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## ***Part XI: Skinner and the 'Virtus Dormitiva' Argument***

### **19. SKINNER RE-SKINNED**

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#### **DENNETT, SKINNER AND THE CASE AGAINST MENTALISM**

This chapter differs from most in this book in that criticism is not directed at the work of B.F. Skinner himself. It is directed instead at a recent criticism of Skinner's position by Professor Daniel C. Dennett which appears under the title 'Skinner Skinned' as Chapter 4 of his recent book, *Brainstorms* (Dennett, 1978).

Dennett begins his critique with the observation that for most psychologists Skinner's behaviourism is no longer a fashionable standpoint. He acknowledges, nevertheless, that at one time Skinner's position commanded a considerable following, and presents his critique as a diagnosis of what went wrong. For Dennett, Skinner's psychology stands or falls on the case for repudiating the use of mentalistic idioms in developing a scientific explanation of the behaviour of living organisms. Skinner, he acknowledges, 'has a strong gut intuition that the *traditional* way of talking about human behaviour - in "mentalistic" terms of a person's beliefs, desires, ideas, hopes, fears, feelings, emotions - is somehow utterly disqualified' (Dennett, 1978, p. 54). In speaking of this prejudice as 'an intuition', Dennett implies that Skinner is right to repudiate the use of mentalistic idioms in a scientific psychology; though by describing it as 'a gut intuition' he also implies that the reasons which Skinner gives for that repudiation leave much to be desired.

Having drawn attention to Skinner's habit of indiscriminately piling up arguments against mentalism with little regard for their cogency or their consistency with one another or with positions he himself adopts elsewhere, Dennett (pp. 55-6) lists four arguments against mentalism put forward by Skinner, the details of which need not concern us, which he dismisses on one or other of these grounds. He then goes on to discuss in greater detail two other arguments which Skinner does not formulate in so many words, but which, in Dennett's view, are implicit in what he does say. These we may call the *virtus dormitiva* and intentionality arguments respectively. The *virtus dormitiva* (Skinner, 1938, p. 427; Dennett, 1978, pp. 56-9) is a reference to Molière's play, *Le Malade Imaginaire*, in which the learned doctor offers its possession of a *virtus dormitiva* as an explanation of why opium puts people who take it to sleep. This explanation of why opium puts people to sleep is plainly vacuous. Dennett must therefore be right to claim, as he does (p. 57) that Skinner's repudiation of mentalism would succeed if he could show that mentalistic explanations of behaviour are similarly vacuous. However, mentalistic explanations of behaviour, according to Dennett are not vacuous. He does not tell us what it is about them that saves them from vacuity; any more than he tells us what it is that makes the *virtus dormitiva* vacuous in the first place. He simply relies on our linguistic intuitions to tell us that to explain Tom's taking the uptown bus in terms of his desire to go to Macy's and his belief that Macy's is uptown is not similarly vacuous (p. 59).

The only argument which Dennett (pp. 60-1) recognizes as providing a good reason for repudiating the use of mentalistic explanations in a scientific psychology is the contention that they involve what he calls, following Chisholm (1957), 'intentional idioms'. These he evidently

equates with Quine's (1953) 'referentially opaque contexts', while endorsing Quine's (1960) view that such idioms are incompatible with the language of 'physical' science.

In opposing Dennett I shall not try to defend Skinner against Dennett's criticism of the reasons he gives for repudiating mentalism for the purposes of a scientific psychology. My quarrel is not with the claim that something is wrong with Skinner's defence of his position; it is rather with Dennett's diagnosis of what is wrong and with the resulting prognosis for the patient's future. I shall argue that Dennett fails to appreciate or, if he has appreciated, fails to point out:

1. that what Skinner thinks is objectionable about mentalistic idioms is that they involve the ascription of dispositional properties to the behaving organism.
2. that the *virtus dormitiva* and
3. intentionality arguments are both arguments against the use of dispositional property ascriptions in scientific explanation;
4. that, since dispositional property ascriptions are essential to any causal explanation, Dennett has failed to provide a good reason for endorsing Skinner's repudiation of mentalism, and
5. that what is objectionable about mentalistic explanations of behaviour is that their use presupposes that the behaviour to be explained is 'rule-governed' in Skinner's (1969) sense: this implies control of behaviour by a verbal specification of the relevant contingency which is contrary to fact in cases where the behaviour to be explained is 'contingency-shaped'.

