CHAPTER 3

<u>'W'-ing:</u>
<u>Teaching exercises for radical behaviourists</u>

Mickey Keenan

<u>Abstract</u>
The widespread misrepresentation of radical behaviourism may be a reflection of the difficulties of teaching its views on private events. Consequently, this paper begins with a discussion of the behavioural stream and it contains exercises in self-observation that are intended to be used in classroom situations. Students who are actively encouraged to participate in self-observation under the guidance of a behavioural perspective may be more discerning of the seriousness of misrepresentation when it appears in their course of study.

<u>Introduction</u>
> 'Though vast in quantity, the great majority of behavioural findings tell us little of worth about ourselves. In a sense, having denied the importance of subjective data, their findings appear limited, alien, even 'soul-less' (Spinelli, 1989, p. 175).

In recent years there have been attempts by members of the behavioural community to redress the type of serious misrepresentation quoted above (Catania, 1991; Lee, 1989; Lonigan, 1990; Morris, 1985, 1990; Wyatt, 1990). The primary objective of this paper is to contribute to the general debate about what should be done by offering suggestions for teaching exercises that address specific features of the philosophy of radical behaviourism.

The rationale for these exercises hinges on some of the problems incurred in the dissemination of conclusions reached by fellow scientists. Skinner (1989) touched on this issue when he said that '... everything scientists now do must at least once have been contingency shaped in someone, but most of the time scientists begin by following rules. Science is a vast verbal environment or culture' (p. 44). In that same chapter he discussed the differential effects of contingency-shaped and rule-governed behaviour. The points he made are relevant here because they contain general guidelines that may help in the design of effective methods for teaching:

> 'Those who have been directly exposed to contingencies behave more subtly and effectively than those who have merely been told, taught, or advised to behave or who follow rules. There is a difference because rules never fully describe the contingencies they were designed to replace. There is also a difference in the states of the body felt' (Skinner, 1989, p. 44)

Radical behaviourists distinguish their discipline from methodological behaviourism in terms of how they view private events (Hayes & Brownstein, 1987; Moore, 1980, 1981; Schneider & Morris, 1987; Skinner, 1953, 1974). This being the

case it would seem reasonable to suppose that the behavioural community should produce teaching exercises concerned with the study of private events that take into account the observations outlined by Skinner. If teachers were provided with, for example, precise instructions for producing the type of differential behavioural effects described above, then the ways in which radical behaviourists resolve some of the difficult issues that arise in the study of private events would be open to inspection by students. Students who are exposed to well structured exercises along these lines may be then less likely to view radical behaviourists as 'contingency accountants'[1] who are insensitive to the richness of human experience.

A second related objective of the exercises contained here is to stimulate others to contribute to the development of a wide range of teaching gambits for teachers of radical behaviourism. The development of such material would ensure that our teaching of scientific verbal behaviour is brought under strong discriminative control. Before describing the exercises, the next section of the paper contains a general overview of some of the issues that they were designed to address.

Radical Behaviourism and the Behavioural Stream
On being a person
Skinner (1989) noted that the word *Experience* originally meant '... something a person had 'gone through' (from the Latin *expiriri*) ...' (p. 13). Nowadays we say that this 'something' refers to the network of contingencies that a person is exposed to over a period of time. When a person 'travels through' this context their body changes and these changes are somehow integrated with changes that have already taken place. 'Being a person', then, can be seen as the evolution of a dynamic process comprising physical and behavioural changes (Lee, 1988; Smith 1985). The nature and extent of these changes is dependent on the interplay between 'the dynamic limitations inherent in the adaptiveness of the [human] biological system and the dynamic limitations [in organism-environment interactions that are] imposed across time by the structure of the prevailing contingencies' (Keenan & Toal, 1991, p. 113). This mercurial-like quality of being a person is nicely captured by the idea of a behavioural stream that continually changes, and is changed by, its physical and social embankment/environment[2,3] (Schoenfeld & Farmer, 1970; Appendix 1 suggests imagery that can be used in the classroom to help convey the idea of a behavioural stream).

Given that behavioural phenomena typically involve combinations of enduring and transient changes and temporal patterns thereof (cf. Epstein, 1984, 1985), the primary concern of behaviour analysts is the delineation of the types of relationships that exist between various categories of change and the corresponding current and historical

---

[1] I thank Giulio Lancioni for suggesting this term to me.

[2] The suggestion that an organism can be viewed as a continuous stream of change can also be found in biology: "My emergence as a unique individual with my own identity began in the ovaries and testes of my parents when they themselves were embryos in the grandparental womb. The events occurring then were in themselves linked via a continuous thread back through successive ancestral germ lines to the emergence of humanity itself. Just as anthropologists cannot define an exact and absolute point during evolutionary time when our ancient ancestors became human, so I cannot define any single developmental transition at which I became an individual with a clear identity. The evolution of humans and the development of my identity are both continuous processes." (Johnston, 1989, p. 41)

[3] Surprising parallels can be drawn between the notion of an organism as a stream and phenomena which arise in the study of water. For example, continual movement can give rise to a form which appears static: "... when a wave appears behind a stone in a stream, a form is all the time being created out of movement, with new substance constantly flowing through it. This is an archetypal principal of all living creation - an organic form, in spite of continuous chemical change, remains intact." (Schwenk, 1990, p. 33)

context from which these relationships emerge (Hayes & Brownstein, 1986; Lee 1981; Michael, 1982). Bearing in mind that any observed behavioural phenomenon is inexorably linked with changes that have previously taken place, when a behaviour is observed to recur at later times a relation can be formulated between the occurrence of these behaviours in such a way that the dynamic character of their relatedness is emphasised. Skinner (1966), for example, suggested that a 'natural datum in a science of behaviour is the probability that a given bit of behaviour will occur at a given time. An experimental analysis deals with that probability in terms of frequency or rate of responding.' (p. 213). Commenting on Skinner's use of time as an independent variable Hineline (1990) further noted that 'Rate, although comprised of tangible, observable events, is an abstraction. You can look right through a rate; that is, it can be going on right now, even though none of the events that comprise the rate is occurring at this moment.' (p. 305).

