THE PROBLEM OF MENTAL CONTENT FROM THE STANDPOINT OF LINGUISTIC EMPIRICISM[1]

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1. Introduction

This paper takes as its target an assumption which underlies a number of books and articles which have been published or otherwise circulated by Jerry Fodor in recent years, beginning with The Language of Thought (Fodor 1975) and culminating in his most recent book Psychosemantics (Fodor 1987). Fodor states this assumption at the beginning of his unpublished paper 'Narrow content and meaning holism'[2] where he says:

> I assume that what we want - and what a successful cognitive science might give us - is a propositional attitude psychology, (a belief/desire psychology, as I shall sometimes say). (p. 1)

In other words what I am proposing to question is the viability and validity of Fodor's basic project in all the publications to which have alluded, namely, that of adapting and generalising the form of explanation which we give of our own behaviour and that of other people in everyday life, so as to provide a universally applicable psychological theory for the purposes of cognitive science.

2. Linguistic Empiricism

I shall criticise Fodor's position in this respect from a standpoint which I am proposing to dignify with the title Linguistic Empiricism. Linguistic empiricism is a theoretical approach to problems of epistemology, the philosophy of science, the philosophy of language, linguistics, psychology and the social sciences which takes the phenomenon of language and linguistic communication as fundamental in all these areas of research and which adopts an approach to the phenomenon of linguistic communication which is empiricist in three different senses.

(a) in the epistemological sense
(b) in the methodological sense and
(c) in the theoretical sense.[3]

3. Linguistic empiricism in the epistemological sense

Linguistic empiricism in the epistemological sense takes as its starting point one of the "two dogmas of empiricism" criticised by Quine in his well known paper of that name (Quine 1953), namely, the view that there is a clear and viable distinction to be drawn between two kinds of true statement, those that are analytic and those

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[2] This paper is mentioned in the preface to Psychosemantics as being superseded by that work.

[3] I owe the distinction between methodological and theoretical empiricism to Donald Broadbent's paper 'In defence of empirical psychology', published as the final chapter of his book with the same title (Broadbent 1973). The concept of empiricism in the epistemological sense comes from a similar distinction which I used to draw in my lectures at Leeds on the philosophy of John Locke, between the "psychological empiricism" of Book I of The Essay concerning the Human Understanding ("No innate principles in the mind"), corresponding to Broadbent's "empirical psychology as a theory", and empiricism as a theory of knowledge, as found in Berkeley and Hume, which contrasts with the rationalist epistemology which Locke develops in Book IV of the Essay.

that are synthetic. For these purposes an analytic statement may be defined as an indicative sentence which is made true solely by virtue of the syntactic and semantic conventions which govern the construction of the sentence and determine the effect produced on the listener who correctly interprets it.[4] A true synthetic statement is defined as a an indicative sentence which is made true partly in the way that analytic statements are made true, i.e., by the linguistic conventions governing their content and structure, and partly by a correspondence between the content and structure of the sentence and the content and structure of the event or state of affairs which it thereby depicts.[5] In other words, linguistic empiricism in the epistemological sense is committed both to a version of Wittgenstein's (1922) "picture theory" of the meaning of sentences and, as far as synthetic statements are concerned, to a version of the correspondence theory of truth in which the correspondence is between the sentence and extra-linguistic reality rather than between theoretical statements and observation sentences.

It is part of this view that the class of statements which are analytic in this sense is co-extensive both with the class of statements which are necessarily true in the sense that it is self-contradictory, given the existing linguistic conventions, to deny them and with the class of statements, which are true a priori in the sense that no empirical observation is needed to determine their truth, provided the listener or reader has a proper grasp of their meaning. Similarly the class of true synthetic statements is held to be co-extensive with the class of statements which are contingently true in the sense that there is no self-contradiction involved in denying them and with the class of empirical propositions whose truth is established by observation.