## **STRATAGEMS USED BY SKINNER TO AVOID ASCRIBING DISPOSITIONS TO THE BEHAVING ORGANISM**

### **Defining Dispositions in Terms of Their Causes**

Skinner nowhere states that it is their dispositional character which for him renders mentalistic idioms unacceptable as a scientific explanation of behaviour. Nevertheless, the remarkable collection of stratagems he adopts in order to avoid ascribing dispositional properties to the behaving organism in his own theoretical formulations makes it tolerably certain that this is his belief. The first of these stratagems is that in which a dispositional property is defined in terms of its causes rather than its effects. This stratagem is illustrated by the replacement of the concept of 'drive' which made a brief appearance in Skinner's first major book, *The Behavior of Organisms* (1938), but which was later replaced by the concept of 'a state of deprivation' which emphasizes what Michael (1982) calls the 'establishing condition', which has the effect of directing the organism's behaviour towards making good that deficiency.

### **Response Probability**

The concept of 'drive' was, briefly, the sole survivor within Skinner's radical behaviorism of a whole galaxy of dispositional concepts which formed part of the 'principles of behavior' proposed by Skinner's immediate predecessor in the behaviourist tradition, Clark L. Hull (1943), against whose elaborate attempt at mathematical theory construction Skinner was consciously reacting. Hull referred to these dispositional concepts as 'intervening variables' and they included, besides the concept of 'drive', such notions as 'habit strength', 'excitatory potential', 'inhibitory potential' and 'reaction potential'. But just as the concept of 'drive' survives in Skinner's later work in the form of the concept of 'a state of deprivation', so Hull's notions of 'habit strength' and 'reaction potential' have their counterpart in Skinner's concept of 'response probability'. This is the device which Skinner uses to express the strength of the organism's disposition or propensity to behave in a particular way. But in order to avoid ascribing such a disposition to the organism, he talks

instead of the strength of the probability that a particular response will be emitted by the organism. In other words, in order to avoid attributing the disposition to the organism, he talks instead in terms of the strength of the observer's expectation that the response in question will appear.

### **Response Class**

If the notion of 'response probability' is Skinner's way of characterizing the strength of a disposition to behave in a certain way, the notion of 'response class' is his way of characterizing the range and variety of different ways of behaving which, if they were emitted by the organism, would constitute what Ryle (1949) calls 'exercises' of the disposition in question. By talking about this range of possible behaviour in terms of the notion of response class, Skinner contrives to suggest that what he is talking about is the class of actual responses emitted by the organism in the past rather than a range of possible responses which it may or may not emit in the future.

### **The Law of Effect**

Skinner's account of what determines both the probability that a given response will be emitted and the nature and breadth of the class of responses whose emission probability is thereby increased or diminished is a version of the Law of Effect in which both aspects of the behaviour are determined by the consequences which similar behaviour has had in the past. What is actually strengthened or weakened by those consequences is the organism's disposition to emit similar behaviour on an indefinite number of possible occasions in the future. However, by talking as if the behaviour whose probability of emission is increased or strengthened by reinforcement is the same behaviour as that which produces the reinforcing consequences, Skinner contrives to suggest that all he is talking about is behaviour that has actually occurred in the past.