The development of conceptual tools for the analysis of complex streams of behaviour has been aided by the study of schedules[4] of reinforcement. Most importantly, perhaps, the realisation that schedules of reinforcement could guide the behavioural stream into recognisable patterns helped contribute to the notion that **prediction** and **control** of behaviour across time are essential corner stones of behavioural epistemology (Hayes & Brownstein, 1986). Essentially this means that if behaviour can be moved around in a predictable manner (i.e., if aspects of it can be controlled), then the variables that are manipulated (which are necessarily **outside** of the target behaviour) are considered to be functionally related to the target behaviour. In other words, the practical steps that are taken by the scientist in his/her attempt to control and thus predict behaviour provide the terms of reference for 'explaining' the behavioural profile that is subsequently observed.

On being a scientist

This last statement can be reformulated so as to reveal an important and distinguishing concern of radical behaviourism, the behaviour of the scientist. When reference is made to the behaviour of the scientist the following can be said: the behaviour of the behavioural scientist when acting upon the environment provides the context for the emission of the term 'explanation' when the consequence of that scientific behaviour leads to the prediction and control of a target behaviour.

This formulation switches the target behaviour of interest from the subject being studied to the scientist him/herself. Said another way, the perspective controlled by this new statement functions as a way of transforming the observer (the scientist) into the observed. The reason for formulating the sentence in this way is the following. In view of the fact that at any point in time the actions of a scientist (or any other person) constitute the end-product of his/her interactions with the environment (i.e., constitute the leading edge of his/her behavioural stream), it is encumbent upon a thorough behavioural analysis to elucidate the manner in which this training sustains the epistemological assumptions that are brough to bear in a scientific analysis. Indeed this task has been at the heart of much of Skinner's writings (e.g., Skinner, 1945, 1977, 1985). The significance of giving attention to the behaviour of the scientist has also been commented upon in a recent paper by Hayes, Hayes, & Reese (1988):

---

[4] A schedule is defined here in the manner outlined by Keenan and Toal (1991): "... a schedule is more properly conceived as providing an opportunity for examining the dynamic behavioral system that "crystalizes out" when a biological system is exposed to environmental constraints ..." (p. 113).

' ... scientists cannot stand apart from the world under analysis; they are, rather, a part of that world. ... ... Behavior analysts acknowledge the fact that science is, among other things, the action of scientists - action meaningful only by reference to its context' (p. 103)

As an example of the implications of this position consider a key term in the conceptual armament of a scientist, namely the term 'objectivity.' Objectivity in scientific investigation is traditionally viewed as 'the extent to which findings are independent of the investigator as regards the ways they are obtained, evaluated and interpreted.' (Eysenck, Arnold, & Meili, 1975, p. 735). Figure 1 shows how this definition might be represented pictorially. In the figure two observers (scientists) are shown looking down on a somewhat condensed linear version of the behavioural stream of a human and of a rat. Each stream depicts 'snapshots' in the life of each organism from birth through to death. (The streams are shown converging because of the fact that all organisms share similar destinies.)
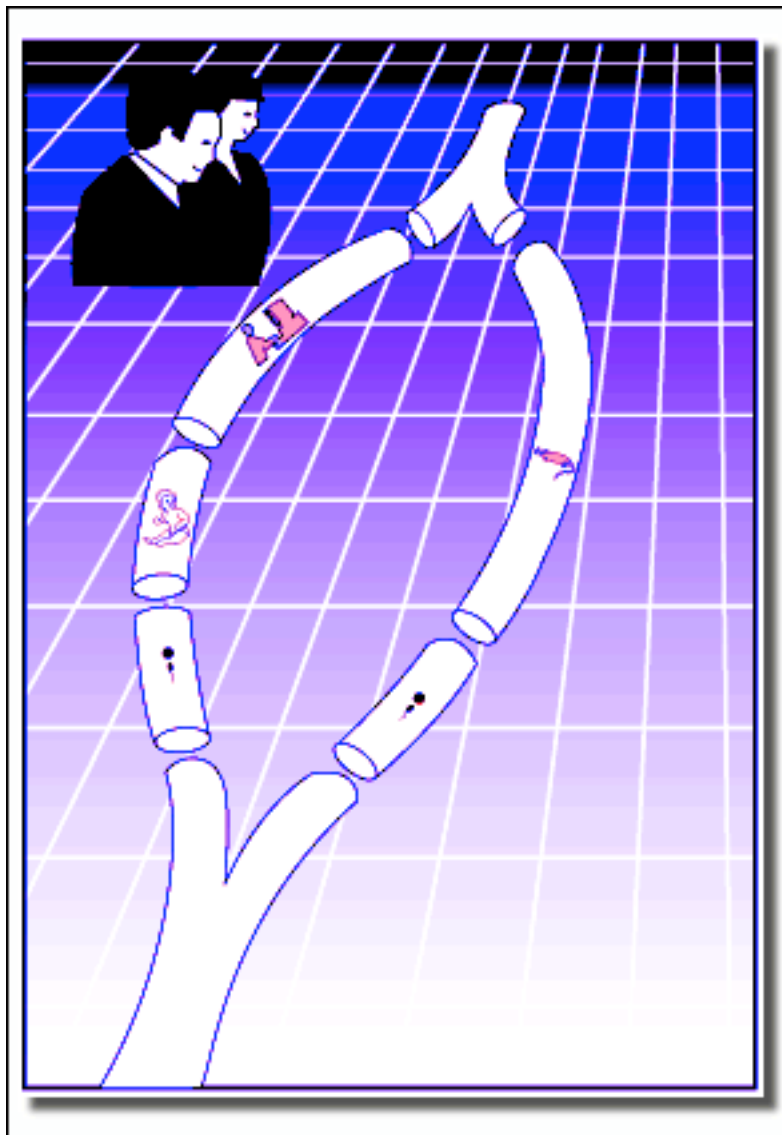

Figure 1 A possible representation of a traditional perspective on 'objectivity.' Two observers are shown looking down of highly condensed versions of the behavioural streams of a human and of a rat.

