top of what has been left by the old ones, and progress happens in an orderly and painless manner. More and more pieces of the gigantic puzzle of nature are gathered and put together by the industrious and harmonious scientific community. Knowledge accrues in a piece-meal progression and the efforts of the scientist are rewarded when he encounters a new item to add to the collection.

This picture has been strongly disputed by T. S. Kuhn in his book *The structure of scientific revolutions*. Kuhn makes a fundamental distinction between what he calls 'normal science' and other periods in which the activities which define normal science cannot be carried out. The conception of science as development-by-accumulation would correspond to his phases of normal science. These are characterised by a concentration of efforts on the solution of what he calls scientific puzzles, which are typical of stabilised and well-established science. Normal science does not aim at the discovery of novelties, indeed when they occur the chances are that they will herald the disintegration of normal science. Instead, it is geared to the solution of problems which are anticipated as having a certain solution within the established paradigm (or, more accurately, which must have one of many solutions), but where it remains for the scientist to discover the steps through which such a solution will be attained. There are three kinds of problems to which the activities of normal science are directed. First, the collection of facts whose solution will be feasible within the given body of knowledge. Second, the matching of the theory with the world outside, an endeavour which also needs to be manageable to be undertaken, but which is far from having an obvious execution. Lastly, the theory itself is expanded and further articulated, thus its power and efficiency being increased. Note that the essential nature of these three kinds of problems is that of puzzle-solving, and that at no stage is the discovery of unaccountable facts aimed at. When this happens, i.e. when a problem emerges that appears to have no solution within the prevailing paradigm, the terrain will be ready for the occurrence of a scientific revolution, in Kuhn's terminology.

The term paradigm, mentioned in the preceding paragraph, is basic to the understanding of what is a revolution in science. A paradigm is a prerequisite to the existence of normal science in that it defines a scientific community and specifies the problems its members will set out to solve and the

methods they will use. Tacit agreement is therefore necessary for a paradigm to prevail. A paradigm has a tangible manifestation in the presence of textbooks which appear as monolithic milestones of the dominant doctrine, thus disguising the history of ideological struggle which antecedes the then obtaining hull. Normal science is only possible when the promise of increased power in the solution of newly emerged problems, implicit in a competing paradigm, is taken up by the community, who then engages in the actualisation of this promise. Before the triumph of a paradigm, during what Kuhn names the "pre-paradigmatic period", the field is in a state of morass, data being frantically collected, but with no guiding star to impose order and give purpose. This situation usually ends with the victory of one of the pre-paradigmatic schools, which then becomes the dominant paradigm where the activity of puzzle-solving, typical of normal science, can thereafter take place.

Revolutions happen when the existing order proves incapable of handling new situations which cannot be predicted, let alone managed, from within the old system. In science this occurs with the emergence of anomalies, a difficult event in itself, given the tendency of any paradigm to perpetuate itself by a process of insulating itself against potentially falsifying data. The scientists working within that framework become, so to speak, conditioned by and to it, blind to phenomena, natural or doctrinal, which fall outside its scope. A gestalt-switch operation is thus necessary for the very realization of an anomaly and the start of the revolutionary process. This usually happens within a small minority from which a sense of crisis and insecurity spreads to the community at large. If no alternative paradigm is available, the problem will have to be shelved in the hope that future generations might be better equipped to attempt to tackle it, lest the whole scientific activity comes to a halt, progress impeded by that alien body which cannot be fitted in, or digested by, the existing machinery. A paradigm is therefore valid until a better paradigm displaces it, and in the last instance nature will have to conform to what is available in the way of scientific doctrines. When a scientist or group of scientists finds a new theory capable of handling the recalcitrant difficulty, however, a revolution is triggered off which will only end with the triumph of the new paradigm, unless the old one manages to crush it temporarily with the help of ad hoc modifications to its own theory. When this happens, the reasons are more sociological (and, ultimately, psychological) than purely scientific. The victory of new paradigm will take a good deal of persuasion by the initial group of revolutionaries. Young or newly-come members of the community will be more easily convinced, but some of the old figures will staunchily resist and maybe even initiate a counter-revolution. The likelihood of this happening is in direct proportion to the strength of the position the resister occupies in the hierarchy. Some (usually old) scientists will never be convinced. If the new paradigm is taken up by the scientific community,

they will remain isolated and, finally, will become irrelevant: "the man who continues to resist after his whole profession has been converted has *ipso facto* ceased to be a scientist" (Kuhn 1970:159).

3.3.1 I shall now attempt to show that the events which took place in linguistics during the mid-fifties qualify as a paradigm revolution. We shall be looking at some well-known data to illustrate the fact that anomalies had emerged that the then prevailing model of taxonomic linguistics could not handle.[9]

A good characterisation of the taxonomic model appers in Chomsky (1964:53). The model consists of two components — a syntactic component and a phonological component, each of them containing a number of unordered rules. The rules are typically of the form: A → B/X_Z, which reads 'rewrite A as B when preceded by X and followed by Z', or 'A has the variant B in the context X_Z' (where X and/or Z can be null; if both are null, the rule will be context-free). In the syntactic component, each of these rules states category membership for some phrase or formative. In the phonological component, there are two distinct subsets of rules. One of them, the morphophonemic rules, expresses the phonemic make-up of the formatives; the other, the phonetic rules, states the contextuallydetermined phonetic constitution of the phonemes. There is no semantic component.

3.3.2. Consider the often quoted sentences (1) and (2):

(1) *John is easy to please*

(2) *John is eager to please*

Taxonomically, the structures of (1) and (2) are identical:

(3) N — COP — ADJ — *to* — V

(i.e., Noun — Copula — Adjective — *to* — Verb)

So taxonomic linguistics would conclude that there is no syntactic difference between (1) and (2). The semantic variation is obvious, but has no possible characterisation in the taxonomic model. Only at the phonological level would (1) and (2) be shown to differ, viz. in the phonological composition of the two last segments of the formatives corresponding to the constituent ADJ — [i:zi] and [i:gə], respectively. Arrived here, the taxonomic linguist would think his job done. Consider, however, sentences (4) through (9):

(4) **John's easiness to please*

(5) *John's eagerness to please*

(6) *It is easy to please John*

(7) **It is eager to please John*

(8) *To please John is easy*

(9) **To please John is eager*

[9] What follows is of course hardly novel. The reasons for its inclusion here have to do with the internal coherence of the paper, as well as hopefully serving the purpose of providing a convenient summary of some of the basic arguments used to compare the generative and the taxonomic models.

It is immediately obvious that (6) and (8) paraphrase (1), while (5) renders (2), as shown below:

(1') *Buy the cheap one, because John is easy to please*
(6') *Buy the cheap one, because it is easy to please John*
(8') *Buy the cheap one, because to please John is easy*
(2') *Because John is eager to please, I've no doubt he'll co-operate*
(5') *Because of John's eagerness to please, I've no doubt he'll co-operate*

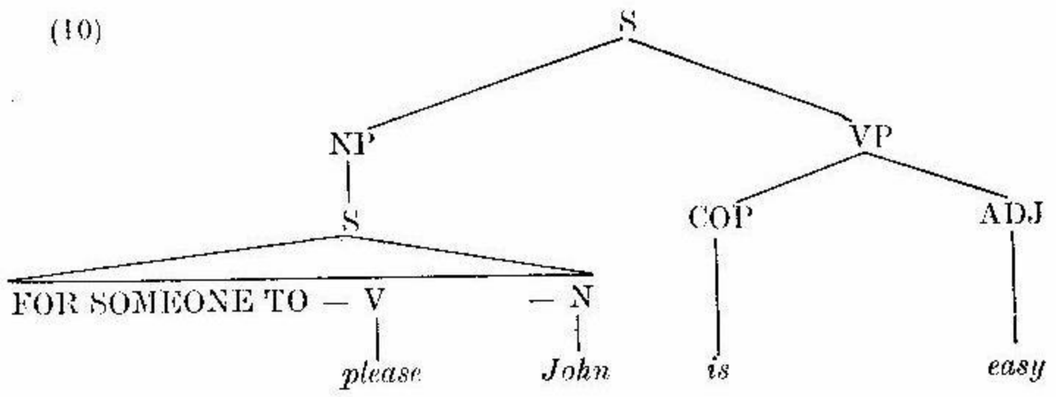
For the taxonomic linguist the situation presents no problem, the speech act taking care of such paraphrase relations. What remains to be accounted for, however, is the starred condition of sentences (4), (7) and (9), which, nevertheless, have the same constituent structure as the grammatical ones (5), (6) and (8), respectively. That is, the taxonomic syntactic component cannot give a principled account of the restrictions on the combinatory possibilities of formatives which these sentences illustrate. On the other hand, this is precisely the task Chomsky sets his grammar to: "the grammar of L (the given language, IMR) will... be a device that generates all of the grammatical sentences of L and none of the ungrammatical ones" (Chomsky 1957:13). In the face of the challenge presented by (4), (7) and (9) two lines of defence appear to be available to the taxonomist. First, he can claim triviality for the proposed task, i.e., he can maintain that the statement of grammaticality falls beyond the boundaries of linguistics because it lacks linguistic significance, a bizarre allegation when considered from the new gestalt frontiers opened up by Chomsky's paradigm. Second, he can resort to the enumeration of co-occurrence restrictions between certain syntactic structures (as *to* — V — N — COP — ADJ, which defines (8) and (9)) and a finite list of formatives (of which *eager* would be part). Questions of feasibility apart, this solution would be obviously faulty at the level of simplicity, and would provide no significant insight into the nature of the event. We shall immediately see that the transformational model can meet both objections satisfactorily.

We shall start with a brief statement of the transformational-generative model, based on an *Aspects*-type paradigm for purposes of illustration. The syntactic component is made up of three elements — the base consists of an ordered set of phrase-structure rules invested with recursive power which generates a set of basic strings, each of them associated with a phrase-marker. Phrase-markers define the deep structure of the sentence. The lexicon is a dictionary-like list of formatives, each of them containing a syntactic, phonological and semantic specification in terms of features. Lexical items can be inserted in a tree provided that the syntactic specification of the formative matches that contained in the tree structure. The transformational subcomponent changes deep into surface structures by the action of formal operations ('transformations') which take phrase-markers as their input and give other well-formed tree structures as their output. The model has two

other components, a phonological and a semantic component, both of them interpretative, at the level of surface and deep structure respectively. The nature of the model is hypothetical. That is, linguistic theory is viewed as an abstract hypothesis along the lines of other scientific theories. Inductive approaches of the kind represented by the 'discovery procedures' of the taxonomist are therefore ruled out.