### **Dispositional Properties Ascribed to Stimuli**

The absurdity of Skinner's attempt to avoid ascribing dispositional properties to the behaving organism is most apparent when he ascribes dispositional properties, such as those of being 'discriminative', 'aversive' or 'reinforcing', to environmental stimuli. The evident purpose of this is to avoid having to ascribe to the behaving organism dispositional properties such as the ability to discriminate, an aversion for or an addiction to the stimuli in question. He can do this because, although our normal linguistic practice constrains us to ascribe the dispositional property to only one of the entities involved, dispositional properties invariably involve an interaction between two distinct entities, a causal agent which acts and a causal patient which is acted upon. In some cases, like the magnetic properties we attribute to an iron bar or the ability to put people to sleep which we attribute to opium, the property is attributed to the causal agent. In other cases, like Ryle's favourite example of the brittleness of glass, they are attributed to the causal patient. But it is always possible to do things the other way round and talk of the propensity of the iron filings to be attracted to the magnet, of the propensity of human beings and other organisms to be put to sleep by opium or of the propensity of missiles to break glass. On this analogy there can be no serious objection to Skinner's practice of ascribing discriminative, aversive and reinforcing properties to the causal agent, the stimulus, instead of ascribing them, as we ordinarily do, to the causal patient, the organism. But while this way of construing the matter cannot be ruled out of order, it has arguably little to recommend it apart from indulging Skinner's prejudice against the ascription of dispositional properties to the behaving organism.

## **THE VIRTUS DORMITIVA AND THE CASE AGAINST DISPOSITIONAL PROPERTY ASCRIPTIONS**

Although Dennett does not mention the fact, he can hardly be unaware that the *virtus dormitiva* has to be construed as an argument against the use for explanatory purposes of a certain kind of dispositional property ascription. Not only is the *virtus dormitiva* an obvious example of a dispositional concept, but Peter Geach (1957), the first philosopher to make use of this example in contemporary philosophical debate, used it as part of a criticism of Ryle's account of dispositional statements (statements ascribing a dispositional property to an entity) as concealed hypothetical statements about what is liable to happen, if certain contingencies are fulfilled.

No one would want to deny that dormitive power is a dispositional property or the vacuity of attributing opium's tendency to put those who take it to sleep to its dormitive power. There is disagreement, however, about what it is about that attribution that makes it vacuous. For Skinner, to judge by his discussion in *The Behavior of Organisms* (Skinner, 1938, p.427) where he refers to 'Molière's "coup de grâce" to verbalism', what the *virtus dormitiva* example shows is the vacuity of *any* purported explanation which relies on the ascription of a dispositional property to the entity in question. According to Geach, on the other hand, such dispositional property ascriptions are vacuous as explanations only insofar as they cannot be backed up by an account of what it is about the microstructure of the entity in question which makes it true that if certain conditions are fulfilled it will behave in the manner described. Thus in the case of the *virtus dormitiva* the explanation would have been saved from vacuity had it been backed up by an account of what it is about the chemical composition of the drug which interacts with the biochemistry of the human brain to produce the effect in question.

Dennett does not tell us what he thinks makes the attribution of a *virtus dormitiva* vacuous; but it is difficult not to believe that he endorses Geach's interpretation, since its methodological implications for psychology are very much in line with his own methodological prescriptions, as outlined in the remainder of the book. For it would seem that on this interpretation of the argument the only way to avoid the vacuity of *virtus dormitiva* explanations in psychology is to rely on explanations involving a detailed specification of what it is about the microstructure of the brain and the central nervous system which makes the organism behave as it does.

Now it has to be conceded that the only non-vacuous account of what it is about opium that puts people who take it to sleep is an account in terms of its chemical composition and the effect of that chemical composition on the biochemistry of the brain. Likewise, as according to Dennett (1978, p. 56), even Skinner concedes, the only non-vacuous account of what it is about a living organism that gives it its behavioural capacities and propensities is an account in terms of the microstructure of the brain. It is also true that the learned doctor in Molière's play is using the impressive-sounding Latin phrase *virtus dormitiva*, as a cover for his ignorance of what it really is about opium that puts people to sleep. Nevertheless, it is not this ignorance which makes the explanation vacuous. What makes it vacuous to attribute opium's propensity to put people who take it to sleep to its *virtus dormitiva* is that the would-be explanation is a pure tautology. To say that opium has a *virtus dormitiva* or in modern pharmacological parlance that it has hypnotic properties, is to say no more and no less than has already been said by saying that it tends to put people who take it to sleep.