4. Objective observations as the foundation of empirical knowledge

Since the correspondence with reality which constitutes the truth of a synthetic statement is as much a function of the linguistic conventions involved in its formulation as is the truth of a statement that is analytic, it follows that there can be no such thing as a direct apprehension of a correspondence between a statement and the reality which it depicts. Any such claim is subject to correction in the light of the objection that, for example, the sentence This is a table, uttered when pointing to an object like this, does not represent the correct usage of those words in the natural language, in this case English, according to the conventions of which that string of phonemes is assumed to constitute a well formed sentence. In the case of basic observation sentences like this, we need to be assured by other speakers present that we are not departing from correct English usage in so describing the publicly observable state of affairs with which we are all currently confronted. The same goes, of course, for the corresponding sentence in Serbo-Croat and any other natural language.

But this reassurance that there is a correspondence between the sentence and the reality it depicts is only available in the case of observation sentences uttered in the presence of other competent speakers of the language in use who are in a position to confirm that the sentence in question correctly describes the state of affairs by which everyone is confronted. In other cases, where either

(a) there is no other competent speaker of the language present,
(b) the observation sentence relates to something such as a private experience which is accessible only to the speaker,

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[4] It should be emphasized, however, that many statements are only analytic truths in certain contexts of utterance. For example, All batchelors are unmarried males is only analytic in contexts such as the reading of the banns of marriage.

[5] It will be appreciated that if you hold that the truth of a synthetic statement is a function of the language used in its formulation, you will give a very different interpretation of Putnam's (1975) Twin Earth example to which Fodor devotes a large proportion of his `Narrow content' paper. On this view, the answer to the question ‘Is the stuff they call "water" on Twin Earth really water?’ is seen to depend on the linguistic community within which the question arises. Within a scientifically unsophisticated linguistic community which knows nothing of the chemical composition of what passes for water on both Earth and Twin Earth, there is no problem. What is called "water" is water whether it is on Earth or Twin earth. However, from the point of view of a scientifically sophisticated verbal community which takes the chemical composition of a stuff into account before deciding how to classify it, we get a different story depending on whether the question arises within such a linguistic community on Earth or on Twin Earth. The scientifically sophisticated linguistic community on Earth will reject Twin Earth's XYZ as a case of water because it has the wrong chemical composition. Likewise a similar community on Twin Earth will reject Earth's H_2O for the same reason.

(c) the synthetic-contingent-empirical statement relates to some event or state of affairs which is historically and or geographically remote from the context of utterance, and, hence, not currently accessible to observation by either speaker or audience,

the only principle we can appeal to assure us of the truth of what is said is the fundamental logical principle of non-contradiction which holds that if two statements contradict one another, they cannot both be true; if they contradict, either one or both of them must be false.

Given that we already possess a reasonably coherent system of propositions whose truth has been established on other grounds, it is frequently possible to use the principle of non-contradiction both

(a) to reject as false propositions which contradict one or more propositions in one's existing stock, and
(b) accept as true ones which fit neatly into place within the system.[6]

In a case where the truth of a statement is not accessible to public observation and confirmation by the relevant linguistic community, confidence in the overall correspondence between a statement and the reality it depicts depends

(a) on the tightness and number of the entailment relations which hold between the statement in question and other propositions in the system whose truth is assured on other grounds, and
(b) on the extent to which that part of the total system of empirical beliefs to which the statement in question belongs is anchored to a set of observation sentences where the correspondence between statement and the reality it depicts is beyond doubt.

According to the traditional subjective empiricism which goes back to Berkeley's empiricist version of Descartes' subjectivist epistemology, the fundamental observation sentences which provide the foundations of empirical knowledge are protocol sentences describing the private sensory experiences of a single individual. On the linguistic empiricist view, they are observation sentences describing a public state of affairs which any number of observers who are competent speakers of the relevant natural language or technical code will agree is a correct description of that state of affairs.

5. Linguistic empiricism in the methodological sense

Although it is just as a controversial as linguistic empiricism in the epistemological sense, I do not propose to spend much time discussing linguistic empiricism in the methodological sense, because it is much less relevant than are the other two senses of the term to the problem of mental content. Suffice it to say that in the methodological sense linguistic empiricism is closely related to thesis expounded by Quine in his paper `Epistemology naturalized' which appeared in his Ontological Relativity and Other Essays in 1969.

