Behavioural Contingency Semantics
by U. T. Place

Behavioural Contingency Semantics is an attempt to rehabilitate the Behavioural or Behaviourist account of language acquisition and subsequent language use which, as far as most students of language are concerned, was effectively consigned to oblivion by Chomsky's (1959) Review of B. F. Skinner's 1957 book *Verbal Behavior*. In the summary of my paper which appears in the proceedings, I have tried to show how a later strand in Skinner's thinking represented by his 1969 book *Contingencies Reinforcement*, particularly the Operant analysis of problem solving which is the topic of Chapter 6 of that book can be developed in such a way as to make good all the important deficiencies in the account given by Skinner in his earlier book and what are mercilessly exposed by Chomsky in his Review.

Rather than read the paper as printed with a few additional remarks and illustrations which is all I could hope to do in 20 minutes, I propose instead to devote my allotted time - in the first instance at least - to a discussion of the reasons why, in my view, a behavioural account of language acquisition and language use is to be preferred to the alternative theories belonging to the tradition that stems from Chomsky.

What I am calling a 'behavioural account of language acquisition and language use' differs from most contemporary accounts of language in three important respects. In the first place, it is a Behaviourist account where the alternative accounts are Mentalistic. Secondly, it is an Empiricist account where the alternative accounts are Nativist and thirdly it is a Molar account where the alternative theories are Molecular.

My argument for preferring a Behaviourist account of language to one that is Mentalistic is based on a consideration of the nature of Mentalism and Mentalistic explanations of behaviour. As I propose to use the terms, a theory of behaviour is a 'behaviourist' theory in so far as it eschews the use of mentalistic language and mentalistic concepts in the explanation of behaviour. I propose to describe an explanation of behaviour as 'mentalistic', if and in so far as the behaviour of an individual organism is explained in terms of either (a) the statements or indicative sentences which the agent is said to hold to be true (his or her propositional attitudes) (b) the questions the agent is said to be able or unable to answer correctly, (i.e. what he or she knows, remembers or has forgotten) and (c) the rules or instructions the agent is said to follow.

If this definition of what a mentalistic explanation consists in is correct, it follows that what distinguishes mentalistic from non-mentalistic explanations of behaviour is that a mentalistic explanation accounts for the behaviour it explains in terms of a sentence, which may be an indicative, interrogative or an imperative, which is assumed to be controlling the behaviour whose occurrence is thereby explained.

It follows from this that any attempt to explain the initial acquisition of linguistic or verbal behaviour in these terms is viciously circular in so far as the explanation presupposes that the child whose acquisition of language is thereby explained already possesses the linguistic abilities - the ability to act on the assumption that a statement or proposition is true, the ability to answer some questions correctly and the ability to follow a rule or instruction - whose acquisition the theory purports *inter alia* to explain.

I should perhaps mention at this point that when I wrote the abstract to this paper and in a previous publication on the topic (Place, 1981a), I fell in with what I now think is a mistaken view

about what is wrong with mentalistic explanations which is held by Quine and, although he does not express it in this way, by Skinner. This is the view that what is objectionable about mentalistic explanations is that they are intensional-with-an-s or referentially opaque to use Quine's term. It follows, if you take this view, that what is required in giving a scientific explanation not only of language, but of any other kind of behaviour, is an explanation couched in purely extensional terms, that is, an explanation in which terms are used solely to designate entities which may be supposed to literally and actually exist. It was recently pointed out to me by Dr Richard Garrett, that what I am calling Behavioural Contingency Semantics is itself an intensional or referentially opaque account of the semantic relation, as indeed, I now think any adequate account of that relationship must necessarily be. What it avoids being, I now want to claim, is a mentalistic explanation in the sense of the definition I have just given, where a mentalistic explanation is a *species* of intensional explanations in which behaviour is explained by reference to the control of behaviour by a sentence, in contrast to other kinds of intensional explanation such as those involving intensional concepts like 'seeing something', 'wanting something' or 'looking for something' where what is seen, wanted or looked for is an intentional object, like 'an apple' which is not identical with any particular apple, rather than the truth of an indicative sentence or statement, as in locutions like 'seeing that *p*' or 'wishing that *p* were true.