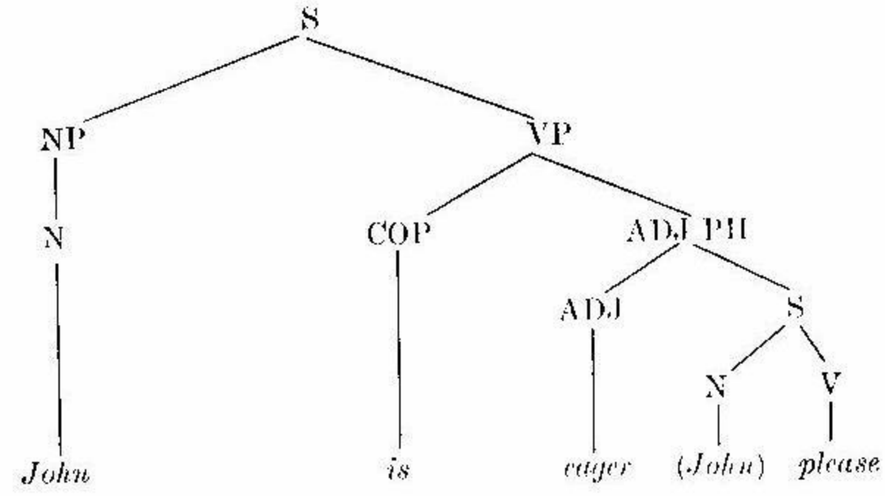
This model yields the folowing phrase-marker for sentence (1) (unimportant details have been omitted):

(10)



The tree structure of (2), on the other hand, is represented in (11):

(11)



(10) and (11) can be seen to be different at a simple glance. This shows that (1) and (2) are themselves constructional homonymous transforms. The differences in grammaticality states in sentences (4) through (9) can be explained in terms of the discrepancies in the structural indices which are input to the nominalisation, adjective preposing and extraposition transformations.

The taxonomic syntactic description of the structure of (1) and (2), given in (3), obscures the differences which obtain in grammatical functions in both

sentences. More specifically, the relation between *John* and *please* is one of subject-verb in (2), but one of object-verb in (1), where the subject is indeterminate, as represented by the phrase FOR SOMEONE TO. Taxonomic syntax is confined to surface structures and cannot meet the present challenge. This is the type of anomaly which, according to Kuhn, triggers off a scientific revolution. The specification of functional notions, however, is an easy task in transformational-generative syntax. For English, Chomsky defines the relation *subject-of* as that "holding between the NP of a sentence of the form NP^Aux^VP and the whole sentence", and *object-of* as "the relation between the NP of a VP of the form V^NP and the whole VP" (Chomsky 1965:69). The statement of the functions in (1) and (2) follows mechanically from these definitions (not all the difficulties are over, however, as the emergence of case grammar bears witness).

3.3.3 Other paradigmatic data frequently quoted in the literature are as follows:

(12) *the shooting of the hunters*
(13) *the shooting of the lions*
(14) *the growling of the lions*
(15) *John persuaded a specialist to examine Bill*
(16) *John expected a specialist to examine Bill*
(17) *flying planes can be dangerous*
(18) *John kept his car in the garage*
(19) *colourless green ideas sleep furiously*
(20) **furiously sleep ideas green colourless*

(12), (13) and (14) are identical in their surface structures, but they radically differ in the functional relations between their constituents. In (14), *the lions* is the subject of *growling*, as shown in the following paraphrase:

(21) *the lions are growling*

On the other hand, the most straightforward interpretation makes *the lions* the object of *shooting* in (13) (it is of course possible that the lions pull the trigger in the world of a story, but this is beside the point here):

(22) *someone is shooting the lions*

Finally, (12) is ambiguous between the two readings. Both (23) and (24) are legitimate paraphrases of it:

(23) *the hunters are shooting*
(24) *someone is shooting the hunters*

All this is beyond the descriptive power of taxonomic grammars.

The surface structures of (15) and (16) are also identical. Only (16), however, has a paraphrase where the embedded sentence has been passivised:

(25) *John expected Bill to be examined by a specialist*

When the same operation is performed in (15), a semantically distinct sentence emerges:

(26) *John persuaded Bill to be examined by a specialist*

Here too, taxonomic syntax fails. Not so transformational grammar. In the underlying phrase-marker for (16), the embedded S hangs directly under the NP in the VP, while in that of (15) the embedded S appears as a sister to that NP.

(17) is ambiguous between two readings, paraphrased here as (27) and (28):

(27) *for someone to fly planes can be dangerous*
(28) *planes which fly can be dangerous*

Notice that the ambiguity goes with the auxiliary:

(29) *flying planes is dangerous*
(30) *flying planes are dangerous*

(18) is also ambiguous between readings (31) and (32):

(31) *the car was kept by John in the garage*
(32) *the car (he had) in the garage was kept by John*

In all these cases disambiguation is straightforward at the level of deep structure, for which taxonomic grammar does not allow, thus failing to resolve the anomaly.

Finally, the difference between (19) and (20) lies in their status with regard to syntactic grammaticality, both sentences being semantically deviant ((19) is syntactically well-formed only up to the level of selectional features; I am simplifying the exposition here). These facts are readily accountable for within a transformational-generative model.

3.3.4 We shall now compare the two models in terms of simplicity and internal coherence. Consider the sentences in (33) and their corresponding questions in (34):

(33) (i) *John hits the ball*
(ii) *John may hit the ball*
(iii) *John has hit the ball*
(iv) *John may have hit the ball*
(v) *John is hitting the ball*
(vi) *John has been hitting the ball*
(vii) *John may have been hitting the ball*

(34) (i) *does John hit the ball?*
(ii) *may John hit the ball?*
(iii) *has John hit the ball?*
(iv) *may John have hit the ball?*
(v) *is John hitting the ball?*
(vi) *has John been hitting the ball?*
(vii) *may John have been hitting the ball?*

In contrast with the sentences above, those in (35) are all ungrammatical:

(35) (i) **hits John the ball?*
(ii) **does John may hit the ball?*

(iii) **does John have hit the ball?*
(iv) **John hit have may the ball*
(v) **does John be hitting the ball?*
(vi) **John been has hitting the ball*
(vii) **John have may been hitting the ball*

Obviously, there are many more sentences parallel to those in each of the three groups above, and rules rather than listing will be necessary to account for the semantic relations between (33) and (34), and for the difference in grammaticality between (33) and (34) on the one hand, and (35) on the other. A grammar lacking transformational power would roughly need one rule for each structure corresponding to a set of grammatical sentences, the ungrammatical ones being automatically discarded by the absence of rules to generate them. Thus the following rules would be necessary to account for (i) through (iv) in (33) (lexical rules have not been included):

(36) (i)
$$\begin{aligned} &S \rightarrow NP\ VP \\ &VP \rightarrow Verb\ NP \\ &Verb \rightarrow V\ Aux \\ &Aux \rightarrow T \\ &T \rightarrow \begin{Bmatrix} Present \\ Past \end{Bmatrix} \end{aligned}$$

(ii)
$$\begin{aligned} &S \rightarrow NP\ VP \\ &VP \rightarrow Verb\ NP \\ &Verb \rightarrow Aux\ V \\ &Aux \rightarrow Modal\ T \\ &T \rightarrow \begin{Bmatrix} Present \\ Past \end{Bmatrix} \end{aligned}$$

(iii)
$$\begin{aligned} &S \rightarrow NP\ VP \\ &VP \rightarrow Verb\ NP \\ &Verb \rightarrow Aux\ V\ \textit{en} \\ &Aux \rightarrow \textit{have}\ T \\ &T \rightarrow \begin{Bmatrix} Present \\ Past \end{Bmatrix} \end{aligned}$$

(iv)
$$\begin{aligned} &S \rightarrow NP\ VP \\ &VP \rightarrow Verb\ NP \\ &Verb \rightarrow Aux\ V\ \textit{en} \\ &Aux \rightarrow Modal\ T\ \textit{have} \\ &T \rightarrow \begin{Bmatrix} Present \\ Past \end{Bmatrix} \end{aligned}$$

Rules (i) through (iv) in (36) can be collapsed as follows:

(37)
$$\begin{aligned} &S \rightarrow NP\ VP \\ &VP \rightarrow Verb\ NP \\ &Verb \rightarrow \left\{ \begin{array}{l} V\ Aux_1 \\ Aux_2\ V \\ \left\{ \begin{array}{l} Aux_3 \\ Aux_4 \end{array} \right\} V\ \textit{en} \end{array} \right\} \\ &Aux_1 \rightarrow T \\ &Aux_2 \rightarrow Modal\ T \\ &Aux_3 \rightarrow \textit{have}\ T \\ &Aux_4 \rightarrow Modal\ T\ \textit{have} \\ &T \rightarrow \begin{Bmatrix} Present \\ Past \end{Bmatrix} \end{aligned}$$

Leaving aside the complexity of (37) (which would have to be considerably increased to account for the rest of the sentences in (33) and (34)), the meaning relations between (33) and (34) still remain unexplained. A transformational account drastically simplifies the description at the same time that it provides an explanation for the semantic correspondences. The two sets of rules specified in (38) will replace (37):

(38) (i)
$$\begin{aligned} &S \rightarrow NP\ VP \\ &VP \rightarrow Verb\ NP \\ &Verb \rightarrow Aux\ V \\ &Aux \rightarrow T\ (Modal)\ (\textit{have}+\textit{en})\ (\textit{be}+\textit{ing})\ (\textit{be}+\textit{en}) \\ &T \rightarrow \begin{Bmatrix} Present \\ Past \end{Bmatrix} \end{aligned}$$

(ii) X Affix V X⇒X V Affix X
(brackets indicate optionality; X is a variable)

Where (38) shows a clear superiority over (37) is in the statement of the Aux rule. Not only is the one in (38) substantially simpler than the corresponding ones in (37), but its generative power is also greater, and it will be now able to account for any grammatical combination of auxiliaries. As it stands, however, (38i) will generate ungrammatical sentences, as in (39):

(39) *John* T *may have en be ing be en beat*

All that is needed to change (39) into a grammatical sentence (40) is a transformational rule as the one stated in (38ii), which has the effect of swapping verbs (where V's, modals, *have* and *be* are 'verbs') and affixes (i.e. T's, *en* and *ing*):

(40) *John may* (T) *have been being beaten*

(I have placed the tense marker T between brackets to indicate that it is subsequently deleted by a phonological rule). Furthermore, all the sen-

tences in (34) can now be derived at the additional cost of only two rules:

(41) $\text{NP T}\left(\begin{Bmatrix}\text{Modal}\\ have\\ be\end{Bmatrix}\right)\Rightarrow \text{T}\left(\begin{Bmatrix}\text{Modal}\\ have\\ be\end{Bmatrix}\right)\text{NP}$

(42) #Affix X⇒#*do* Affix X
(#indicates phrase boundary)

Given the ordering (38i), (41), (38ii), (42), we can now derive (34) (i) and (ii) as shown in (43):

(43) (i) *John* T *hit the ball*
T *John hit the ball?*
do T *John hit the ball?*
does John hit the ball?

(ii) *John* T *may hit the ball*
T *may John hit the ball?*
may (T) *John hit the ball?*
may John hit the ball?