In that paper, Quine argues that epistemology or the theory of knowledge should be viewed as a theoretical issue which arises within the framework of science rather than as an issue arising from some Olympean standpoint outside it. Linguistic empiricism in the methodological sense differs from Quine's position in the following respects:

(a) the thesis, instead of being restricted to epistemology, becomes a thesis about the activity of constructive philosophical enquiry in general, which in turn is identified with conceptual analysis, as applied, not just to ordinary language, but to elucidating the semantics and pragmatics of any language or code of which the investigator is a fully competent speaker.
(b) In contrast to Quine who, it would seem, continues to regard philosophical enquiry in general and epistemology in particular as an a priori discipline closely related to logic and mathematics, linguistic empiricism in the methodological sense is committed to the view that conceptual analysis, which it takes to be the only major source of genuine philosophical discovery, is an empirical discipline whose principal methodological procedure is the ethnomethodological thought experiment. In an ethnomethodological thought experiment the investigator uses him or herself as his or her own ethnologist's informant in order to check the hypothesis that a particular social convention obtains within the social group to which he or she belongs by imagining what the reaction would be, if someone were to behave in a manner contrary to that prescribed by the putative convention.

[6] This is how I would interpret the principle of holism as described by Donald Davidson in ‘Mental events’ (Davidson 1970) and by Fodor in ‘Narrow content’.

(c) Although Quine is sensitive to the linguistic aspects of epistemology in ‘Epistemology naturalized’, the position he assigns to epistemology within the natural sciences lies in the area of the psychology of sensation. This appears to be a carry over from traditional subjectivist empiricism which takes the basic observation data of the empirical sciences to consist in protocol sentences describing the individual's private sensations or sense data; except that, in Quine's physicalism, sense data are replaced by "surface irritations" of the receptor organs. In the methodological version of linguistic empiricism by contrast, epistemology and conceptual analysis are construed as branches of empirical sociolinguistics.

6. Linguistic empiricism in the theoretical sense

Linguistic empiricism in the theoretical sense is the version of linguistic empiricism with the most immediate implications for the problem of mental content. It consists in the hypothesis that the linguistic competence of the individual, and, hence, the possibility of linguistic communication within the linguistic community, constituted by speakers of the same natural language or technical code is acquired and maintained by a process in which the listener selectively reinforces those utterances of the speaker which conform to the semantic and syntactic conventions endorsed by that linguistic community. It will be seen from this that linguistic empiricism in this theoretical sense is diametrically opposed to nativist theories of the acquisition of linguistic competence such those proposed by Chomsky (1968) and Fodor (1975), both in holding

(a) that linguistic competence is learned rather than genetically pre-programmed, and
(b) that the process whereby linguistic competence is learned, and maintained once learning has taken place, is essentially the same process of the selective reinforcement of behaviour by its consequences, as that whereby learned behaviour is acquired and maintained in the case of animals and pre-linguistic children.

7. The linguistic theory of the nature of propositions

However, the implications of linguistic empiricism in the theoretical sense for the problem of mental content only become apparent when it is combined with what we may call "the linguistic theory of the nature of propositions." The linguistic theory of the nature of the proposition holds that a proposition is a linguistic entity which is defined as the set of actual and possible indicative sentences, in all natural languages which possess the conceptual resources required to formulate such a sentence, which is such that

(a) if any one member of the set is true, all of them are true,
(b) particulars (objects, persons, places and times) referred to in the sentences are referred to either in the same way or in corresponding ways allowing
    (i) for changes of tense as events or states of affairs move with the passage of time from future to present to past,
    (ii) for changes in personal pronouns as the sentence or, rather, its equivalent is passed from mouth to mouth, and
    (iii) for changes in other indexicals, such as demonstratives, as the context of utterance changes.

Although the linguistic theory of the nature of propositions is not, strictly speaking, entailed by linguistic empiricism in any of its senses, it is evidently very congenial to its general thrust. Moreover, if The Language of Thought (Fodor 1975) is anything to go by, it is not as far removed as one might think from Fodor's position. He would agree that a proposition is a linguistic entity and that it is a kind of sentence. However, for him it is a sentence formulated, not in a language of interpersonal communication, but in his hypothetical innately pre-programmed private language of thought. That concept, moreover, is clearly incompatible with linguistic empiricism, both in its epistemological sense (which is incompatible with the notion of a language which is private in the sense that it is never used for the purpose of interpersonal communication) and in its theoretical sense which is incompatible with the contention that knowledge of the private language of thought is innately pre-programmed.