From the way that this diagram is constructed, an obvious question presents itself. That is, in his/her search for an explanation of a particular phenomenon can a scientist really stand outside of nature in the manner depicted? Clearly this can not be the case and therefore the claim to be able to develop something called an objective perspective that is independent of the effects propagated by previous interactions with the physical and social environment is in need of reappraisal. Furthermore, not only is such a view at odds with the image of a person that has been portrayed so far, but it has also come under criticism from recent developments in other sciencies like atomic physics. Capra (1975), for example, has said that:

> 'A careful analysis of the process of observation in atomic physics has shown that the subatomic particles have no meaning as isolated entities, but can only be understood as interconnections between the preparation of an experiment and the subsequent measurement. ... The human observer constitutes the final link in the chain of observational processes, and the properties of any atomic object can only be understood in terms of the object's interaction with the observer. This means that the classical idea of an objective description of nature is no longer valid. The Cartesian partition between the I and the world, between the observer and the observed, cannot be made when dealing with atomic matter' (pp. 68-69).

Within the context of nuclear physics, Capra's statement can be considered as an expose of the working assumptions of those scientists who represented the main stream opinion of their discipline. Adherence to the idea of an objective reality may possibly have blinded these scientists to the fact that their conclusions/observations were heavily influenced by current and historical factors. (Note that although Capra's conclusion is entirely commensurate with the position of radical behaviourism (cf. Williams, 1986), this is not generally recognised to be the case (Briggs & Peat, 1984; Capra, 1975; Spinelli, 1989)).

Within psychology, radical behaviourism has been engaged in a similar type of expose. This is not the place, however, for a detailed explication of a behavioural approach to the term objectivity (see Leigland, 1989a). Suffice to say, the point being made here is that questions concerned with the meaning of psychological terms like this have been the mainstay of radical behaviourism. In Skinner's (1988) words radical behaviourism is '... a thoroughgoing analysis of traditional mentalistic terms' (p. 151). A strategy he adopted to help deal with the problems caused by the mentalism[5] rampant in traditional explanations of human behaviour was to include in his analysis the effect of a specific type of historical factor, the fact that scientists were formally children. When viewing things from this perspective he raised a fundamental question concerning the development of a child's understanding of psychological terms: 'How is it possible to learn to refer to or describe (and I would say know) things or events within our bodies [e.g., having an objective perspective, having a feeling of anticipation, being self-aware etc.] to which our teachers do not have access? How can they tell us that we are right or wrong when we describe them?' (p.162)

Explaining

---

[5] Moore (1981) noted that mentalism is characterised by several explicit or implicit features: "(a) the bifurcation of human experience into a behavioral dimension and a prebehavioral dimension, (b) the use of psychological terms to refer to organocentric entities from the prebehavioral dimension, and (c) the use of organocentric entities as causally effective antecedents in explaining behavior." (p. 62)

The general significance of these questions for the analysis of scientific behaviour can be appreciated if we return to the problem of how behavioural scientists come to use the term 'explanation.' The issue addressed here comes under the topic of 'operationism' and can be illustrated briefly. For example, it is clearly the case that historical precedents have ensured that the term 'explanation' has been passed on to us by our ancestors instead of an arbitrary sound like, say, 'wibbly-wobbly.' Acknowledging the possibility that scientists to-day could be looking for 'wibbly-wobblies' instead of explanations directs attention to the fact that the meaning of a word is to be found from an analysis of the contingencies controlling its use (Creel, 1987; Day, 1969; Moore, 1975, 1985; Smith, 1986).

When this view is applied to the use of the word explanation by behaviour analysts, the following can be said: as the neophyte passes through the context created by his/her scientific forebearers their verbal behaviour of emitting a word like 'explanation' is refined to the extent that it comes to be used in a stereotypic fashion. The contingencies currently governing the behavioural community's analysis of the appropriateness or meaning of a word have themselves evolved from a system of contingencies which helped to mould Skinner's verbal behaviour with respect to the notion of operationism. Creel (1987) has paraphrased Skinner thus:

> 'Operationism insists that the concepts, claims and procedures of science be interpretable in terms of physical properties and operations. It seeks 'an effective experimental approach' to each subject matter. This approach is encouraging because its primary concern is demonstrable prediction and control, not communication or disputation. It places little value on argument or logical dialectics. Its aim is not to win the agreement of others; it is to increase our control over nature' (p. 110-111).

A key factor responsible for Skinner's formulation of operationism was his early empirical work with schedules of reinforcement. The opportunity afforded by schedules for the study of purposeful/intentional behaviour brought him to an important conclusion. That is, when regularities in the performance of organisms appeared these regularities were independent of an observer's speculation about what was going on inside the organism in terms of either physiological changes or in terms of cognitive processes. Thus, even if one was to initially adopt a non-behavioural approach in accounting for performance of an organism on a schedule, one would eventually have to concede that the organism would not have changed in the way that it did without exposure to the scheduled contingencies. Consequently, the development of a behavioural explanation of performance on a schedule is viewed as synonomous with the development of an empirically derived data base of behavioural facts that is under the discriminative control of the behavioural dynamics controlled by the structure of the prevailing contingencies.