Turning now to the reasons for preferring an empiricist to a nativist theory of language acquisition, we find that the arguments in this case are more circumstantial. By an empiricist theory of language acquisition, I mean a theory in which linguistic skills are conceived as acquired by the child by the operation of the same principles as those which govern all human and animal learning. Empiricist theories in this sense contrast with nativist theories, like that of Chomsky (1968), according to which the human child has innate knowledge of the 'deep structure' that is common to the grammars of all human natural languages or, like that of Fodor (1978), according to which human prelinguistic infants along with members of the more intelligent of sub-human species, both have and deploy an innately pre-programmed private language of thought to and from which the child learns to translate when it learns its first language, of interpersonal communication on its mother's knee.

In my view, the most persuasive argument for endorsing an empiricist account of language acquisition in the child, and for rejecting nativism in whatever form, is an argument which I call the Tower of Babel argument. According to this argument, the human species derives its ability to colonise a wide variety of different environments without having to develop innately pre-programmed physical and behavioural characteristics appropriate to those different environments, from its ability to develop and exploit a new technology appropriate to each new environment the species encounters. In order both to organise the cooperative activity required by such a technology and, in order to communicate what has been learned by one generation to the next and subsequent generations, human beings require a system of communication which differs from the innately preprogrammed systems of communication which have been extensively investigated by the ethologists in the case of other species of animals, namely a system of communication which gives scope for the kind of conceptual innovation which is needed in order to communicate the details of a new technological process. It seems to me that only a system of communication which is learned *ab initio* by each individual on its mother's knee can provide the required conceptual flexibility. But, as the Tower of Babel legend emphasises, this flexibility is bought at a price. As different groups exploit different environments with different technologies and develop different words or use old words in new ways to describe their respective environments and technologies, this will tend after a few generations of geographical separation to develop two mutually unintelligible natural languages, a process which is all too familiar to us from the researches of the philologists.

This is not, of course, to deny the evidence derived from recent studies of teaching apes to use sign language which, however you interpret it, clearly shows that no ape is capable of

mastering a human language beyond the level achieved by a human child of the age of 2 or 3. Obviously something has happened to the genetically determined constituents of the human brain in the course of evolution which allows human beings to acquire language to a level far beyond anything an ape can remotely hope to emulate. However, instead of interpreting that change as a matter of acquiring innate knowledge of the deep structure of what is common to the grammars of all human language, it seems much more plausible to construe it in terms of the acquisition, on the one hand, of universal powers of selective perception or selectively picking out common elements which recur in a wide variety of different contexts which is required in order for the listener to be able to decode novel combinations of familiar words and familiar sentence patterns and, on the other hand, in terms of the acquisition of the increased powers of creative improvisation required by the speaker in order to put together familiar words and familiar sentence patterns in these novel ways in the first place. Conceiving the cognitive developments which make human language possible in this way has the advantage that these cognitive abilities are at least very closely related to those required in order to develop and master a new technology, such as the making of flint tools which must have developed alongside the ability to use language in the process of human evolution. It is, it seems to me, very much easier to envisage the process whereby the human ability to use language evolved in *these* terms than in terms of either Chomsky or Fodor's theories.

The arguments for preferring a Molar theory of language acquisition and language use to a Molecular one, differ from those just rehearsed, which favour a Behaviourist as opposed to a Mentalistic theory and an Empiricist as opposed to a Nativistic theory in that whereas giving a Behaviourist account of language acquisition and language use is incompatible with simultaneously giving a Mentalistic account and giving an Empiricist theory is similarly incompatible with simultaneously giving a Nativist account, Molar and Molecular explanations are not similarly mutually exclusive. By a molar explanation here I mean an explanation of the behaviour of an entity which adverts only to the external forces acting on the entity from outside it and the dispositional properties of the entity as a whole when subjected to forces of that kind. By a Molecular explanation on the other hand, I mean an explanation of the dispositional properties of an individual entity or of all entities of a particular kind in terms of the dispositional properties, not of the entity as a whole, but of the individual parts of which the entity is composed and the way in which those parts are organised so as to form the whole. In the case of the explanation of linguistic competence, a molecular explanation would be one which accounts for the linguistic competence of human beings in general, or that of particular individuals in so far as their peculiarities can be attributed to the abnormal functioning of the brain, in terms of the properties of actual or hypothetical substructures within the central nervous system. A molar explanation by contrast explains the particular facts of verbal behaviour, such as what someone said on a particular occasion, or the linguistic abilities of particular individuals in so far as they are within normal limits, purely in terms of the environmental circumstances impinging on the individual's behaviour at the time in question, or which have impinged on the individual's behaviour in the past, and the linguistic and other abilities which are characteristic of that individual as a complete behaving organism.