8. The interpretation of propositional attitudes on the linguistic theory of propositions.

The full extent of the "cognitive dissonance" (Festinger 1957) between linguistic empiricism and Fodor's position becomes apparent when the notion of a "propositional attitude" is given an interpretation in terms of the

linguistic theory of propositions in the form in which I have stated it. For, if a proposition is a purely linguistic entity defined in terms of a set of actual and possible sentences in natural language it follows that only an organism that has the ability to construct sentences in some natural human language which "expresses" a certain proposition, i.e., which are members of the set of sentences which comprise it, can be credited with an attitude to the proposition in question. Furthermore, in the case older children and adults whose ability to construct a wide variety of novel sentences in at least one natural language allows us to credit them with a number of propositional attitudes, those propositional attitudes cannot, when speaking strictly and literally, be invoked to explain the actions and behaviour of the individual, unless there is reason to think that the decision to perform that action has been reached in the light of a thought process consisting of a set of sentences formulated in the natural language of interpersonal communication.

It follows from this that if both linguistic empiricism in the theoretical sense and the linguistic theory of propositions are true, there is no way that there can be a general psychology, i.e., a psychology which applies to all forms of behaviour and mental process, both human and animal, which takes the propositional attitude as its fundamental explanatory concept.

9. Wanting is not a propositional attitude

But this is not all. If the linguistic theory of propositions is true in the form that I have stated it, it follows that wanting is not a propositional attitude, and if wanting is not a propositional attitude and it is also true, as Geach (1957) first pointed out in Mental Acts, that we need to know what someone wants before we can make any predictions of their behaviour from a knowledge of their beliefs, it follows that assumptions about an agent's propositional attitudes will not by themselves yield predictions of action even in those cases where behaviour is based on a verbally formulated decision process.

The linguistic theory of the nature of propositions, as I have stated it, is incompatible with the notion that wanting is a propositional attitude, because it is part of that theory that the set of sentences which constitute a given proposition includes sentences which describe a particular event or state of affairs before it occurs or becomes the case, while it is happening or is the case and after it has happened or ceased to be the case. Thus the sentences Caesar will be murdered in the senate on the Ides of March uttered as a prediction before the event, Caesar is being murdered in the senate at this very moment uttered at the time and Caesar was murdered in the senate on the Ides of March 44BC uttered after the event all be said to express the same proposition on this view.

But if we now look at what Wittgenstein would have called "grammar" of the verb to want, we find that it only makes sense to say that someone wants something in a case where that something is the coming about in the future of some state of affairs such as possession or consumption of some object by the individual in question. Now if wanting something were a propositional attitude, we should have to represent this feature of the grammar of wanting by saying that it only makes sense to say that someone wants something in a case where the proposition whose truth is desired is a proposition in the future tense which describes the coming about of some state of affairs, such as the possession or consumption of an object by the individual in question. This is plainly inconsistent with the principle whereby propositions include sentences describing the coming about of a particular state of affairs regardless of tense. This, in turn, implies that propositions are timelessly and tenselessly true, and, thus, rules out the notion of their being such a thing as a future tense proposition.

While the conclusion that wanting is not a propositional attitude is an embarrassment from the standpoint of Fodor's theory, it is, of course, a very congenial conclusion from the standpoint of linguistic empiricism. For while there are many considerations which make us uneasy about attributing genuine propositional attitudes, like knowing and believing, to linguistic incompetents, like animals and pre-linguistic children, none of these considerations apply in the case of wanting. Behaviourist objections to the attribution of desires to animals have no firmer basis than a misunderstanding of the logic of so-called "teleological" explanations.

10. "There is no alternative"

Of course, it is one thing to point to a cognitive dissonance between linguistic empiricism on the one hand and Fodor's project for cognitive science on the other. It is quite another to provide reasons for preferring the one position to the other. On the other hand, to cite all the evidence which inclines me to favour the linguistic empiricist standpoint and reject Fodor's position would take us too far afield. Instead, what I propose to do in the

time remaining to me, is to examine the kind of argument which Fodor uses to recommend his position to us and suggest some reasons why we ought to look at those arguments with a certain amount of scepticism.