Parallel derivations will account for the rest of the sentences.

3.4 The exposition above has been drastically simplified, but the superiority of transformational grammar appears manifest. Rules (38ii), (41) and (42) are transformational rules. They possess different formal properties to those of phrase-structure rules and cannot be conflated with them. A taxonomic grammar is considerably more complex than its transformational counterpart. Far more serious, however, is its failure to give a satisfactory account of phenomena such as deep structure functional relations, ambiguity and disambiguation, semantic correspondences, paraphrase relations, and ungrammaticality of structures in constructional homonymity with grammatical ones. All this has been summarily illustrated here. The situation brought about by these anomalies in the mid-fifties is one of crisis and rapid change. The fight of paradigms quickly resolves itself with the triumph of transformational grammar. This victory is not without qualifications, however, since the resistance put up by nuclei of advocates of the old model has not disappeared to this date. On the other hand, new problems emerged within Chomsky's own paradigm almost immediately after launching, and disagreements and schisms have divided the transformational camp. The state in which linguistics finds itself at present is not altogether clear, and an analysis in Kuhnian terms might prove steep. History, however, can only move forward, and the one thing which appears well assured is that the conquests of transformational grammar cannot, and will not, be given up. The times of taxonomic linguistics have gone for ever, and if the new model introduced by Chomsky two decades ago finds itself running aground, a new paradigm will be necessary which will overcome the present anomalies. This task is well beyond the scope of taxonomic linguistics. The close links of this model with the audio-lingual approach to language teaching make the situation particularly relevant to our main concern here. Chomsky has successfully attacked the two key pivots of audio-lingualism. Whether they agree with him or not, both psychologists and linguists are ready to admit to the impact of the Chomskyan revolution in the fields of learning theory and language analysis. Counter-argument is possible and legitimate, but silence is not. The burden of proof must be with those who claim that second language learning cannot draw from the advances brought about by Chomsky. The present paper is a modest attempt to argue that it can and it must.[10]

4. On creativity and the nature of man

4.1 Implicit in the formal model of transformational grammar sketched above is the idea that human language has the property which has come to be called "creativity". Used in the context of Chomskyan ideas, this is a technical term which must be given a careful analysis. First, Chomsky makes a difference between rule-governed creativity and rule-changing creativity. The latter corresponds to the idea of creativity in ordinary language. One talks about an artist or a scientist being creative as related to quantitative as well as qualitative aspects of their work. Creativity in this sense has been one of the objects of study of classical Poetics, and the Platonic idea of inspiration or divine furore has been widely used to account for the act of creation. What is characteristic of this kind of creativity is that its very nature consists in the exploration and subsequent expansion of the limits of a certain type of mental activity, then of course given a material outlet. For example, the different styles of painting illustrate a continuous flow of conventions being broken, the imagination being forced to take further and further leaps. Rule-governed creativity, on the other hand, operates within the constraints of a given set of rules. This, far from hindering the creative process, serves to enhance it, as Chomsky remarks: "The image of a mind, initially unconstrained, striking out freely in arbitrary directions, suggests at first glance

[10] I am aware that others before have pointed at the advantages of transformational grammar for language teaching (for a good summary of points, see Roulet (1975: 40 ff.); in the chapter devoted to structuralist grammars, Roulet also raises many of the objections which appear above). Despite isolated trials, however, the overall prevailing feeling is one of apathy, and the quotes from Chomsky cited at the beginning of this paper tend to be taken too literally and too seriously, without paying much attention to the context, as will be seen in the next section. The claim I am making here is that Chomskyan linguistics has a very substantial contribution to make in the area of second language learning, and that this is frequently overlooked.

a richer and more hopeful view of human freedom and creativity, but I think that this conclusion is mistaken... The principles of mind provide the scope as well as the limits of human creativity" (Chomsky 1971: 45). The game of chess, with its strict precepts on the one hand, and the range of courses of action open to the players on the other, is a good illustration of this second type of creativity. Another one is language. Remember that the mental correlate of the behavioural manifestation of language is a (rather restricted) set of rules represented in the speaker's linguistic competence which allows for the generation of an infinite number of well-formed strings. I use 'mental' in a philosophical rather than a psychological sense, and I do not wish to commit myself about the possible form of the psychological or neurological correlates of these abstract principles. As a hypothesis, the postulation of these entities is perfectly intelligible, as well as legitimate. However they happen to manifest themselves materially, their place in the theory must remain undisputed. All this is not very different from the atomic hypothesis in physics, or the postulation of planets in astronomy whose existence must be kept on trust until technological advances make the visual experience feasible. On the other hand, the study of the nature of language can and, Chomsky claims, must be kept apart from the aspects of its practical use, be they psychological or social. In other words, the study of linguistic competence does not presuppose (or even entail) the study of linguistic performance, although the advance of the latter requires the previous existence of progress in the former, as Chomsky remarks: "to my knowledge, the only concrete results that have been achieved and the only clear suggestions that have been put forth concerning the theory of performance, outside of phonetics, have come from studies of performance models that incorporate generative grammars of specific kinds — that is, from studies that have been based on assumptions about underlying competence" (Chomsky 1965 : 10). It follows, from what has been said so far, that it is rule-governed creativity that is relevant to the study of language.[11] We shall concentrate on it here.

4.2 There are at least three aspects or manifestations of rule-governed creativity in language worth commenting on — its freedom from outside control (outside language, that is), its innovativeness, and its appropriateness to the situation. The seeming freedom of language had already been noticed by the Cartesians. Descartes's attempt to extend his mechanistic explanation of animals to man could not go beyond bodily functions and certain aspects of

[11] Rules are of two types, regulative and constitutive. "Regulative rules regulate a pre-existing activity, an activity whose existence is logically independent of the rules. Constitutive rules constitute (and also regulate) an activity the existence of which is logically dependent on the rules" (Searle 1970: 34). An example of regulative rules would be the rules of etiquette, whose function is the regulation of a pre-existent activity, viz. interpersonal behaviour. The rules being talked of here are constitutive rules.

behaviour. Faced with the phenomenon of language, he regarded it as a human distinctive feature absent in the beast: "it is a very remarkable fact that there are none so depraved and stupid, without even excepting idiots, that they cannot arrange different words together, forming of them a statement by which they make known their thoughts; while, on the other hand, there is no other animal, however perfect and fortunately circumstanced it may be, which can do the same" (Descartes, *Discourse on method*, cited by Chomsky 1966a: 4). The most outstanding characteristic of language is not its external form, which has to do with peripheral physiological aspects, but the fact that it cannot be brought under the "mechanical principle": it is easy to "understand a machine's being constituted so that it can utter words, and even emit some responses to action on it of a corporeal kind, which brings about a change in its organs; for instance, if it is touched in a particular part it may ask what we wish to say to it; if in another part it may exclaim that it is being hurt, and so on. But it never happens that it arranges its speech in various ways, in order to reply appropriately to everything that may be said in its presence, as even the lowest type of man can do" (cited in Chomsky 1966a: 3—4). The failure of the mechanical principle to provide a full account of man, makes the postulation of a second principle operating alongside it a necessity. This second substance whose manifestation is the "creative principle" of which human language is evidence, Descartes concludes is the mind, specific to human beings, and whose essence is thought. Descartes's two principles parallel the "human" and the "brutal" principles of James Harris's: "The leading principle of Brutes appears to tend in each species to one single purpose... On the contrary, the leading purpose of Man is capable of infinite directions, is convertible to all sorts of purposes, equal to all sorts of subjects... In a word, to oppose the two principles to each other — the leading principle of Man is multiform, originally uninstructed, pliant and docil; the leading principle of Brutes is uniform, originally instructed; but, in most instances afterward, inflexible and indocile" (Harris, *Treatise the third*, quoted in Chomsky 1966a: 15—16; I have modified the original orthography slightly). We will see below that similar ideas are found in the writings of Wilhelm von Humboldt. Opposition to the Cartesian ideas there has also been, however. To the conception of man as qualitatively different from animals, the couter-argument is put forward that the only discrepancy is one of degree of complexity: "La Mettrie, for example, holds that man is simply the most complex of machines. 'He is to the ape, and to the most intelligent animals as the planetary pendulum of Huyghens is to a watch of Julien Leroy", so that "there is, in his opinion, no difficulty in accounting for thought on mechanical principles. I believe that thought is so little incompatible with organized matter, that it seems to be one of its properties on a par with electricity, the faculty of motion, impenetrability, extension, etc.'" (Chomsky 1966a: 9—10).

But, Chomsky comments, "neither La Mettrie nor Bougeant comes to grips with the problem raised by Descartes — the problem posed by the creative aspect of language use, by the fact that human language, being free from control by identifiable external stimuli or internal physiological states, can serve as a general instrument of thought and self-expression rather than merely as a communicative device of report, request or command" (Chomsky 1966a: 11—12). The same failure can be observed in modern manifestations of the same basic doctrine.

A particularly good exposition of the two kinds of principles postulated by Descartes, along with a third one which identifies with what has been called 'rule-changing creativity' above, appears in the writings of the sixteenth century Spanish physician Huarte de San Juan. Huarte distinguishes three types of wit or *ingenio* (he mistakenly derives this word from the Latin root also present in *generare*, to generate; the error, however, makes the theoretical point beautifully) — the "docile wit", common to man and animals and submitted to empiricist-type constraints and limitations, normal intelligence, which overrides them and is peculiar to man, and creative imagination which goes beyond normal intelligence into a kind of creative madness. Normal intelligence, the second of the three wits, corresponds with rule-governed creativity. It can "'engender within itself, by its own power, the principles on which knowledge rests'", i.e., as Chomsky remarks, it is "capable of acquiring knowledge through its own internal resourses, perhaps making use of the data of sense but going on to construct a cognitive system in terms of concepts and principles that are developed on independent grounds; and it is capable of generating new thoughts and of finding appropriate and novel ways of expressing them, in ways that entirely transcend any training or experience" (Chomsky 1968 : 8).

4.3 This brief historical excursus has been brought in as evidence of the respectability of the notions being handled here. We shall now return to the analysis of rule-governed creativity. Freedom from outside control, the first of its three manifestations, means freedom from both external stimuli and internal states. "A process is free from stimulus control if and only if changes and manifestations of the process do not stand in one-to-one correlation to changes in the environment. This does not rule out correlations that have certain stimuli followed — under certain conditions — by certain responses" (Moravcsik 1969 : 425). What this means is that, while it is perfectly possible that certain stimuli might be followed (or perhaps are necessarily followed) by certain responses, it is however not the case that all responses presuppose the existence of a stimulus; i.e., "the empirical assumption is that language use is creative inasmuch as the production of various well-formed parts of the language is not wholly determined by changes — perceptible or otherwise — in the environment" (Moravcsik 1969 : 426). Thus the Chomskyan

claim is that, contrary to behaviourist assumptions, linguistic behaviour is not determined by environmental stimuli of the kind illustrated in Bloomfield's Jack and Jill's story of the apple. Nor, and this is the second side of the allegation, is it bound by internal drives or desires, as it would if Jill's hunger was the only source of her behaviour. The point to be emphasised once more is that neither claim precludes the possibility that *some* verbal acts might be determined by outer or inner forces. What it does reject is the idea that *all* such behaviour is so dictated. But if this is so, where is the origin of language use to be allocated? As Moravcsik explains, "the use of language is determined only by the process of thinking, and ... the latter is autonomous, i.e., possesses the freedoms ascribed to the use of language above" (Moravcsik 1969 : 427). We are thus back to Descartes's view of language as evidence for the existence of thought (and, therefore, mind) in the human being. As for thinking itself, "there is no answer to the question: what triggers off thinking?" (Moravcsik 1969 : 428). Some practical consequences of this will be examined below.