Earlier it was noted that the objective of behaviour analysis was to relate aspects of the changing organism to the context in which it is observed. The perspective which evolves from this endeavour can be extended to the dyad comprising the scientist and his/her subject matter. In the language of the behavioural stream, at the interface between the scientist and his/her subject is a dynamic process which regulates the ensuing course of their respective behavioural streams. In any study, for example, it can be said that the behaviour of the subject entrains the behaviour of the scientist. When only passive observation (i.e., actions associated with the monitoring of behavioural change) is involved, the nature of the ensuing observer-observed synchronisation is different from that which develops when active observation (i.e., actions involved in monitoring and

controlling the direction of behavioural change) leads to an evolving process of reciprocal determination between the behaviour of the scientist and the changes produced in the behaviour of the subject.

The verbal behaviour of the scientist is necessarily included in this perspective. Consequently, the implications which are derived from it extend into the realm of epistemology. Consider again, for example, the issues that arise when a non-behavioural scientist seeks an explanation of performance on a schedule of reinforcement. Given that the inferring of inner causal processes by such a scientist arises as a function of the contingencies operating on the observed organism, and that performance of this organism is, as we have already noted, independent of these inferences, the verbal behaviour of equating explanation exclusively with the operation of inner processes is more informative of the behavioural processes of the scientist than it is about the behaviour of the organism under investigation. (Barnes, 1989; Leigland, 1989b; Morris, Higgins, & Bickel, 1982)

This behavioural perspective on the meaning of the term explanation contains the essence of Skinner's view of operationism. That is to say, it is consistent with his view that an operational definition entails an empirical description of the conditions under which a term is used, i.e., the functional relations governing its emission as a verbal response. This approach is markedly different from that taken by logicians, linguists, or cognitive scientists when they attempt to give a formal analysis of language or behaviour (Marr, 1983; Terrell & Johnston, 1989). To the extent that they engage in logical analyses that do not explicitly incorporate reference to the context supporting the phenomenon they observe, the consequences of their analysis must necessarily differ from a behavioural analysis. In spite of this difference, however, the epistemological assumptions which characterise the respective behavioural streams of these scientists can be accomodated within a behavioural perspective. Consider, for example, the possibility that one was able to identify the contingencies responsible for the development of the epistemological assumptions of, say, cognitive science. One would then be able to bring a person to the perspective in which human behaviour is viewed as a result of information processes similar to those which are said to occur inside a computer; such a person is shown sitting in front of a computer in Figure 1. This possibility is not as far fetched as it first sounds because any university course in cognitive science manipulates the apropriate contingencies to bring about exactly this effect.

Adult children

In one sense the discussion has now come full circle. The scientist, as a person, as a behavioural stream, is seen to change in ways which are functionally related to the current and historical context through which he/she passes. The act of engaging in a functional analysis can be said to have 'folded in upon itself' consequently producing far reaching questions concerned with the 'doing' of science. Before exploring some of these questions it might be useful to recap at this point. An effective means of doing so is to caracature the interests of the mature scientist as having evolved from the games of a young child. The games that scientists once played when they were younger were transformed as new sets of contingencies came into operation. At one time, for example, it was fashionable for psychologists to play the 'objective game.' 'Adult children' who played this game were called Methodological Behaviourists and they incorporated the rules of another game called Logical Positivism. Leigland (1989) has noted that some of the rules involved in playing this game include:

'(1) the definition of the (empirically-based) subject matter as publicly-observable behavior (related to historical ties with logical positivism); (2) the focus upon the study of behavior as a means of investigating internal, causal mechanisms of a conceptual nature which form the basis of scientific explanation; (3) a commitment to the practice of operational definitions in the traditional sense ...; and (4) a position which has been described in terms of reductionism and mechanism...' (p. 26)

When Skinner appeared on the scene he explored the possibility that the objective, purposeful or intentional behaviour of other scientists could be accounted for by the same type of functional analysis that he used to account for the behaviour of a 'lower' organism on a schedule of reinforcement. That is, he speculated about the contingencies controlling the game played by the other children. Such speculation by Skinner was inexorable given his recognition of the controllability of behaviour and it is commensurate with one of his primary aims as a radical behaviourist, i.e., developing more effective means of identifying the variables of which behaviour is a function. Being able to control the behaviour of interest without being side-tracked by mentalism was, he considered, a fundamental step in this direction. This concern with pragmatism is a central feature of Skinner's philosophy of science and it serves as a pivotal 'truth criterion' for discriminating between possible alternative explanations of behavioural phenomena (Smith, 1986; Zuriff, 1985).

As already indicated above a recurrent theme in the position taken by radical behaviourism is that the person observed at any point in time is an 'end-product' of a process of change resulting from interactions with the environment, or as Skinner (1974) has said, the person observed is a focal point of a number of influences:

'A person is not an originating agent; he is a locus, a point at which many genetic and environmental conditions come together in a joint effect' (p. 168)

This being the case, a scientific analysis of the observable behaviour of another person is inevitably faced with the problem of reformulating the traditional role usually ascribed to private events. The crux of Skinner's arguments in dealing with this issue can be paraphrased by noting that since the functioning of the person observed is an integral segment in the continuation of that particular behavioural stream, the initiating role usually ascribed to private events can be no longer considered tenable. Skinner argued further that no special ontological status should be conferred on private events simply on the grounds that they are private. In effect, the view he took was that changes localised in the biological substratum of an organism that are not open to inspection (and hence are considered private) stand in relation to observable behaviour in such a way that a contextually framed coordinated system evolves as one continuous process[6] (Hayes & Brownstein, 1986; Morris, 1980, 1992).