The argument which is usually invoked by the likes of Fodor to defend the contention that psychology and cognitive science require a jazzed-up version of common-sense belief-desire explanations as its basic theory is a version of an argument that was repeatedly used by Margaret Thatcher during her first administration from 1979-1983 which is summarised by the acronym TINA - There Is No Alternative[7].

There is, of course, an alternative both in Mrs Thatcher's case and in Fodor's. In Mrs Thatcher's case, the alternative is the socialist and quasi-socialist policies advocated by the opposition parties. In Fodor's case it is the theory of selective reinforcement in accordance with the Law of Effect which is advocated by behaviourists such as B.F.Skinner. In both cases, however, it is assumed that the alternative has been totally discredited and can, thus, be safely ignored.

11. Linguistic empiricism and behaviourism

It will not have escaped most of you that Linguistic Empiricism, as I have described it, has much in common with the behaviourist position. Linguistic empiricism in the epistemological sense is an objectivist epistemology similar to that which provided the impetus both for Comte's (1830-1842) positivism in the nineteenth century and Watson's original behaviourism of 1913. Similarly the kind of conceptual analysis which is the focus of interest in linguistic empiricism in the methodological sense led both Ryle (1949), who acknowledged the fact, and Wittgenstein (1953), who didn't, towards a decidedly behaviourist interpretation of the majority of our ordinary psychological concepts; while linguistic empiricism in the theoretical sense, as I have stated it, is firmly committed to an account of the acquisition and maintenance of linguistic competence through the process of the selective reinforcement of behaviour by its consequences which is the essence of Skinner's so-called "behaviour analysis".

It is my belief that, when interpreted in the light of the principles of linguistic empiricism, behaviourism offers a viable alternative to explanations of behaviour in terms of the agent's beliefs and desires in those cases where the agent lacks the linguistic competence whose possession, I have argued, is implied by explanations of the belief/desire type. I would also argue, that behaviourism is able to provide us with a theory of the acquisition and maintenance of linguistic competence from which the principles governing the control of behaviour by a combination of propositional and motivational attitudes can be deduced. If this is correct, it follows that the kind of behaviourism propounded by Skinner, can provide us with the kind of general psychological theory which the belief/desire explanatory scheme, because of its reliance on the model of the linguistically competent organism, cannot do.

12. Two reasons for ignoring behaviourism

Fodor is able to rely on general acceptance for his view that the behaviourist alternative to his project has been effectively discredited for two reasons:

(a) Chomsky's (1959) Review of Skinner's book Verbal Behavior (1957) which is interpreted as showing conclusively that no behaviourist account of language can ever hope to succeed, and

(b) the prestige of the digital computer as a model for the functioning of the brain and its control of behaviour, combined with the fact that the way the digital computer works lends itself to description in the language of propositional attitudes which the behaviourist repudiates.

13. Reconsidering the implication of Chomsky's Review

There are a number of considerations which, so it seems to me, should lead us to reconsider the implications of both of these historical events. Some of these considerations have been with us all along. Others arise from developments which have taken place more recently. In the case of Chomsky's Review of Skinner's

[7] In 'Narrow content' Fodor states the argument as follows:

> "Moreover, there seems to be no serious alternative to the program of building a computational psychology on the foundation of informal belief/desire explanation." (p. 3)

book, Dr Carol Sherrard of the University of Bradford has recently carried out an analysis of the Review (Sherrard 1987) which shows that so far from offering a general refutation Skinner's contention that learned behaviour is acquired and maintained by the principle of reinforcement by consequences, Chomsky actually endorses the principle, as applied to the behaviour of animals and, presumably, though this is not specifically mentioned, that of pre-linguistic children. His objection is to Skinner's proposal to extend principles derived from the experimental study of animal behaviour, where their operation is not disputed, to the acquisition and maintenance of linguistic competence by the child and subsequently the adult, where no such experimental confirmation has been or is likely to be provided.