Innovativeness is the second aspect of the creativity which characterises language, that is, the fact that "much of what we say in the course of normal language use is entirely new, not a repetition of anything that we have heard before and not even similar in pattern — in any useful sense of the terms "similar" and "pattern" — to sentences or discourse that we have heard in the past" (Chomsky 1968 : 10). And not only do we say things we have not heard before, but also we understand things that we hear for the first time, i.e., the property of innovativeness has a perception, as well as a production, side. I have given above the figure which would correspond to the time that would take to utter all admissible twenty-word sentences of English, calculated as one hundred thousand million centuries by Miller. It is therefore obvious that language is innovative in the sense discussed here — it would be physically impossible for it to be repetitive (that is, if given the full benefit of its generative capacity). Technically, this is accounted for by the abstract construct of competence grammar with its finite set of rules possessing infinite generative capacity. This, of course, has crucial implications for a theory of language acquisition, as we examined above in connection with the rationalist and empiricist approaches to learning. An illustration of its applications to second language teaching will be given shortly.

Finally, the third aspect of language creativity, its "appropriateness to the situation", does not follow from the other two, as it is perfectly imaginable that free innovative associations could be made in a totally random way. The matching of verbal behaviour with a situation must be crucially differentiated from the possible (but rejected here) determination of such a behaviour by some external variable. That is, appropriateness to the situation is not the same thing as control by the situation. In the first case, thought triggers off

language; in the latter, the situation does. On the other hand, thought happens in a (hitherto mysterious) way which is related to the situation where the process occurs. Language being related to thought, and thought being related to the situation, it follows that language too has links with the situation. Such links are defined here as "appropriateness", the pivot of which is, as has just been seen, thought, and not external stimuli, as the behaviourist claim would run. As in many other areas of language and human behaviour, mysteries remain which must await clarification: "Just what "appropriateness" and "coherence" may consist in we cannot say in any clear or definite way, but there is no doubt that these are meaningful concepts. We can distinguish normal use of language from the ravings of a maniac or the output of a computer with a random element" (Chomsky 1968 : 11). This ignorance, however, can be no argument for theories that the available evidence reveals as erroneous.

4.4 I shall now exemplify how concepts such as creativity or generative grammar (with its implications of finite means to infinite ends) brought about by the Chomskyan revolution find a direct and crucial application to language teaching practice.[12] I shall concentrate on one particular aspect of Spanish syntax, the so-called subjunctive verbal mood. We shall be comparing the presentation of this topic in a recent, commercially very successful audio-lingual method with the way it is approached in what can be called a creative model of language learning. The former has a strong behaviouristic flavour; the latter inscribes itself in the frame of the Chomskyan revolution.

In the *Ealing introductory course in Spanish,* the stimulus-response-reinforcement schedule primarily takes place in the form of structure drills, which "are intended to systematize and generalize forms that have so far in the unit been learnt only as meaningful particularities" (Ealing: xv). There is also a grammar section every third unit, which "is intended to be taught inductively in class, with students explaining the grammar in answer to the teacher's questions on the frames. For this reason, all explanations and rules have been omitted. If the inductive method is followed, the teacher will avoid giving *a priori* rules, but rather lead the student to generalize from the particularities contained in the frames" (Ealing: xvii). All the subjunctives (most forms of the so-called "imperative" are here subsumed under the label "subjunctive") appearing in the structure drills and the grammar sections have been tabulated in the Appendix. To each Spanish utterance I have added an English paraphrase. I have only transcribed the first line of each set of drill sentences, and the grammar explanations have been summarised (usually only the first example is given). I have underlined all subjunctive forms to facilitate the check with the English paraphrase. Each structure or grammatical frame appears with its original serial number against it. A cursory glance at the tables will be sufficient to get a flavour of their intention and method. They are geared to memorisation and the stimulation of "generalisation" processes in the hope that this will eventually lead to the mastery of this particular point of Spanish syntax. How long this will take might depend on all kinds of factors, but the magnitude of the task should be apparent. Nothing much can be done to brighten up the student's prospects, but to convince him of the need for diligent application, with the concomitant time expenditure in the classroom and the laboratory.

[12] "Language teaching", as used here, is just an abbreviation for the setting of a situation where the process of language learning finds its optimal maximisation. It has no suggestion, therefore, that the learning happens as a direct result of the teacher's activities. Rather, the "teacher" becomes a "facilitator" whose task is to remove obstacles to allow for the optimal functioning of the language acquisition device, the only really active participant in the process. For a development of these ideas, see Roca (1977b).

The following question must be asked at this stage: is the audio-lingual approach realistic in its estimation of what is to be done and the way it can be achieved most efficiently? In the light of Chomsky's criticisms of behaviourist psychology and taxonomic linguistics the answer clearly seems to be no. Also, if language is truly creative, the piece-meal approach displayed in the Appendix does not seem the most efficient way of giving full expression to this creativity. Evidence for this can be brought in from the creative approach to the teaching of the Spanish subjunctive. This method uses a cognitive statement along the lines of that in (44):

(44) In Spanish, each finite form of the verb has one of two forms. One form we shall call the "statement form", and is used when the verb carrying it expresses a statement by the speaker. The other form we can call the "non-statement" form, and is used when the verb carrying it does not express a statement by the speaker.

The object of (44) is to put forth the most general statement which explains the functioning of the modal system in Spanish, and it achieves it with a remarkable degree of success. Being a formula-type statement, it might require further clarification before it can be apprehended and put to function by the learner. This task, however, is quite straightforward. It is being assumed that the student has an intuitive grasp of concepts like verb, finite form, etc. This is an integral part of the creative approach, which aims at cognition and subsequent creativity. Granted this much, the next step is to switch into the gestalt that each Spanish finite verbal form expresses overtly an idea that can be paraphrased as either *I state that X* or *I don't state that X*, where *I* refers to the speaker and *X* stands for, and only for, the sentence whose nucleus is the verb under analysis. For example, the following English sentence, of deliberate complexity:

(45) *It is to be expected that John didn't tell Mary that Peter asked Susan not to tell anyone what had happened*

contains four verbs in a finite form: *is, didn't tell, asked,* and *had happened,* to which *to tell,* must be added for Spanish. What will be the correct assignment of the two forms for each of the five verbs in (45)? (44) gives the answer, as follows. It *is* the case that whoever uttered (45) stated that something is to be expected, and so '*is*' will take the statement form. On the other hand, it is *not* the case that he states that John didn't tell Mary something, i.e., '*didn't tell*' will take the non-statement form. In one reading, he does state that Peter asked Susan something, thus '*asked*' will in this case be statement. But he does *not* state that Susan did not tell anyone, i.e., '*tell*' will have the non-statement form. Finally, again in one of the readings, he *states* that something has happened, and therefore '*had happened*' will be statement. To put it in a slightly different way, given (45) the following truth value table obtains for its five sentences in the readings taken up here (the referent of '*I*' in (46) is the speaker of (45)):[13]

(46) I state that something is to be expected	T
I state that John didn't tell Mary something	F
I state that Peter asked Susan something	T
I state that Susan didn't tell anyone	F
I state that something happened	T

The verbs in the sentences marked T will take the statement form (as they co-occur with the phrase '*I state*'), and those marked F will take the non-statement form. The statement form has the set of endings of what is traditionally called "indicative", and the non-statement form those of the "subjunctive". The determination of the phonological shape of these endings is not a syntactic problem and can therefore be ignored here (the morphological rules which determine these endings are also quite straightforward). We can now give the Spanish translation of (45) for the readings in (46) (subjunctives are underlined):

(47) Es de esperar que Juan no le *haya dicho* a María que Pedro le pidió a Susana que no le *dijera* a nadie lo que había pasado.

(47) shows that (44) works, and that the modal predictions can be made regardless of the language in which the sentences are formulated. Thus there is no need for "conditioning" in Spanish. Rather what the learner needs is to "understand" (in a cognitive sense of "understand", with a strong gestalt bias) principle (44), and then apply it to the analysis of any Spanish sentence. That this can be done, and done efficiently, has been amply proven in my own

[13] I am indebted to Ian Stirk for intuitions on the readings of (45).

experience. This indicates that the problem of Spanish mood is a general theoretical problem bearing on the semantics of any natural language. Only at the phonological level do Spanish and English differ: the semantic analysis receives a phonological interpretation in Spanish, but not in English.[14]

Notice that, given (44), the sentences in the Appendix can be given a ready interpretation or, if we focus on the other side of the coin, they can be created. Memorisation, painful and time consuming as it is, becomes completely unnecessary, as does conditioning. The generalisation which allegedly follows the process of association is given in a straightforward manner in (44). On the other hand, the tables in the Appendix are seemingly incapable of predicting modal use in the following sentences (subjunctives underlined):

(48) (i) Pedro niega que Maria *haya venido*
Peter says that Mary didn't come
(ii) Pedro niega que Maria *ha venido*
Peter denies that Mary came
(iii) Nunca he negado que lo hice
I've never denied I did it
(iv) Es dudoso que *venga*
It's doubtful that he'll come

While it seems difficult to imagine a way by which anyone whose knowledge of the tables in the Appendix had been obtained by conditioning could arrive at the correct formulation of the sentences in (48) (which only constitute a small sample), the statement in (44) makes the right prediction, and it does it at no additional cost whatever (as it is, however, (44) will yield some phonologically incorrect outputs, and must therefore be complemented with some minor rules, of limited scope and easy formulation). I know of no evidence which could suggest that (44) is not the valid generalisation to be made about Spanish mood, and a claim of psychological reality for it does not seem too far-fetched. Whatever the form of the psychological representation, however, (44) expresses nearly all a learner of Spanish has to know about the semantico-syntactic determination of verbal mood. In this light, the exuberance displayed in the Appendix appears very hard to justify. In contrast, principle (44) makes use of the notion of creativity and of the technical tools of generative grammar, thus achieving a remarkable level of economy and linguistic and psychological realism. What choice any reasonable evaluation measure would make should not be a difficult conjecture.