The implications that unfold from this perspective can be better appreciated if you imagine for a moment that a scientist has been given the opportunity to observe a 'translucent person.' Imagine further that this opportunity permits an unlimited extension of the range of private events that can now be observed. Such a scenario would permit a scientific observer of a behavioural stream to demarcate a host of functional relations that

---

[6] A water-related image is useful for encapsulating the contextualistic perspective that is advanced here. For example, a vortex is "a form which has separated itself off from the general flow of water; a self-contained region in the mass of water, enclosed within itself yet bound up within the whole." (Schwenk, 1990, p. 44)

8

arise between specific categories of change that are localised within the boundaries of the skin. He/she could also formulate laws which connect these intradermal relations to those extradermal relations that extend from the skin to the external environment (Lee, 1988). In effect, it would be possible to derive an integrated system of functional relations which covers all aspects of the functioning of the whole person. The contextual boundaries within which all of the various functional relations were formulated would serve as reference points for a map or directory of the types of changes that happened to our translucent person during the period of observation (cf. Hayes, Hayes, & Reese, 1988). This map could then be referred to in the event of an explanation being required for specific behaviours at any point in time.

Let's consider now the implications to be derived from another scenario wherein our translucent person swops places with the observer; the observer has now become translucent whilst the person observed is opaque. In terms of furthering our understanding of the behaviour of the scientist, this situation helps to highlight the fact that a scientist's act of, for example, positing hypothetical internal entities as explanations for the observable behaviour of another person is merely an aspect of their observing behaviour under stimulus control. This point is all the more poignant when one considers that the functioning of the translucent scientist is seen to be a complex system of coordination within and between (what would previously have been categorised as) private behaviours and public behaviours.

When the scientific behaviour of a number of people is subjected to this perspective their behaviour of 'meeting the criteria imposed by the strictures of intersubjective agreement' can be considered as one facet of **group** observing behaviour that is under stimulus control. The observable behaviours of the opaque person that constitute the stimuli in this instance are contextually bound, intersubjectively verifiable, relational elements, and they have gained control because of the effects of historical contingencies that operated during the observers' training.

Investigative rules that arise as a direct function of the problems faced by the limited accessibility of private events of the observed (opaque) person are a major constitutent of group observing behaviour (cf. Johnston & Pennypacker, 1980). These rules, in conjunction with other rules derived from the powerful reinforcing effects of demonstrable prediction and control of observable behaviour contribute to the scientific rubric of the time (Lee, 1985). In summary, when scientific practices focus on the observable behaviour of another person epistemological guidelines evolve such that the relationship between the observer(s) and the observed is enshrined in a particular type of synchronisation that is a function of identifiable constraining factors.

Introduction to the exercises

In light of what has been said so far, the suggestion that prediction and control can be construed as constraining factors may seem a little odd to say the least. However, the issue being raised here is not whether prediction and control per se are constraining factors, but whether an overriding concern for truth by public agreement has usurped their usefulness as guidelines for exploring private behaviour[7]. Although the public behaviour of a person observed can be controlled and thus predicted without referencing associated private behaviour, this does not in any way condemn private behaviour as unworthy of investigation (cf. Hayes & Hayes, 1992). On the contrary, given that the private events of the observer participate in the synchronisation between the observer and the observed, it is imperative that methods are developed for investigating this private behaviour that is brought to bear on the context called scientific observation[8]. That is to say, a thorough analysis recognises that when a scientist is giving attention solely to the observable behaviour of another person, he/she is, by definition, **not** giving attention to the perspective of 'the other one' (Skinner 1974, p.171) from where the origins and ramifications of the conclusions or epistemological assumptions involved in that observation are considered as investigateable. When the perspective of 'the other one' is engaged it functions as a necessary check for ensuring that the scientist is mindful of the fact that not only is the person observed the focal point of a number of influences, but so also is the observer[9].

Support for this line of argument comes from a parallel situation that is familiar to all teachers of radical behaviourism. When teachers are faced with the challenge of teaching students to recognise the mentalism that is sometimes inherent in their analyses of behaviour, they are in fact teaching them to monitor the operation of their own private events. It is sometimes necessary, for example, for a teacher to point out to students that they can not see inside the observed person to determine what it is that he/she is feeling or thinking before he/she behaves; even if one could see inside, all that would be observed is part of the overall profile that constitutes the leading edge of a behavioural stream. Consequently, when explanations for an observed person's behaviour are located inside that person, students can be informed that they are in fact really only observing their own private changes in the context supporting the observation[10] (cf. Hineline, 1990). Teaching a student the perspective of behaviour analysis, then, is a complex issue which invloves the construction of experiences for the student such that he/she becomes self-aware with respect to the impact that their mentalistic training has on their own analysing and categorising behaviour. In some respects, teaching a student to discriminate between a behavioural perspective and a mentalistic perspective is tantamount to conducting 'educational therapy' whereby intrusive private events that masquerade as explanations (and which might interfere with effective action) are brought under control. From the

---

[7] Note: "When privacy is invaded with scientific instruments, the form of stimulation is changed; the scales read by the scientist are not the private events themselves." (Skinner, 1964, p. 82)

[8] The terms "observation" or "attention" could be considered as tacts for the relative degree of discriminative control that is evident at the interface between the current context of a stimulus collage and the changes wrought on an organism by an historical context that is brought to bear on that stimulus collage.

[9] Working with the images used earlier, it can be said that the perspective that emanates from the conceptual foundations of intersubjective agreement is but one strand in the fabric of achievable ends of the behavioural stream of a translucent person (cf. Hayes & Hayes, 1992).