But it is not only that Chomsky's criticism of reinforcement theory is restricted to the acquisition and maintenance of linguistic competence. There is also evidence from audio and video recordings of naturally occurring linguistic interactions, evidence which had not become generally available at the time when Skinner was writing Verbal Behavior, which shows that responses on the part of the listener which appear to perform the function of reinforcing what has just been said by the speaker are a universal feature of linguistic interaction in every culture. Virtually every sentence that is completed by a speaker in a naturally occurring conversation or other verbal interaction is "consequated" by some verbal or non-verbal response on the part of the listener. This phenomenon, whose significance seems to have been entirely overlooked by Skinner, provides formidable evidence in favour of the empiricist/reinforcement theory of the acquisition and maintenance of linguistic competence. It is true that, in the nature of things, there is very little experimental evidence[8] that these "response tokens", or "backchannels" as they are called respectively by sociologists and social psychologists who study such matters, do play the role in the acquisition and maintenance of the speaker's linguistic competence which is attributed to them by the empiricist theory. On the other hand their incidence, location and occasional omission is just what one would expect if they do in fact perform the selective reinforcement function attributed to them by the theory. Moreover, it is very difficult to see what other explanation of their function might be suggested, if this explanation is to be rejected.

Another more recent piece of evidence which supports a similar conclusion is Ernst Moerk's (1983) book Mother of Eve as a first language teacher. In that book, Moerk re-analyses the data collected by Roger Brown on a mother's verbal interactions with the girl, who was given the pseudonym "Eve", between the ages of 18 and 27 months. Brown's (1973) original analysis of this same data had concluded, in accordance with Chomsky's nativist theory of the acquisition of linguistic competence, that there was no evidence that the child was ever corrected for mistakes of grammar, and that, consequently, the ability to construct novel well-formed sentences which she, nevertheless, displayed must be due to her innately pre-programmed knowledge of the deep structure which, according to the theory is common to all natural languages. What Moerk's re-analysis of the same data shows is, in his own words (Moerk 1983 p. 1) "that the input provided mainly by the mother is rich enough to account for language acquisition".

14. Reconsidering the digital computer as a model for the brain

In the case of the computer model of brain functioning, it should have been obvious from the outset that the digital computer was not going to provide a good model for the functioning of the brain. The digital computer is a mechanical device designed in order to carry out quickly and efficiently computation tasks which the unaided human brain carries out slowly and inefficiently, if at all. It is, therefore, most unlikely that the two systems operate according to the same principle.

More recently, two developments have occurred which cast a further doubt on the model of the digital computer as a guide to the functions of the brain. One of them is a distinction which is drawn by B.F.Skinner in an important paper first published in 1966 under the title ‘An operant analysis of problem solving’. In that paper which was republished as Chapter 6 of his book Contingencies of Reinforcement in 1969, Skinner distinguishes two kinds of human behaviour,

(a) what he calls "contingency-shaped" behaviour, behaviour like all the behaviour of animals, pre-linguistic children, as well as all forms of habitual and skilled behaviour in the case of older children and adults,

[8] An experiment by Verplanck (1955) on ‘The control of the content of conversation: reinforcement of statements of opinion’ is an honorable exception.

which is shaped by actual experience of the consequences which similar behaviour has led to in the past, and

(b) what he calls "rule-governed" behaviour which is behaviour controlled by a verbal specification of either
  (I) the behaviour to be performed, given a certain antecedent condition (prescriptive rule), or
  (II) the consequences of behaving in some way (descriptive rule) where the rule in this sense is derived either
    (i) from observation of what the consequences have been of behaving in one way rather than another either in one's own case or in that of others (descriptive rules),
    (ii) from information (descriptive rules) or instructions (prescriptive rules) supplied by others, or
    (iii) by inference or calculation based on two or more rules of either kind derived from either or both of these sources.[9]

The importance of this distinction for the digital computer model of human behaviour is that computation based on deductive inference from a set of symbolically formulated principles is seen as something which only manifests itself in the control of behaviour, once the degree of linguistic competence required to formulate and make deductions from a rule in Skinner's sense has been acquired.