Molar and molecular explanations, in my view, are not in competition with one another, because they are not used to explain the same kinds of thing. Explanations of both kinds are needed, depending on what it is that needs to be explained. If you are concerned to explain particular behavioural events or particular behavioural dispositions of individuals which are within normal limits or again, if you want simply to state the general behavioural dispositions characteristic of the organisms of a given species, before attempting to explain those dispositions in molecular terms, you will need a body of molar concepts in which such explanations and descriptions can be formulated. If, on the other hand, what needs to be explained is the dispositional properties characteristic of the species as a whole or the particular dispositional

properties of individuals who are functioning abnormally due to brain damage or other kinds of organic malfunction, then you will need a molecular account in terms of the actual or hypothetical brain mechanisms involved.

It follows from this that the claim to be made on behalf of a molar behavioural account of language acquisition and language use is not that such an account is to be preferred to a molecular account in every case, but simply that there is an important range of cases where a molecular account is inappropriate and a molar account is indispensible.

Having, as I hope, established the need to provide an account of language acquisition and language use that is Behaviourist, Empiricist and Molar, rather than Mentalistic, Nativist and Molecular, it then has to be accepted that the Behaviourist, Empiricist and Molar account of language offered by Skinner in his book *Verbal Behavior* simply will do as it stands.

As I argued in my paper 'Skinner's *Verbal Behavior* -What's wrong with it' (Place, 1981b), Skinner's book suffers from two basic defects.

(1) Its failure in analysing verbal behaviour to make use of the important distinction between sentences and the words of which they are composed,

and

(2) the inadequacy of Skinner's account of the effect of verbal utterances in their capacity as stimuli on the behaviour of the listener.

Between them these two defects prevent Skinner from providing an account of what Chomsky (1959) in his Review of Skinner's book correctly identifies as the distinctive feature of human linguistic communication, namely, the speaker's ability to construct and the listener's ability to construe novel sentences whereby the speaker is able both to elicit from the listener behaviour which he or she has never previously emitted and convey to the listener information about contingencies which he or she has never previously encountered.

Behavioural Contingency Semantics is an attempt to rectify these defects in Skinner's account of language by proposing that when the speaker puts words together so as to form a sentence, he or she is constructing what we can describe in Skinner's language as 'a discriminative stimulus' which has the effect of preparing the listener to encounter what, in Skinner's language, is known as 'a contingency'. The sentence, on this view, acquires its ability to act as a discriminative stimulus, by virtue of an isomorphic mapping relationship holding between the structure of the sentence on the one hand and the structure of a part or of the whole of the putative contingency for which it thereby acts as a discriminative stimulus.

A contingency in Skinner's sense is a causal relationship which holds under certain Antecedent pre-conditions between Behaviour which the listener has emitted in the past or might emit in the future and the actual or alleged Consequences of so doing.

In order to illustrate this idea, consider the sentence *The baby is crying.* This is a sentence which specifies or maps onto an Antecedent condition under which the Behaviour specified in the imperative sentence *Give the baby a bottle* is called for, which hopefully will have the reinforcing consequence which the sentence *The baby has gone back to sleep* maps onto and thus specifies.

Given these three atomic sentences, as I call them, each of which maps onto a different leg or term of the same contingency, we can now construct two compound conditional sentences of the form `If *p* then *q*'. The first of these, the sentence *If the baby cries, give it a bottle* specifies the Antecedent condition and the Behaviour to be performed when that condition arises. The second, the sentence *If you give the baby a bottle, it will go back to sleep* specifies the Behaviour to be performed and its reinforcing Consequences. Finally, the three-clause sentence *If the baby cries, give it a bottle and it will go back to sleep* specifies all three legs of the contingency.

Needless to say, in this brief talk I cannot hope to do more than give you the flavour of this revised behavioural approach to linguistic theory. To do justice both to the theory and to the various objections that can be raised to it would require much more time than I have available to me. I can only hope that I have said enough to stimulate discussion in the few minutes remaining.