[14] For a theoretical study of mood in Spanish see Roca (1977a), where the data are given a more abstract interpretation at the level of general theory. A similar approach to the one sketched here has been advanced by Terrell and Hooper, and by Flora Klein, with whom my theoretical analysis, however, finds itself at odds.

4.5 It has been mentioned above that the idea of language being creative reappears during the romantic period after the post-Cartesian lapse. For Humboldt, language is "energeia" rather than "ergon", form rather than substance, as Chomsky remarks: "Only the underlying laws of generation are fixed in language. The scope and manner in which the generative process may operate in the actual production of speech... are totally undetermined" (Chomsky 1966a:19). Language is boundless, determined only by the fixed mechanisms which constitute its form. This extends to the lexicon, not only regarding word formation, but also with reference to the process of lexical selection in the actual speech act. Language serves the purposes of thought and self-expression. The communication function, important as it is in the context of human society, is not primarily characteristic of language, although, needless to say, language can and is used to this end.

The other important aspect of Humboldt's doctrine to be considered here refers to his ideas on the nature of man. The relevance of this for the present discussion stems from the fact that, as Chomsky notes, "Humboldt's emphasis on the spontaneous and creative aspects of language use derives from a much more general concept of "human nature", a concept which he did not originate but which he developed and elaborated in original and important ways" (Chomsky 1966a:26). Creativity is at the very heart of this concept. Self-realization is the most basic drive in man, and the social and political organisation of society must be geared to the facilitation of its exercise. All through history, however, the examples of curtailing of this fundamental liberty are more than numerous. When this happens, the whole activity of man becomes vitiated: "'Freedom is the necessary condition without which even the most soul-satisfying occupation cannot produce any wholesome effects of this sort. Whatever task is not chosen of man's free will, whatever constrains or even only guides him, does not become part of his nature. It remains forever alien to him; if he performs it, he does so with true human energy but with mere mechanical skill"' (Humboldt, quoted in Chomsky 1966a:24—5). Whoever breaks this basic right "ought justly to be suspected of failing to recognize human nature for what it is and of wishing to turn men into machines" (Chomsky 1966a:25). For Humboldt, "if a man acts in a purely mechanical way, "we may admire what he does, but we despise what he is" (Chomsky 1966a:26). Chomsky's own thought is remarkably close to all this: "The fundamental human capacity is the capacity and the need for creative self-expression, for free control of all aspects of one's own life and thought. One particularly crucial realization of this capacity is the creative use of language as a free instrument of thought and expression" (Chomsky 1969b:31). The connections with the topic under analysis here should be obvious. A further line showing the links with Chomsky's own reflections on language teaching will be developed presently.

4.6 At the opening of this essay some quotes were given indicating the seeming scepticism of Chomsky with regard to the repercussions of his doctrine for language teaching. Throughout the rest of the paper it has been argued that it is wrong to give these quotes their literal meaning, and that a serious effort of interpretation is essential to do full justice to Chomsky's doctrine. One of the clearest instances of the apparent negative character of Chomsky's attitude to this problem can be found in his already cited essay "Linguistic theory". I repeat the quote here for convenience: "I am, frankly, rather skeptical about the significance, for the teaching of languages, of such insights and understanding as have been attained in linguistics and psychology" (Chomsky 1966b:52). Left like this, the message seems clear. The very next sentence, however, practically invalidates his first statement:[15] "Surely the teacher of language would do well to keep informed of progress and discussion in these fields, and the efforts of linguists and psychologists to approach the problems of language teaching from a principled point of view are extremely worthwhile, from an intellectual as well as a social point of view" (Chomsky 1966b:52). Chomsky's words must be put in the context of the "technological revolution" in language teaching which followed the linguistic theories of the forties and fifties, engrained, as has been seen, in behaviouristic principles. Unconditional optimism in the then prevailing linguistic theories led to the opinion that the problem of teaching second languages had been solved, and an extensive technological programme ensued. Instances which readily spring to mind are the language laboratory, programmed learning, and the whole paraphernalia of audio-visual aids for classroom use, all of which seemed to have replaced the teacher and done so in such a way as to make the operation successful. Some of these offshoots still have considerable following, but an atmosphere of caution has replaced the original unreserved optimism, in this as in other fields. Recall, however, that the Chomskyan revolution in linguistics also brought about waves of hope. The danger of a premature technology being hurriedly brought in was probably a real one, and Chomsky warns about its present futility. To infer from this that the language teaching theoretician can safely turn his back on Chomskyan insights, or, even, content himself with keeping a keen but uncommitted eye on the advances of linguistic theory and accompanying philosophical thought is, to my mind, a clear distortion of the facts as well as of Chomsky's intentions.

Chomsky's distaste of the deification of science and technology extends itself beyond the confines of language teaching. In the paper just cited he remarks that "the willingness to rely on "experts" is a frightening aspect of contemporary political and social life" (Chomsky 1966a:55). The warning

[15] It is surprising that the complete quote is very seldom given. The mutilation of Chomsky's thought is, I think, quite obvious.

becomes more pressing in the case of the teaching profession: "teachers, in particular, have a responsibility to make sure that ideas and proposals are evaluated on their merits, and not passively accepted on grounds of authority, real or presumed" (Chomsky 1966b:55). It therefore follows that"... principles of psychology and linguistics may supply insights useful to the language teacher. But this must be demonstrated, and cannot be presumed. It is the teacher himself who must validate or refute any specific proposal. There is very little in psychology or linguistics that he can accept on faith" (Chomsky 1966b:55). The caveat is not against the legitimate fecundation of language teaching by linguistic or psychological ideas, least of all his, but against blind allegiance to élites of self-elected gurus, who use science as a glamour cover of their theoretical vacuity.

This wariness in the face of the "expert" has strong roots in Chomsky's political thinking. His attacks on behaviourism are closely linked to this abhorrence of a society controlled by an élite who claims special knowledge to which the rest of their fellow citizens are denied access: "there are dangerous tendencies in the ideology of the welfare state intelligentsia who claim to possess the technique and understanding required to manage our 'post-industrial society' " (Chomsky 1969c:104). The members of the meritocracy move in high spheres of influence and financial reward sharing a restricted ideology and common interests, brought about by the inherent dynamics of professionalisation. These élites assume the role of defenders of the status quo, what Chomsky, following C. C. O'Brien, calls "counter-revolutionary subordination". They become planners and executives of policies implementing coercive ideologies, and attempt to acquire a "vague aura of respectability" under the cover of scientific styles and terminology. A case in point is the so-called "science of behaviour", to which Chomsky turns his attention in his essay "Psychology and ideology".

The two basic questions to be asked about the science of behaviour (as about any other science, for that matter) refer to its scientific status and to its social or ideological role. Chomsky directs his guns to Skinner's speculations about human behaviour, whose fundamental tenet is that of the malleability of the human being, the behaviour of whom can allegedly be shaped by the scientist or the political pundit. This would be done through the manipulation of the environment, since in the doctrine the environment is invested with powers of determination of human conduct, along the lines that the lever-pressing behaviour of the rat is ascribed to the variations which take place within the Skinner box. But, Chomsky maintains, the evidence available to back these claims amounts to nil: "No evidence is presented. In fact, as will become clear when we turn to more specific examples, the question of evidence is beside the point, since the claims dissolve into triviality or incoherence under analysis" (Chomsky 1970:107). We have seen some specific instances in

the discussion of behaviourism in section one above, and will not duplicate them here. Further to this, we must remind ourselves of the strong a priori restrictions that the arbitrary banning of "internal states" imposes on the behaviouristic approach to human behaviour: "By rejecting the study of postulated inner states, Skinner reveals his hostility not only to 'the nature of scientific enquiry' but even to common engineering practice" (Chomsky 1970:109). What follows is a very odd conception of science, where future results are tailor-made to fit the imposed preconceptions. While it is correct that "physics advanced only when it 'stopped personifying things' and attributing to them 'wills, impulses, feelings, purposes', and so on", it is wrong to assume, as Skinner does, that "the science of behaviour will progress only when it stops personifying people and avoids reference to 'internal states' " (Chomsky 1970:108), for there is no a priori reason for the science of human behaviour to be isomorphic with physics, neither is there any hint that people do not differ from rocks.[16]

5. On language and society

5.1 An objection might be in the mind of the reader with regard to the main line of argument pursued so far. As is well known, Chomsky's reflections on the acquisition of language have been made with primary, if not exclusive, reference to first language learning, that is, to the supposedly innate mechanism that enables any child anywhere in the world to acquire the language of his environment with the characteristics of rapidity, perfection and creativity which have been so emphasised by the Chomskyan approach. Since the object of the present paper, however, is the analysis of the possible relationship between Chomsky's theories and second or, more specifically, foreign language learning, the argument could be put forward that the scope of such theories is at variance with the boundaries of the object of our present study. The purpose of this section is to show that this is not necessarily the case.

5.2 The most striking difference between first and second language learning lies in the degree of proficiency usually attained by the learner. While the native speaker's mastery of his language is, language pathology apart, perfect by definition, the second language learner more often than not finds himself at pains to achieve a reasonable level of performance. Several reasons have been advanced to account for this phenomenon, among them age, aptitude, attitude and method. We shall look at each of them briefly.

Of the four variables, method is, to some extent, the easiest to investigate. Indeed, a good amount of research has been carried out in an attempt to isolate those factors that may most influence the effectiveness of the language learning

[16] For a more detailed exposition of Chomsky's political views and their relations to his linguistic and psychological doctrines see Roca (1974).

situation. The outcome of this activity has been extremely disappointing, however. Spolsky cites a study by Scherer and Wertheimer, who found no real difference in achievement between students taught with an audio-lingual or with a traditional approach. Also, Smith and Berger, and Smith and Baranyi showed the lack of positive effect of language laboratories. Further, Upshur has presented evidence that formal instruction has no effect whatever on the learning, a finding which, as Spolsky remarks, "supports the argument that the adult, as well as the child, learns a language better in a natural environment than in a classroom" (Spolsky 1969:272). This is in agreement with Carroll's discovery that it is time spent overseas, and not time of instruction, that most closely correlates with achievement. All this highlights the relatively low importance of teaching method within the rich constellation of variables which obtain in a (foreign) language learning situation. Something very similar must be said of the factor commonly known as "aptitude". True, the measurement of aptitude has, to some extent, been possible, but "in all studies, however, the correlation of measured aptitude and success in language learning has been quite low" (Spolsky 1969:273). This leaves us with the factors of age and attitude still to be considered.

The idea has been put forward by Lenneberg that there is a critical period for language, lasting approximately from the age of two to puberty, during which acquisition can take place by mere exposure. According to this position, the time of puberty would coincide with the completion of the lateralisation of the language function, thus accounting for the loss of cerebral plasticity and, with it, of the "natural" mode of language acquisition. Lenneberg has presented a good amount of evidence that seems to confirm this thesis, and the notion that, biologically, adult language acquisition is radically different to that of the child is still common place in the field of second language teaching. Against Lenneberg's theory, however, Krashen has recently argued that, in the first place, "the development of language lateralization is complete far earlier than puberty, perhaps as early as age five" (Krashen 1973:63—4), and, secondly, that a re-examination of the concept of cerebral plasticity and its relation to second language learning is in order.