[10] Perhaps the attributional processes at work here are a form of "projection" that might be accounted for by an analysis of the equivalence relations that operate when animated stimuli form a social context. Steps have already been taken to forge links between stimulus eqivalence and another area of social learning, social categorisation, although the static stimuli employed were contained within the boundaries of a computer screen (Kohlenberg, Hayes, & Hayes, 1992; Watt, Keenan, Barnes, & Cairns, 1991).

perspective of the student, the transition to their new mode of functioning can often be a difficult journey because of the sustained attack on established beliefs by behavioural literature. At the same time, however, new avenues for self-awareness may be opened in which case the opening quotation by Spinelli (1989) will be seen as woefully misinformed.

Returning to the issue raised earlier, the above analysis highlights one way in which the unsuspecting observer can be transformed by the perspective of 'the other one'; in this instance, the perspective of 'the other one' is actualised in the actions of the teacher. As a consequence of adopting this perspective (i.e., of being exposed to these contingencies) the student may be made aware of the limitations of his/her previous conclusions. That is, the contingencies which are responsible for the transition from one perspective to another provide the conditions for the use of the term awareness. Details of the observations that constitute this awareness are not open to inspection by others. Yet, interestingly, it is through the judicious manipulation of appropriate contingencies that the skilled teacher, like the parent, embraces the problem of privacy[11] with the result that the process of self-observation is instantiated. With this in mind, the behavioural student is now in a position to persue an understanding of how his/her private events are a function of contextual influences. He/she can begin simply by noting that there are contingencies operating to control their current perspective of the phenomenon to be investigated. The question then arises as to what contingencies can be manipulated to reveal what effects? Essentially this question involves a role play of the perspective of 'the other one.'

There are many difficulties involved in developing a rigorous behavioural approach to self-observation and its counterpart, self-experimentation, as this quotation by a phenomenologist testifies:

> 'The phenomemologist begins his observation of phenomena by suspending his biases, by putting his implicit assumptions in brackets. If your immediate comment is that it is impossible to observe anything without bias, all that I can say is that I heartily agree. There is no observation without bias, but there can be a deliberate attempt to identify bias and temporarily suspend it or at least to shift observation systematically from one bias to another' (MacLeod, 1964, p. 52)

While this statement contains much of what has already been said it makes no reference to the role of context in supporting observations. That being said, though, the statement serves as a useful reminder of the fact that apart from Skinner's writings (see also Neuringer, 1981; Ulrich, 1975), very little in the way of behavioural exercises exist for students who may be interested in exploring private events. It would be a strange state of affairs if this should continue to be the case, for, as already mentioned above, scientists interested in the effects that the environment has on behaviour cannot remain aloof from the implications that their findings have for them on a personal level. On a more pragmatic note, if teaching about radical behaviourism's perspective on private events is confined to a **description** of Skinner's arguments then, in accordance with the differential effects of contingency-shaped and rule-governed behaviour, we should not be surprised if many students continue to view his interpretations as mere rhetoric. Since these students will already have been trained to self-observe by the verbal community they may instead

---

[11] Wann (1964) has paraphrased Skinner's general approach to the problem of privacy: "The "boundary" for public-private is not the skin, but the line between the verbal community's being able to reinforce behavior differentially and its not being able to do so, or able to only with great difficulty." (p. 107)

opt for other approachs, like phenomenology, with which they might more easily identify.

The exercises which follow are in response to this vacuum that exists for teaching exercises concerned with a behavioural approach to self-observation. To set the scene for them consider these quotations from Skinner:

'The environment, whether public or private, appears to remain undistinguished until the organism is forced to make a distinction' (1953, p. 260).

'... self-observation is also the product of discriminative contingencies, and if a discrimination cannot be forced by the community, it may never arise. Strangely enough, it is the community which teaches the individual to 'know himself' (1953, p. 260-261).

'The kind of self-knowledge represented by discriminative verbal behavior - the knowledge which is 'expressed' when we talk about our own behavior - is strictly limited by the contingencies which the verbal community can arrange' (1953, p. 261).

'It is true that psychologists sometimes use themselves as subjects successfully, but it is only when they manipulate external variables precisely as they would in studying the behavior of someone else. The scientist's 'observation' of a private event is a response to that event, or perhaps even a response to a response to it' (1953, p. 280).

'We should not be surprised that the more we know about the behavior of others, the better we understand ourselves. It was a practical interest in the behavior of 'the other one' which led to this new kind of self-knowledge. The experimental analysis of behavior, together with a special self-descriptive vocabulary derived from it, has made it possible to apply to oneself much of what has been learned about the behavior of others, including other species' (1974, p. 171).

'We may take feeling to be simply responding to stimuli, but reporting is the product of the verbal contingencies arranged by a community. There is a similar difference between behaving and reporting that one is behaving or reporting the causes of one's behavior. In arranging conditions under which a person describes the public or private world in which he lives, a community generates that very special form of behavior called knowing. ... ... Self-knowledge is of social origin. It is only when a person's private world becomes important to others that it is made important to him. It then enters into the control of the behavior called knowing. But self-knowledge has a special value to the individual himself. A person who has been 'made aware of himself' by the questions he has been asked is in a better position to predict and control his own behavior' (1974, p. 31).

Contained within these excerpts are guidelines for the construction of contingencies that promote self-observation and self-awareness. The classroom exercises that are offered here in response to these guidelines are by no means considered as definitive. Instead, the reader is encouraged to refer to these excerpts again after he/she has participated in the exercises so that a critical appraisal of the exercises may be promoted along with suggestions for improvements.

<u>Exercise 1</u>

<u>Textual control of awareness</u>

It may take several readings of these introductory paragraphs before they develop sufficient discriminative control over your behaviour. One way to help facilitate this process is for you to leave time for contemplation after reading each paragraph.