This being the case, we cannot claim either, as Skinner evidently wants to do, that every explanation that relies on the ascription of a dispositional property to the entity in question is bound to be vacuous or, with Geach, that dispositional property ascriptions are only saved from vacuity insofar as they are backed up by a theoretical understanding of the state of the microstructure of the entity in question on which the dispositional property depends. If it is its tautological character which accounts for the vacuity of a *virtus dormitiva* explanation, the fact that such explanations are also dispositional in character is entirely beside the point. The fact that a dispositional property cannot be used to explain itself under another description cannot be used

as evidence that dispositional property ascriptions are invariably vacuous. If what is to be explained is a particular event or state of affairs, for example, someone's falling asleep on a particular occasion after taking opium, there is nothing vacuous about explaining *that* in terms of the dormitive virtue or hypnotic properties of the drug. By the same token there is nothing vacuous about explaining the particular event constituted by Tom's taking the uptown bus (Dennett, 1978, p. 59) in terms of the dispositions constituted by his desire to go to Macy's and his belief that Macy's is uptown.

## **INTENTIONALITY AS THE MARK OF THE DISPOSITIONAL**

According to Dennett (1978, pp. 60-1), Skinner is right to repudiate mentalistic explanations for scientific purposes, because such explanations rely on what he calls, following Chisholm (1957), 'intentional' or what Quine (1953) calls 'referentially opaque' idioms. Moreover, his reason for endorsing Skinner's belief that the use of such idioms is unacceptable in a genuinely scientific explanation is that, according to Quine (1960), such idioms 'refuse to "reduce" to the sentences of the physical sciences' (Dennett, 1978, p. 61).

Contrary to the view which I expressed in an earlier paper (Place, 1981), I would no longer wish to dispute Dennett's claim that Skinner is mistaken in believing that it is possible to provide non-intentional (i.e. referentially transparent) translations of intentional or referentially opaque idioms. What I do dispute is Quine's view that there is some radical and unbridgeable discontinuity between intentionality and referential opacity, on the one hand, and the language of physical science, on the other. Quine's view, it seems to me, is based on a confusion between the language of physical science and the first-order predicate calculus. The first-order predicate calculus is an extensional logic in which Leibniz's Law is taken as an axiomatic principle. Such a logic cannot admit 'intensional' or 'referentially opaque' predicates whose defining characteristic is that they flout that principle. But, as far as I can see, there are no particular reasons, other than the prejudices of a lifetime, for thinking that the language of physics either is or can be adequately represented in terms of the first-order predicate calculus or any other purely extensional logic. On the other hand, there are very good reasons for thinking that intentionality and referential opacity are an essential feature of any genuine explanation in any empirical science including physics.

The first step in the argument which shows that intentionality is an essential ingredient in all explanation in the empirical sciences is to show that so far from being, as Brentano (1974) thought, the mark of the mental, the intentional is the mark of the dispositional. Intentionality, as (thanks to Dr John Burnheim<sup>1</sup>) we now understand it, is the 'teleological' feature of dispositions whereby they involve an orientation of the entity to which the disposition belongs towards the occurrence of a kind of event, an 'exercise' of the disposition, as Ryle calls such things, if at any time certain broadly specifiable conditions are fulfilled. Thus the brittleness of a pane of glass is intentional-with-a-t insofar as it involves an orientation of the glass towards the occurrence of an event, its breaking, which has not yet occurred, may never occur (at the end of the day it may just melt in some final conflagration) but which may occur at any time, if it is subjected to the required degree of stress.

But not only are dispositional properties intentional-with-a-t; dispositional predicates are intensional-with-an-s or referentially opaque. For suppose that this particular pane of glass

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<sup>1</sup>Of the Department of General Philosophy, University of Sydney, in an unpublished paper (Burnheim, c 1969) presented to the then united Department of Philosophy at Sydney (personal communication from Professor David Armstrong). I was personally converted to this view through discussions with Professor C. B. Martin of the University of Calgary (Martin and Pfeifer, 1986)

actually breaks on 24 August 1986, we cannot say, nor is it true, that its brittleness consists in the propensity for the event to occur which will actually occur or has actually occurred on that date. For brittleness consists in the propensity for that event to occur *at any time* given that the required conditions are fulfilled and not just at the time when those conditions are in fact fulfilled.