Lenneberg presents data which seem to indicate that in the case of injury to the right hemisphere the amount of language disturbance that ensues is greater in children than in adults, thus confirming the thesis of the greater role played by the right hemisphere in child language. For Krashen, however, "this data is consistent with the hypothesis that the development of lateralization is complete by five", because "in all cases of injury to the right hemisphere resulting in speech disturbance, the lesion was incurred before five" (Krashen 1973:65). He also quotes reports of psychological testing of children with unilateral brain damage which indicate that "the effect of unilateral brain damage in children is the same as in adults: left lesions impair performance on verbal tests and do not affect performance on spatial and configurational tests, while right sided lesions impair performance on spatial and configurational tests and do not affect verbal scores" (Krashen 1973:65). Finally, by means of experiments conducted using the technique of diachotic listening "no significant change in degree of lateralization or right ear advantage was found for the age range tested, from four to nine. In addition, the degree of lateralization exhibited by the children is the same as that shown by adults tested under similar conditions" (Krashen 1973:66). These results obviously confirm the hypothesis that lateralisation occurs by the age of five, for, should it take place gradually throughout puberty, right ear dominance would progress at a similar pace, contrary to what has been shown by the tests just referred to.

Further confirmation comes from data on transfer, i.e., the possibility of a takeover of the language fuction by the right hemisphere in the case of serious injury in the left hemisphere. Undoubtedly, transfer and lateralisation are linked, since the loss of plasticity will result in the impossibility of transfer. Now, while "perfect transfer is definitely possible before five", in other cases reported by Lenneberg with injury before teens "the lesion was incurred before five" (Krashen 1973:67). Despite the scarcity of data on lesions incurred between five and puberty and the associated transfer, Krashen cites evidence given by Rasmussen of five cases of left damage in right handed children, where "transfer of dominance... occurred in the three children who were five or under at the time their lesion was incurred..., but not in the children who were seven and eight years old at the time of the lesion" (Krashen 1973:68). In the face of the paucity of data in this connection, however, the possibility of transfer happening after puberty must remain open. If this were the case, the thesis that lateralisation occurs before five would not necessarily be destroyed. In effect, for Krashen "this would imply that lateralization and transfer are not directly related. It is logically possible that the right hemisphere can retrain itself to do language despite its full specialization for other functions (this possibility was independently suggested by Richard Harshman and Eric Lenneberg)" (Krashen 1973:68).

In view of what has been said so far, it appears that the idea of a rigid critical period for language must be abandoned. The case of Genie, an adolescent girl reared in isolation, is also illustrative in this connection. Genie's language acquisition is taking place slowly but steadily, thus clearly indicating that not all is lost after puberty. Tests that have been performed on her show that "for Genie both linguistic and non-linguistic processing is taking place in the right hemisphere" (Krashen 1973:71). Thus the question of the correlation between lateralisation, undoubtedly completed in the case of Genie, and "natural" language acquisition cannot be considered closed. The evidence provided by Carol Chomsky with respect to acquisition of syntax after the age of five seems to point in the same direction. On the other hand, however,

Krashen remarks that Chomsky's findings mainly relate to secondary syntactic processes, and that "the fact remains that the five year old has certainly mastered the fundamentals of his language". Therefore, "either the two processes may go hand-in-hand, or... language acquisition may involve and depend on the previous lateralization of certain functions." And he concludes: "the development of lateralization may represent the acquisition of an ability rather than the loss of an ability" (Krashen 1973:69). In the midst of such unsolved questions, one thing seems reasonably clear: as with method and aptitude, the role played by age with regard to achievement in language acquisition must not be taken too far. While, on the one hand, it is obvious that age differences usually correlate with (sometimes very important) discrepancies in achievement, on the other hand it is questionable that such facts can be accounted for from a biological perspective. In addition, Taylor (1974) has remarked that, psychologically, the basic learning strategies in language acquisition are the same for child first language, for child second language, and for adult language, the strategy being one of simplifying and regularising the structure of the target language, with the inclusion of typical errors brought about by overgeneralisation and reduction of arbitrary exception or subcategorisation features.

In this connection, Chomsky's own ideas appear to go along the lines which are being suggested here. Commenting on Goodman's view that "second-language acquisition poses no problem, since 'once one language is available and can be used for giving explanation and instruction, the limitations (determined by an innate schematism) are transcended'" (Chomsky 1969a : 67), he forcibly notes 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 1969a: 68). Differences between first and second language learning there are, of course, and the present section is an attempt to shed light on their true nature. Erroneous conceptions as to the character of the discrepancy abound. As Chomsky points out, "although second-language acquisition is, indeed, to be distinguished from first-language acquisition, the distinction is not of the sort that Goodman suggests. While it may be true that "once some language is available, acquisition of others is relatively easy", it nevertheless remains a very serious problem — *not significantly different from the problem of explaining first language acquisition* — to account for this fact" (Chomsky 1969a:68; my emphasis, IMR).

5.3 For all the parallels between child and adult language learning, the fact still remains to be explained that the level of proficiency achieved by the adult learner is only very rarely comparable to that of the child. Some interesting ideas have been put forward by Guiora in an attempt to shed light on this problem.

... The two basic concepts advanced by Guiora are those of language ego and empathy. The notion of language ego parallels the Freudian construct of body ego, both of them related to matters of self-representation, boundaries and integration: "body ego... refers to a self-representation with physical outlines and firm boundaries", and "language, too, will have, similar to the body ego, its physical outlines and firm boundaries" (Guiora 1972 : 144). Following this idea, language is an integral part of the individual's sense of identity, and therefore from the acquisition of a new language psychological threat may result. This is particularly the case with regard to pronunciation, which is "the most critical and most valuable contribution of language to self-representation" (Guiora 1972 : 145). The extent to which each individual will accommodate to the demands put by the new language will primarily depend on the degree of permeability of his language boundaries. Here, too, there is a parallel with body ego, where "permeability in these boundaries (as in the case of the gifted pilot or race-car driver) is individually determined and will depend on crucial events in early life" (Guiora 1972 : 144). In the case of language ego, "the permeability of these... boundaries, specifically the flexibility of the pronunciation boundaries is developmentally and genetically (in the psychoanalytic sense) determined. That is to say that pronunciation permeability will correspond to stages in the development of the ego". In this way, "the levels of permeability of the language ego correspond to stages in the ego development of the individual", and also "individual variations among adults in the degree of approximation of native-like authenticity, in levels of permeability of the language ego are genetically determined" (Guiora 1972 : 145). We are far from biological determination here (remember that Guiora does not use "genetically" literally, but in the psychoanalytic sense). Rather, the emphasis is shifted onto psychological concepts involving the crucial notion of ego plasticity. For Guiora, the acquisition of a new language can be compared to the acquisition of a new identity. Success will be contingent on the psychic capacity of the individual to live through the change and incorporate it without destroying his own psychological balance.

The other main component of Guiora's model, empathy, reflects the capacity of the learner to identify himself with the object to be apprehended: "empathy is a process of comprehending in which a temporary fusion of self-object boundaries, as in the earliest pattern of object relation, permits an immediate emotional apprehension of the affective experience of another, this sensing being used by the cognitive functions to gain understanding of the other" (Guiora 1972 : 142). It follows that the greater the empathic capacity of the individual, the higher the degree of achievement he would attain in foreign language learning. As has been mentioned above, pronunciation is, for Guiora, the one component which is most closely related to ego identity. He has attempted to gage the degree of empathy in an individual

by establishing a correlation with achievement in foreign language pronunciation. A series of tests were carried out to this effect, of which the most interesting one is the Micro-Momentary Expression Test (MME), which was taken over from psychotherapy. The purpose of the tests is the identification of feelings which appear in slow motion pictures of patients: "the MME consists of silent film clips shown at various speeds during which subjects are asked to indicate each observed change in facial expression" (Guiora et al. 1972 : 117). An Authenticity of Pronunciation Test was also administered. The results of these and other similar tests were positive, thus allowing for the establishment of a correlation between MME scores and achievement in foreign language pronunciation. The hypothesis that ability to pronounce a second language is positively related to empathic capacity appeared therefore to be confirmed. An explanation along these lines for the differences between first and second language acquisition seems very plausible, since it is precisely in early childhood that the empathic capacity finds itself at its optimum point, subsequently gradually lost with the development of the ego: "In the earliest mother-child relationship, prior to stable establishment of separate self boundaries by the infant, the primary pattern of interaction is based on affective fusion. Diffuseness of self boundaries sensitizes the infant to changes in the quality and intensity of emotional states in those close to him. This sensitivity to experience changes appears to be the prerequisite of empathic skill, a skill whose further development is dependent upon the quality of continuing interpersonal experiences during the developmental process. The sensitivity and empathic capacity existing in the affective relation to the mother may well be the vehicle through which original pronunciation authenticity is acquired and, by extension, may enhance the conditions favorable to later novel inclusions pertinent to second language authenticity" (Guiora 1972 : 145).

The shift of emphasis away from what can be called *intrinsic* variables onto what can be qualified as *extrinsic* variables in an attempt to account for the differences usually found between first and second language learners also shows up in Taylor, for whom "it seems likely that affective psychological variables may constitute the major reason why adults are not always as successful as children in language acquisition. If we further assume that the psychological learning strategies involved in language acquisition are basically the same for children and adults, differing essentially in the degree of cognitive maturity of the learner, affective barriers take on a special significance" (Taylor 1974 : 34). That is, the barrier to overcome in the acquisition of a second language by the adult is not to be located in factors which are a function of the biology of the human being. Nor can it be ascribed to a psychological development of deterministic bias, as clearly indicated by Guiora's results showing different empathic scores for different individuals. Rather, the problem lies in the dynamic relationship between the learner, on the one hand, and the language community, on the other. It is precisely in this light that, to my mind, Guiora's results find their most ready interpretation. Interestingly enough, he found that the use of alcohol enhances pronunciation achievement. This can be explained taking account of the fact that alcohol consumption is usually followed by a lowering of inhibitions, and with it an increase in ego permeability, thus in empathic capacity. What makes these results the more interesting is the fact that "overall mental functioning (cognitive, psychomotor, memory, i.e., integrated ego functioning) as measured by the Digit Symbol Test is adversely affected by the same condition" (Guiora 1972 : 148). Language ego boundaries can therefore fluctuate, thus showing that empathy is not a static variable, but can and does oscillate. This movement, I will contend, is primarily contingent on social factors.