Paragraph 1

Imagine a scientist (B) observing another person (A). When A is engaged in behaviour such as observing his/her world 'inside' (i.e., introspecting) or observing the world 'outside', B's scientific behaviour can express itself in the conclusion that A's behaviours are a function of his/her current and historical context. But B's observing and categorising behaviour of A can also be seen as a focal point of his/her current and historical context, as viewed by another person 'C'; in other words, B is both the observer and the observed. The same applies to C as viewed by 'D', and to D as viewed by E, and so on ad infinitum.

Paragraph 2

Imagine now what would happen if you set out to implement the linear progression in the above scenario. One way you could do this would be to get together all of the people on the earth and align them in one long chain. However, if you did this you would soon run into an obvious problem; that is, there is only a finite number of people on the earth. Once you had reached the last person in the chain you would be forced to conclude that the practical demonstration of an infinite progression is impossible in a finite world. This argument is all the more cogent when you consider the fact that each one of us, from a certain perspective is already that last person in the chain. You may, of course, argue that the problem of an infinite progression could be addressed by arranging the people into a circle. However, this way of thinking is different from above in that it presupposes that the first person will eventually be observing the last person in the chain.

What lesson is to be drawn from your reading of these two paragraphs? The intention behind writing them was simply to construct two pieces of text that produced different but related feelings. The first paragraph was designed to give you the feeling that infinity 'exists', whereas in the second paragraph that feeling was made to disappear. (Whether you agree or disagree with each of the arguments in the paragraphs is immaterial. I am only concerned that you respond differently to each of them.) That text can have powerful control over one's feelings and imagining behaviour is common knowledge, but insofar as this article is concerned with experiments in self-observation, the analysis of the differential effects that were produced by these two paragraphs provides important guidelines for how one should proceed.

A useful starting point is to consider how the respective views portrayed in the paragraphs shed light on the meaning of the term 'infinite progression.' The incompatibility of these views in effect demonstrates that this term is only a label for a particular type of imagining behaviour. To be more precise, your understanding of this term can be seen as an indication of the extent to which you have been taught to consider it as an appropriate label for a specific type of private event that occurred as a consequence of you reading Paragraph 1.

Clearly this analysis of your understanding behaviour is framed from the perspective of someone observing you. That is, another person would characterise the consequences of your reading behaviour (i.e., the feeling that infinity exists) as a specific type of change in you that was somehow related to the nature of the text. (Notice how this realisation marks a shift in emphasis from 'inside' to 'outside' when it comes to specifying the source of control over private events.) The advantage of adopting this perspective is that a crucial point now arises when you consider the way you would be functioning if you could arrive at a similar conclusion about your own behaviour. In effect, the 'you' who interacted with and was self-absorbed by the first paragraph (call this ME 1) would be replaced by a different way of functioning (call this ME 2). Functioning from this new perspective usually occasions the use of the term 'self-awareness.' Metaphorically speaking, you would have managed to step outside of your own behaviour. (This doesn't mean that there are two of you, you and your self. Rather, any suggestion of a duality is merely a characteristic feature of our style of talking when reference is made to the transition from one mode of functioning to another.)

Perhaps an interesting way for you to further your understanding of what is meant here would be for you to try and become fully self-aware with respect to changes produced within the context of this current paragraph. Giving attention to the nature of this process provides you with an opportunity to reflect upon the efficacy of the analysis offered above. Before beginning this process, however, consider the fact that when I drew your attention to the practicalities involved in working with the human chain in Paragraph 2 you were drawn away from the depth of feeling one normally associates with the term 'infinite progression.' In fact the imagining behaviour of 'progressing' was replaced by the behaviour of 'experimenting' i.e., in its simplest form, making something happen. (Actually, the experiment itself was also only an imaginary activity and it didn't have to be carried out for the shift in perspective to have been accomplished.) Inasmuch as this current paragraph has so far produced a different feeling relative to the feelings produced by all the paragraphs above, you have already been seduced into another 'transition.' This time, however, it is likely that you will readily formulate an explanation as to why you have your current feelings. This is in marked contrast to your behaviour in the context of Paragraphs 1 and 2 where 'it may never have occurred to you to do this.'

The process of relating changes in one's behaviour to changes in the environment functions as a way of transforming the observer into the observed and thereby increasing awareness of oneself. As another example, consider now how you may have functioned intuitively as the observer when you first picked up this journal and began reading this article. By the time you got to this sentence you had read the previous pages. You may even have formulated some phrase or other to summarise your reaction to what I have said so far. Perhaps the longer you stay in this paragraph the more likely you are to recognise that you made a transition some time ago but had forgotten how it affected you. Whatever you feel now it may be difficult for you to verbalise the nature of the change that has taken place, but you may now be aware that certain contingencies are responsible for this feeling.

In terms of personal experimentation, you are in a position to experiment further and attain another perspective which again transcends your current perspective of you the observer (i.e., the you who is currently reading this sentence) into you the observed. See if you can do it now before continuing with the text below!

There are a number of reasons why you may be reading this paragraph just now. If we work with your behaviour of reading it for the first time, then it is possible to discern three main reasons for this behaviour. Firstly, you may have 'ignored' the request at the end of the previous paragraph and simply continued reading. This possibility

would reflect the power of your experimental history in ensuring that the behaviour of reading an article until the end is reached continues as per usual. A second possible reason for reaching this paragraph is that you have been successful in following the previous request. If this possibility applies, then you may find it interesting to contemplate the power of that simple request in terms of the context in which it is embedded. Finally, you may be reading this paragraph because you were not able to accomplish what was requested of you, or else you feel frustrated at not understanding what it is I am driving at. In either case I would ask you now to just wait until your current feeling passes; do not continue with your reading of the chapter; **STOP!**