## **THE ROLE OF DISPOSITIONAL PREDICATES IN CAUSAL EXPLANATION**

Given that intentionality is the mark of the dispositional rather than the mark of the mental, the second step in the argument is to show that a causal explanation is necessarily incomplete if it fails to mention the relevant dispositional properties of the entities involved. The argument here relates to the counterfactual nature of causal necessity. To say that a state or event *A* is a cause of the existence or occurrence of another distinct state or event *B* is to say that *B* would not have existed or occurred, as and when it did, if *A* had not existed or occurred. But since we can never hope to observe how things would have been, if things had been different, it follows that we can never hope to establish the truth of any causal judgment on the basis of observation alone. The only way to establish the truth of the kind of counterfactual claim that is involved in every causal judgment is by deducing it from some kind of universal law statement. These so-called ‘covering laws’ which are required to sustain the counterfactuals involved in causal judgments do not need to be wide-ranging principles like the law statements of science which apply to all individuals of a particular kind at all times and at all places. As Nelson Goodman (1955) first pointed out, all that is required in order to yield a counterfactual is to be in the position to assert that, *if at any time* within a period of time, which may be as restricted as you like provided it covers the period to which the counterfactual relates, an event or state of affairs of the cause type occurs or exists, an event or state of the effect type is liable to occur or exist. In other words, all that is required is that over that limited period a particular dispositional statement be true of one or both of the individuals involved in the causal relationship. Moreover, the fact that mentalistic explanations of behaviour frequently rely on the ascription of individual mental dispositions of extremely short duration, such as the belief that it is going to rain or the need to defecate, does not, in my view and contrary to what would appear to be Donald Davidson's (1970) opinion, disqualify the ascription of individual short-term dispositions from providing the sort of support for the counterfactual claim that is needed in genuinely scientific causal explanation.

Given that intentionality is the mark of the dispositional and that dispositional property ascriptions are an essential ingredient in all causal explanations, all that is required in order to deduce the principle that intentionality (and hence the referentially opaque idioms required to express it) is an essential feature of the language of any empirical science, including physics, is the principle, which seems to me self-evidently true, that all explanations in the empirical sciences are causal explanations. That being the case, nothing is left of the claim, endorsed implicitly by Skinner and explicitly by Quine and, following him, by Dennett, that it is their intentionality or referential opacity which disqualifies the use of mentalistic explanations in the context of a scientific psychology.

## **MENTALISM AND THE PRESUPPOSITION OF RATIONALITY**

On the other hand, what is also undermined, given that intentionality is the mark of the dispositional rather than the mental, is Dennett's claim (1978, p. 61) that the use of intentional idioms ‘presupposes rationality’. But, since in this passage Dennett is evidently equating ‘intentional idioms’ with mentalistic notions like ‘knowing’, ‘believing’, ‘wanting’, ‘intending’, etc., the claim that these mentalistic notions presuppose rationality is unimpaired. In Dennett's

view, moreover, because rationality is ‘the very thing psychology is supposed to explain . . . if there is progress in psychology, it will inevitably be, as Skinner suggests, in the direction of eliminating ultimate appeals to beliefs, desires and other intentional items from our explanations’ (Dennett, 1978, p. 61). I find this an extremely puzzling suggestion. It is as if we were told that, because digestion is one of the things that physiology is required to explain, progress in the physiology of digestion will inevitably be in the direction of eliminating the use of terms like ‘digestion’ and other terms which presuppose it, presumably such terms as ‘stomach’, ‘gastric juices’, ‘indigestion’ etc. from our explanation of the process.