This distinction of Skinner's has recently been given substantial confirmation by the development of what is known as the "parallel distributed processor". This is a computing device which, instead of a single memory store to which "bits" of information are consigned, when received, and from which they are retrieved when required, consists of a network of interconnected microchip memory units, resembling the neurons of which the brain is composed, in which the information is stored, in the way it undoubtedly is in the brain, in terms of increases and decreases in the susceptibility of millions of such interconnected units to activation by neighbouring units in the network.

Not only does the parallel distributor processor operate in the way that the brain operates, its functional properties are much more like those of the brain than are those of the now traditional digital computer. For one thing unlike the digital computer which is designed to perform quickly and efficiently complex computational tasks which human beings perform slowly and inefficiently, if at all, the parallel distributed processor is designed to perform tasks like visual space perception and visual recognition which the human and, for that matter, the mammalian and avian brain generally is very good at, and which the digital computer performs very slowly and inefficiently. At the same time there is no counterpart in describing the functioning of the parallel distributed processor for the concepts like a computer program, "a programming language" (the model for Fodor's private language of thought), "propositions" and inferences from them based on the principle of logic. The parallel distributed processor is a system whose functional properties are shaped entirely by the experiences it has encountered in the past. Whereas the language of propositional attitudes is perfectly at home in describing the operation of the digital computer; in describing the operation of the parallel distributed processor, it is as much a matter of an inappropriate extension of an ill-fitting metaphor, as it is when applied to the behaviour of animals, pre-linguistic children and other forms of contingency-shaped behaviour.

15. Belief/desire explanations and the morality of behaviour modification

One final point. If we go along with Fodor and try to develop belief/desire explanations as a general psychology we deprive ourselves of any possibility of making sense of moral argument against behaviourism which, I suspect, is the most important single factor in its unpopularity as an approach to human behaviour. The suggestion here is that the primary function of the belief/desire type of explanation is to lay out the dispositional determinants of behaviour in the way that they need to be laid out, if you are going to modify a another person's behaviour by persuading him or her to alter his or her other beliefs about the situation with which he or she is confronted. What we need if we are to do this, and what the belief/desire type account gives us, is

(a) a specification of the propositions on whose truth the agent in question is currently disposed to rely, in taking a decision as to what to do in the current situation, combined with

[9] This account of the distinction has been elaborated in the light of a questionnaire survey carried by the writer on the views of behaviour analysts on how the distinction should be understood.

(b) a specification of the agent's motivational attitude to the various consequences of behaviour envisaged in those propositions which will motivate the decision that is taken.

Now there is also a strongly held moral principle with which few would want to quarrel which holds that the only way of modifying another person's behaviour which is morally beyond criticism is by persuading the potential agent either

(a) of the falsity of one or more of the propositions on the truth of which he or she is currently disposed to rely when deciding what to do, or

(b) of the truth of some relevant proposition which he or she does not currently accept,

always provided that the persuader is personally and honestly convinced of the falsity or truth of the propositions in question.

The behaviourist, as I see the matter, incurs odium in the light of this moral principle, not only by advocating other methods of controlling behaviour, such as changing the consequences of doing one thing rather than another, but by apparently denying that what a man or woman believes can influence how they behave in any way. This, I take it, is how Skinner's repudiation of the doctrine of the freedom of human will in Beyond Freedom and Dignity (Skinner 1971) has been interpreted. It is, therefore, important to point out that in drawing his (Skinner 1966) distinction between contingency-shaped and rule-governed behaviour he is conceding a key role to verbally formulated beliefs or "rules", as he calls them, in the control of the behaviour of linguistically competent human beings. Moreover, as rules in his sense can be communicated verbally by others, it is a consequence of this concession that an agent's rule-governed behaviour can be modified by persuading him or her to change one or more of the rules which have hitherto been governing his or her behaviour.

But since it is also a consequence of this view that there is a whole category of behaviour (contingency-shaped behaviour) which is not controlled in this way, it has to be the case that there are other methods of modifying another person's behaviour besides persuading them to alter the rules/beliefs which govern their behaviour; and only if there are other methods of modifying another person's behaviour, does it make sense to have a moral rule which prescribes that persuading another person to accept the truth or falsity of what one honestly believes oneself is the only morally acceptable way of so doing.

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