5.4 Schumann refers to some of the acculturation problems encountered by the adult language learner. First, cultural alienation, which has been the object of special attention by Larsen and Smalley. The integration of the learner in the target language community can receive a serious setback or even be totally frustrated by the hostility of the host society and by the efforts of the expatriate community or the sponsoring agency to keep hold of the learner. The second problem, language shock, has been investigated by Stengal, and refers to the disillusionment and frustration of the learner in the face of his difficulties with the language itself, which prevent him from expressing his thoughts and feelings freely and accurately. Even worse, the learner is often doubtful about the success of his successive attempts, since he lacks an efficient checking and feedback procedure. Also, the words in the new language do not convey the visual and emotional connotations of the first language. All this can produce a sense of shame and insufficiency, as well as a fear of ridicule, which acts as a firm barrier between the learner and the language. The third problem in Schumann's list is that of culture shock, which he defines as "anxiety resulting from the disorientation encountered upon entering a new culture" (Schumann 1975 : 212). Alongside tackling the language, the learner must come to grips with coping with one thousand and one every-day life problems which he can effortlessly solve in his own country. Finally, the fourth of the difficulties is culture stress, which is related to problems of identity and role in the new society. As a means of overcoming all these obstacles, Schumann quotes Larsen and Smalley, who suggest that "what the learner needs is a small community of sympathetic people who will help him in the difficult period when he is a linguistic and cultural child-adult. He needs a new family to help him grow up" (quoted in Schumann 1975 : 214).

The social aspect of language learning is given special emphasis by Lambert and his co-workers. Two types of attitude are isolated, viz., an *instrumental* attitude, based on utilitarian reasons, and an *integrative* attitude, where the interest of the learner in genuinely placed on the community speaking the

target language. Of these, the latter appears as the most positive approach to second language learning. For Lambert, "an individual successfully acquiring a second language gradually adopts various features of behaviour which characterize another linguistic and, as is often the case, another cultural group" (Lambert et al. 1963 : 358). This is tantamount to propounding an exocentric attitude with respect to the own ethnic group. Psychologically, this positive approach to an external group manifests itself in terms of anomie, that is, "feelings of social uncertainty or dissatisfaction which characterize not only the socially unattached person, but also, it appears, the bilingual or even the serious student of a second language and culture" (Lambert et al. 1963 : 358—9).

Along similar lines, Spolsky comments that "we are led to note the significance of sociolinguistics to second language pedagogy... Learning a second language is a key to possible membership of a secondary society: the desire to join that group is a major factor in language learning" (Spolsky 1969 : 281—2). Among the attitudinal foci he cites the parents, the teacher and the peer group with regard to the learner, on the one hand, and the learner with respect to the target language and its speakers, on the other. He refers to several studies which have shown a significant correlation between parents' attitude and foreign language achievement. Also, "a number of recent studies (though not in language learning) have pointed up the importance of the attitude of the teacher to the learner on the latter's achievement. Teacher expectations have been shown to make a great deal of difference to student success" (Spolsky 1969 : 273). There has also been research on the importance of peer group attitude for language acquisition. Finally, in an attempt to shed light on the role of the learner's attitude towards the target language community, Spolsky carried out an experiment with a view to correlating achievement in learning a foreign language and the choice of the speakers of that language as a reference group by the learner. The results confirmed the hypothesis that there is a negative correlation between maintenance of full membership of the own ethnic group and attainment of proficiency in the target language.

It can now be seen that the idea that the bio-psychological mechanism used in acquiring a second language is radically at variance with that which engages in first language learning is anything but proven. Indeed, there seems to be no weighty reason, apart from the prejudice of some, to apply different criteria to each of the two processes. The discrepancies in achievement can be successfully accounted for from a sociological angle. Both Spolsky's attitudinal factors and Lambert's integrative motivation fall well within that camp, as do concepts like anomie and Guiora's empathy and language ego, in spite of their at first sight psychological appearance. After all, anomie refers to feelings of social bafflement, and both empathy and language ego necessitate the *other* to exercise themselves, the *other* being of necessity a

speaker of the target language qua speaker of such language. There is no obvious reason therefore to reject a priori the extension to second language learning of Chomsky's findings regarding first language acquisition, embedded in the whole universe of the Chomskyan revolution impinging on the most varied aspects of human behaviour.

5.5 A final reflection along the same lines which may bring additional evidence for the position advanced here will be taken from the field of ethology. The crucial fact of the existence of different languages and dialects, a sine qua non for the process of second language learning, still awaits a satisfactory explanation. Neither biological traits nor historical factors are of any avail in this connection — new dialects emerge continuously, even within new nuclei of population; furthermore, it is the young rather than the old generations that appear to be the main agents of the change. Investigating bird dialects, Nottebohm notes that while they remain remarkably homogeneous over large territories of similar geographical and climatic characteristics, they tend to change rapidly in accordance with environmental differences: "neighboring populations established on habitats with different climatic, edaphic, and vegetational characteristics sing in a different manner" (Nottebohm 1970 : 954). The significance of this fact may well lie in the delimitation of geographically-bound groups which would develop genetic traits especially adapted to their environment: "if dialects play a role in an assortative mating system, as evidence suggests, the flow of genes across the boundary between two dialect populations would be significantly reduced" (Nottebohm 1970 : 954). Note the advantage of linguistic barriers, which are not too difficult to overcome, over more stable ones of a genetic nature: "whereas genetic isolation of small populations may lead to high rates of extinction and even possibly to excessive inbreeding, differences in vocalizations are probably rarely insuperable barriers to breeding, and thus the microevolutionary process is kept more flexible and open" (Nottebohm 1970 : 955). Although the development of dialects is not the only means of achieving social cohesion, and neither is the erection of genetic barriers the only function of bird song (territorial claim is another well-known one), Nottebohm asserts that "the change from a self-centered to an environmentally dependent vocal ontogeny must have taken place, presumably avoiding the confusion and information loss that might follow the loosening of genetic control over information patterns" (Nottebohm 1970 : 955). Now, if this is the case for birds, why should it be necessarily different for humans? There is some, though not conclusive, evidence that it may not be. Nottebohm notes that "that gene pools and dialects can be coextensive is suggested by observations on Australian aborigines" (Nottebohm 1970 : 955). Also, I agree with him that the coincidence of the ending of Lenneberg's critical period for language and the start of the individual's social life beyond the confines of the

family is highly suggestive: "this is contrary to other expectations; one might argue that, at that age, man's vocal abilities have reached high proficiency. Might this be a cue to a hitherto unsuspected function of language — namely, that of hindering communication between communities that speak different languages or dialects?" (Nottebohm 1970 : 955). The answer to this question must remain open for some time to come. Were it to turn out to be positive, however, more than one hitherto unsolved riddle would fall into place. The apparent lack of biological evidence to account for the difficulty of adult language learning would reconcile itself with the existence of attitudinal and psycho-social factors of undeniable importance. Chomsky's psycholinguistic and epistemological view of first language acquisition could be taken over verbatim to the process of adult language learning, differences in sociological co-ordinates and in the whole ecological environment accounting for points of discrepancy between the two. In this way, the Chomskyan lesson on language and man could fertilise the field of second language pedagogy, and the Chomskyan revolution would become yet more meaningful.

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APPENDIX

Unit No.	Type of Activity	*Subjunctive Structure*	
11	SD/79	-¿Puedo fumar?	-Can I smoke?
		-Sí, *fume* usted	-Yes, smoke
	80	-Voy a bebor agua	-I'm going to drink water
		-No, no *beba* usted agua	-Don't, don't drink water
	81	-¿Tengo que escribir?	-Do I have to write?
		-Sí, *escriba* usted	-Yes, write
	82	-¿Puedo marcharme?	-Can I leave?
		-Sí, *márchese* usted	-Yes, leave
	83	-Voy a marcharme	-I'm going to leave
		-No, no se *marche* usted	-Don't, don't leave
	84	-¿Pago este billete?	-Shall I pay for this ticket?
		-Sí, *páguelo*	-Yes, pay for it
	85	-¿Pago este billete?	-Shall I pay for this ticket?
		-No, no lo *pague*	-No, don't pay for it
	86	-¡*Pase* usted!	-Come on in!
		-¿Por dónde se pasa?	-Which way can I go in?
	88	-¿Quiere usted traerme la cuenta?	-Will you bring the bill?
		-*Tráigame* la cuenta, por favor	-Bring the bill, please
	89	-¡*Tráigame* la cuenta!	-Bring the bill!
		-Aquí la tiene usted	-Here it is

12 G/131

Imperative (usted, ustedes):		
Infin.:	Present:	Imperative:
-ar	usted(es) habla(n) inglés	(no) *hable(n)* usted(es) inglés
-er/-ir	usted(es) come(n) mucho	(no) *coma(n)* usted(es) mucho

you speak English/(don't) speak English
you eat a lot/(don't) eat a lot

G/132

Imperative (tú, vosotros)			
Infin.:	Present:	Imperative:	
-ar	tú hablas inglés	habla no *hables*	(tú) inglés
	vosotros habláis inglés	hablad no *habléis*	(vosotros) inglés
-er	tú comes mucho	come no *comas*	(tú) mucho
	vosotros coméis mucho	comed no *comáis*	(vosotros) mucho
-ir	tú subes aquí	sube no *subas*	(tú) aquí
	vosotros subís aquí	subid no *subáis*	(vosotros) aquí

you speak English/(don't) speak English

you eat a lot/(don't) eat a lot

you come up here/(don't) come up here

12 G/135

More examples of the Imperative:			
Infin.	usted(es)	tú	vosotros
-ar	(no) *tome(n)*	toma/no *tomes*	tomad/no *toméis*
-er	(no) *beba(n)*	bebe/no *bebas*	bebed/no *bebáis*
-ir	(no) *abra(n)*	abre/no *abras*	abrid/no *abráis*

13 SD/98 -*Deme* una peseta
-¿Me da una peseta, por favor?

101 -¿Puede pasar mi amigo?
-Sí, que *pase*

17 SD/132 -¿Le traigo el correo?
-Sí, *tráigamelo*

134 -*Hágame* estas cartas
-Ahora mismo se las hago

135 -¿Puede marcharse el botones?
-Sí, *dígale* que se *marche*

136 -El secretario se va enseguida
-No quiero que se *vaya*

18 G/207

Uses of the Subjunctive:
Ind.: usted va
Subj.: quiero que usted *vaya* le ruego a usted que *vaya* *dígale* a Juan que *vaya*

208

Uses of the Subjunctive:
Quiero que *vaya* usted a un recado ¿A qué hora quiere que *comamos*?
Que *sean* ustedes muy felices

209

Convenir:
A su jefe le conviene que usted *compre* el coche

20 SD/151 -*Firme* esta hoja, por favor
-¿Me hace el favor de firmar esta hoja?

156 -¿Necesita usted este dinero?
-Sí, *démelo*, por favor

157 -*Haga* el favor de venir
-Le ruego que *venga*

158 -¿Va usted a ir al banco?
-Prefiero que *vaya* usted

(don't) take
(don't) drink
(don't) open
-Give me a peseta
-Will you give me a peseta, please?