But while he is obviously mistaken in thinking that progress towards explaining a phenomenon entails eliminating the terminology used to describe it from our scientific vocabulary. Dennett is equally certainly right to think that it is the presupposition of rationality that disqualifies the use of mentalistic explanations, not indeed in all but at least in a great many branches of psychological science. For, as I see it, mentalistic explanations presuppose the rationality of the behaving organism in two senses. In one sense they presuppose that behaviour in question has been initiated as a result of a process of what Aristotle called ‘practical reasoning’, in which the agent formulates the consequences of the various courses of action open to him or her in the form of a series of sentences, and decides on a course of action which is again specified verbally in the form of a sentence. In the other sense mentalistic explanations presuppose rationality in that they assume that the behavioural strategies of the agent are worked out in terms of an organized system of verbally formulated beliefs. The rationality of this system of beliefs, and hence the assurance that most of its constituent beliefs are true, derives, in accordance with the fundamental logical principle of non-contradiction, from the internal consistency of or lack of dissonance (Festinger, 1957) within the system. Rationality in this sense requires consistency not only between the different beliefs constituting the individual's *Eigenwelt* (von Uekull (1926), but also between those beliefs and the shared beliefs of the verbal community (Skinner, 1957, Appendix). These shared beliefs of the verbal community constitute what Binswanger (1947) calls the *Mitwelt*: and it is on this system of shared beliefs, as Strawson (1959) points out, that we depend for our ability to refer to and hence convey information about objects, states and events remote from the context of utterance.

If I am right in thinking that mentalistic idioms presuppose the rationality of the agent in either or both these two senses, it follows that mentalistic explanations of behaviour can only be used with their full literal meaning in those cases where the behaviour to be explained is what Skinner (1969) calls ‘rule-governed’ as opposed to ‘contingency-shaped’. ‘Rule-governed behaviour’ in Skinner's sense is behaviour controlled by a verbal specification of the contingency of which that behaviour forms part, where a contingency comprises the relation between a set of antecedent conditions, the behaviour called for under those conditions and the consequences of so behaving. Such verbal specifications of the contingency may be formulated by the agent himself or herself on the basis of past experience, or may be received ready-made as information derived from another speaker. In either case the agent need not have had any previous encounter with the contingency in question. In this respect rule-governed behaviour contrasts with contingency-shaped behaviour which develops as a result of repeated exposure and consequent moulding or shaping of behaviour to the contingency itself. Empirical evidence demonstrating the reality of this distinction and the dependence of rule-governed behaviour in the growing child on the acquisition of linguistic competence has been summarized recently by Lowe (1979, 1983).

If it is true that mentalistic explanations of behaviour presuppose that the behaviour to be explained is rule-governed or verbally controlled rather than contingency-shaped, two things appear to follow. On the one hand, no serious objection can be raised to the use of mentalistic explanation in cases where this presupposition holds good, where the behaviour

in question is in fact rule-governed or verbally controlled. On the other hand, where the behaviour is contingency-shaped, either, as in the case of animal or infant behaviour, because the agent lacks the relevant linguistic skills or, as in the case of verbal behaviour and the exercise of a motor skill like driving a car or playing tennis, because verbal control has little or no application in such a case, the use of mentalistic explanations is ruled out for serious scientific purposes on the grounds that such explanations presuppose what is demonstrably not the case, that the behaviour is verbally controlled.

I conclude from this that there is a place within psychology for mentalism in providing a molar explanation of rule-governed behaviour. There is clearly a place for the kind of investigation of the functions of the brain and its constituent parts to which most of the remainder of Dennett's book is devoted, in providing a molecular explanation of the general dispositional properties of both rule-governed and contingency-shaped behaviour. But there is also a place within psychology for a non-mentalistic molar theory such as Skinner's in order to be able (1) to state, though not explain, the general dispositional properties of contingency-shaped behaviour; (2) to explain particular behavioural events insofar as the behaviour in question is contingency-shaped; and (3) since verbal behaviour itself is for the most part contingency-shaped, to explain the verbal control of non-verbal and other verbal behaviour and hence the very foundations of mentalism which cannot themselves be explained in mentalistic terms on pain of circularity.

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