-Can my friend come in?
-Yes, have him come in

-Shall I bring in the mail?
-Yes, bring it in

-Write those letters
-I'll write them right away

-Can the buttons go?
-Yes, tell him to go

-The secretary is leaving immediately
-I don't want him to leave

you are going
I want you to go
I'd like you to go
tell John to go

I want you to go on an errand
At what time do you want us to eat?
May you be very happy

It's good for your boss that you should buy the car

-Sign this form, please
-Would you be so kind as to sign this form?

-Do you need this money?
-Yes, give it to me, please

-Please come
-Will you come, please?

-Are you going to the bank?
-I'd rather you went

20 SD/159 -El señor Short va al banco para abrir una cuenta
-Y para que su mujer *abra* una cuenta también

-Mr. Short goes to the bank to open an account
-And with the purpose that his wife opens an account too

160 -¿Por qué espera usted?
-Porque me han dicho que *espere*

-Why are you waiting?
-Because I've been told to wait

161 -El banco no ha mandado el dinero
-Voy a escribir diciéndoles que *manden* el dinero

-The bank hasn't sent the money in
-I'll write telling them to send the money in

162 -¿Qué cantidad quiere usted?
-La cantidad que *sea*

-What amount do you want?
-Any amount

21 G/241

Para que+Subjunctive (purpose)
Le escribo para que me *manden* dinero

I'm writing to you to be sent some money

246

...que sea (indefinite 'any')
Venga usted el día que *sea*

Come any day

23 SD/175 -Este coche está asegurado
-Necesito un coche que *esté* asegurado

-This car is insured
-I need an insured car

176 -Yo trabajo bien
-Es importante que usted *trabaje* bien

-I work well
-It is important that you work well

177 -¿Es conveniente alquilar un coche?
-No es conveniente que *alquile* usted un coche

-Is it a good idea to rent a car?
-It isn't a good idea that you should rent a car

178 -¿Cuándo prefiere usted ir?
-Cuando usted *vaya*

-When would you rather go?
-Whenever you go

179 -¿Cuándo vamos a comer?
-Cuando usted *quiera*

-When shall we eat?
-Whenever you wish

24 G/258

Impersonal verbs+Subjunctive
Es importante que *sepa* usted español

It is important that you should know Spanish

259

Subjunctive in noun modifiers
Necesito un coche que *sea* amplio

I need a roomy car

260

Con que+Subjunctive (provided that):
Con que *salgamos* a las ocho, llegamos ampliamente

Provided that we leave at eight, we will arrive comfortably

261

Cuando+Subjunctive (=future)
Avíseme cuando usted *venga*

Let me know when you come

24 G/262

Other uses of the Subjunctive:
Puedes conducir el coche antes de que *haya* mucho tráfico Depende del tráfico que *haya*

26 SD/199 -¿Cree usted que es una bujía?
-Puede que *sea* una bujía

200 -¿Cree usted que es una bujía?
-No creo que *sea* una bujía

201 -¿Echo un vistazo al motor?
-Sí, quiero que *eche* un vistazo al motor

202 -¿No funciona el motor?
-Quizá no *funcione*

203 -Hace calor
-Me alegro de que *haga* calor

27 G/295

Subjunctive after a negative:
no creo que *sea* el carburador

296

Subjunctive indicating possibility:
Quizá *sea* el carburador

297

Subjunctive expressing emotion:
Me alegro de que la casa le *guste*

28 SD/215 -Tenemos pasar hoy ¿no?
-No, no hace falta que *pasemos* hoy

216 -¿Cuándo va usted a venir?
-Yo vendré cuando usted *venga*

29 SD/230 -La familia Short estará contenta
-Espero que *esté* contenta

231 -Espero que la familia Short *esté* contenta
-Estoy seguro de que estará contenta

234 -Hay jardín, y eso me gusta
-He gusta que *haya* jardín

30 G/319

Present Subjunctive = Future:
El día que nos *vayamos*, me levantaré pronto

You can drive the car before the traffic becomes heavy
It depends on how heavy the traffic is

-Do you think it might be a plug?
-It might be a plug

-Do you think it might be a plug?
-I don't think it's a plug

-Shall I have a look at the engine?
-Yes, I'd like you to have a look at the engine

-Isn't the engine working?
-Maybe it isn't working

-It's hot
-I'm glad it's hot

I don't think it's the carburettor

Maybe it's the carburettor

I'm glad you like the house

-We must go through today, musn't we?
-No, we needn't go through today

-When will you come?
-I'll come when you come

-The Shorts must be happy
-I hope they are happy

-I hope the Shorts are happy
-I'm sure they are happy

-There is a garden, and I like that
-I am pleased there is a garden

The day we leave, I'll get up early

30 G/320

Agradeceré que+Subjunctive:
Le agradeceré que *instale* la cocina nueva

321

Creer (+Indic.); no creer (+Subj.):
Indic.: Creo que es la hora Subj.: No creo que *sea* la hora

322

Esperar (Indic. = 'expect', Subj. = 'hope'):
Espero que vendrá Juan (= 'expect') Espero que *venga* Juan ('hope')

325

Recomendar, aconsejar+Subjunctive:
Le recomiendo que no *vaya*

31 SD/235 -Luisa llegó tarde
-Al señor Short no le gustó que Luisa *llegase* tarde

236 -Usted trabaja poco
-Al jefe le gustaría que yo *trabajase* más

237 -¿Qué haría usted si *tuviese* hambre?
-Si *tuviese* hambre, comería algo

238 -Si usted se *levantase* pronto llegaría en punto
-Si usted se *levantase* pronto llegaría en punto

241 -¿Trabajamos un poco?
-Sí, *trabajemos* un poco

242 -¿Quiere usted que *empecemos* el trabajo hoy?
-No, no lo *empecemos* hoy; *empecémoslo* mañana

243 -¿Por qué no vino usted ayer?
-El jefe me dijo que no *viniera*

244 -Los clientes telefonearon
-Yo no quería que *telefonearan*

245 -Charlamos mucho
-El director prefería que *charláramos* menos

32 SD/249 -¿Qué puedo comer?
-Lo que usted *quiera*

253 -¿Ha empezado María?
-No, no ha empezado. Si María *hubiese empezado*, yo hubiera empezado también

I'll be grateful if you would install the new cooker

I think it's time
I don't think it's time

I expect John to come
I hope John will come

I advise you not to go

-Louise was late
-Mr. Short didn't like Louise's being late

-You do little work
-My boss would like me to work harder

-What would you do if you were hungry?
-If I were hungry, I would eat something

-If you got up early you would arrive right on the dot
-If you got up early you would arrive right on the dot

-Shall we do some work?
-Yes, let's do some work

-Would you like us to start the job today?
-No, let's not start today, let's start tomorrow

-Why didn't you come yesterday?
-The boss told me not to come

-The customers rang me up
-I didn't want them to ring up

-We talked a lot
-The manager would rather we talked less

-What can I eat?
-Whatever you want

-Has Mary started?
-No, she hasn't started. If Mary had started, I would have started too

32 SD/255

-Estoy enfermo
-Que se *mejore*

-I'm ill
-(I hope you'll) get better

33 G/337

Imperfect Subjunctive in -se:		
hablar:	comer:	vivir:
hablase, etc.	*comiese*, etc.	*viviese*, etc.

speak (Imp. Subj.), eat (Imp. Subj.), lived (Imp. Subj.)

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Imperfect Subjunctive in -ra:		
hablar:	comer:	vivir:
hablara, etc.	*comiera*, etc.	*viviera*, etc.

speak (Imp. Subj.), eat (Imp. Subj.), lived (Imp. Subj.)

339

Imperfect Subjunctive (irregular):		
Infin.	Preterito	Imp. Subj.
venir	vinieron	*viniese*, *viniera*

to come, they came, came (Imp. Subj.)

340

Uses of the Imperfect Subjunctive in conditional tenses:
Si usted se *levantase* antes, no tendría problemas

If you got up earlier, you wouldn't have problems

341

Uses of the Imperfect Subjunctive after the past tenses:
No me gustó que *llegase* usted (*llegara*) tarde

I wasn't pleased you were late

342

Uses of the Imperfect Subjunctive after the Conditional mood:
No me gustaría que usted *llegase* (*llegara*) tarde

I wouldn't like you to be late

343

Pluperfect Subjunctive:	
-se:	-ra:
hubiese ido	*hubiera ido*

had (Imp. Subj.) gone

344

Uses of the Pluperfect Subjunctive in conditional sentences:
Si usted me *hubiese llamado*, le hubiera (habría) recetado algo

If you had called me, I would have given you a prescription

350

Present Subjunctive (1st person plural) = 'let us':
trabajemos un poco = vamos a trabajar

Let's do some work = we are going to do some work

33 G/351

Hasta que..., hasta que no...:
Trabaje ustod hasta que yo *venga*

352

Subjunctive expressing indefiniteness:
Puedo comer cuando *quiera*

34 SD/260 -¿Vendrá ustod mañana?
-Dudo que *venga* mañana

261 -¿Vendrá usted mañana?
-Depende de que *venga* el técnico

262 -¿Cuándo vendrá usted?
-Depende de cuándo *venga* el gerente

263 -¿Puedo fumar?
-Preferiría que no *fumase*

266 -Le agradeceré que me *llame*
-Le agradecerá que me *llame*

267 -Le agradecería que me *llamase*
-Le agradecería que me *llamase*

268 -No están ocupados los operarios
-Procuraré que *esten* ocupados

270 -¿Telefoneó usted después de venir el gerente?
-No, antes de que *viniera*

35 SD/271 -Usted me escribió y yo vina aquí
-Si usted no me *hubiese escrito*, yo no hubiera venido aquí

272 -Mi secretaria no ha comprado el billete y por tanto no he podido marcharme
-Si mi secretaria *hubiese* comprado el billete, hubiese podido marcharme

276 -No he visto su casa todavía
-Me gustaría que la *viera*

36 G/368

Uses of the Subjunctive:
hacer que: una deficiencia de lubrificación hizo que se *calentara* el motor

369

Double Subjunctivo:
Esté donde *esté*, siempre pensaré en ustedes

Go on working until I come back

I can eat whenever I want

-Will you come tomorrow?
-I doubt I'll come tomorrow

-Will you come tomorrow?
-It depends on whether the technician is coming

-When will you come?
-It depends on when the manager comes

-Can I smoke?
-I'd rather you didn't smoke

-I'll be grateful if you will call me
-I'll be grateful if you will call me

-I'd be grateful if you would call me
-I'd be grateful if you would call me

-Not all the workers are busy
-I'll try to keep them busy

-Did you phone after the manager came?
-No, before he came

-You wrote to me and I came here
-If you hadn't written to me, I wouldn't have come here

-My secretary didn't buy the ticket, so I couldn't go

-If my secretary had bought the ticket, I could have gone

-I haven't seen your house yet
-I'd like you to see it

A fault in the lubrication system caused the engine to heat up

Wherever I might be, I'll always think of you