In behavioural epistemology, the pragmatic step of controlling a behavioural phenomenon plays a crucial role in the delineation of what is regarded as an explanation. If, as part of a particular experiment, you can arrange circumstances such that an organism is likely to engage in a specific behaviour, then from a behaviour analytic perspective the search for an explanation of the organism's behaviour has stopped. The contingencies that allow for the prediction and control of behaviour provide the explanation for that behaviour. The relevance of this to personal experimentation has already been alluded to in the text above. That is, part of the explanation for any changes which occurred in you as you read each of the paragraphs above can be found in the manner in which the text was structured. Furthermore, the reading of this paper can in itself be considered as an exercise in personal experimentation[12]. In lay terms you made a decision to read this paper knowing in advance, consciously or unconsciously, that it would change you in some way. Given this perspective, it is important to understand the rationale behind the design of the text so that 'control' can be relinquished by the writer and 'given' to the reader in order for further experimentation to be conducted. An example of further experimentation is given below, but first here is a summary of the steps that were taken in designing the text above:

1   Paragraphs 1 and 2 were presented for you to read.
2   Your attention was then drawn to the way that you were changed by each of these paragraphs; producing awareness of **how** you had changed.
3   Your attention was then drawn to the discriminative control responsible for the change in your feelings; producing awareness of **why** you had changed.
4   Steps 1, 2, & 3 were provided as a way of developing a short experimental history which might encourage the emergence of a different calibre of awareness[13], i.e., the behaviour of 'recognising a transition'. Once established, this awareness accompanies future transitions, i.e., it becomes incorporated into the behaviour of monitoring the nature of subsequent transitions.
5   Further opportunities were created that allowed you to practise changing your awareness.

---

[12] Neuringer's (1991) Two-Labs strategy for the study of covert phenomena is relevant here: "Self-experimenter W observes a covert phenomenon as [a] dependent or independent variable, publishes the findings, and self-experimenter Z attempts to replicate. The goal of self-experimental covert research is descriptions of intersubjectively reliable functional relationships." (p. 45). Everyone who reads this paper is participating in the same "experiment." The relative changes that are produced may vary across subjects, but if the contingencies are properly designed then the relative changes that are produced in each person should occur at roughly the same location. At the same time, each person may be aware of his/her relative changes but their descriptions of these changes are not the changes themsleves.

[13] The recurrence of this behaviour (i.e., "recognising a transition") constitutes the act of self-remembering that was considered by Gurdjieff and Ouspensky (see Nicholl, 1984) to be an essential step in the development of higher states of consciousness. Increasing the probability of this behaviour has also been considered by some (e.g., Krishnamurti, 1986, 1988) to be a primary objective of personal explorations of private behavioural changes; this is so even when there are no manifest changes in the environment outside of the body, as in some forms of meditation for example.

One problem with the method, and the medium, used above to produce changes in you and to 'reflect them back onto you' is the fact that the changes were probably too subtle and therefore difficult for you to monitor; notwithstanding the powerful effects of your experimental history in determining your acceptance of an unconventional writing style for an academic paper. To circumvent some of these problems the exercise below was developed as a way of producing more significant behavioural changes for you to monitor.

The objective of the exercise is similar to the discussion above in that it raises pertinent issues in the study of private events. The design of the exercise relies heavily on differential effects associated with contingency-shaped and rule-governed behaviour. By providing an opportunity for a contrast to emerge between an imagined reality[14] and a currently experienced reality[15] you can learn how to recognise characteristics of your own private behaviour. Making opportunities for that type of contrast to appear is one of the simplest ways of self experimentation. In one sense, then, the exercise functions as a 'mirror' for one's private behaviour so that, for example, in this instance the behaviour of predicting can be seen for what it is, i.e., an activity arising out of the dynamic interplay of current and historical contexts; or said another way, the behaviour of predicting is an extension of the past into the present. The principal message of the exercise can be extracted from the following maxim: it is important to recognise the limitations of your conclusions; the biggest problem you will have, however, is to first of all recognise when you are in a conclusion.

The whole exercise is more easily understood with the help of the schematic diagram of the behavioural stream shown in Figure 2. The diagram is composed of two related parts with the larger human figure (in fact there are two versions of the same person, one opaque and one 'translucent') in the foreground representing a more abstract version of the scene depicted in the film strip on the left-hand side. Points A, B, C, and D represent 'snapshots' in time. A person who is observed at each of these times has arrived there by virtue of his/her preceding interaction with the
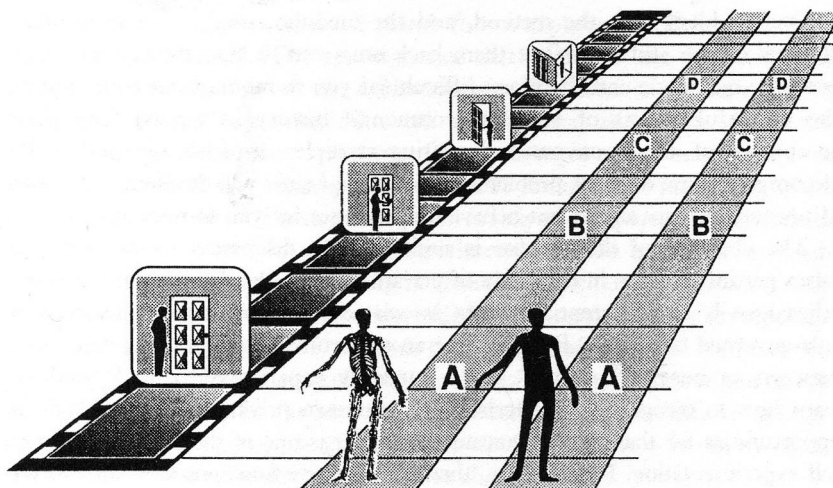

Figure 2: Snapshots in time of the behavioural stream of an imaginary person engaged in Exercise 2. See text for details.

---

[14] The phenomenological perspective which functions as predicting behaviour.

[15] The phenomenological perspective/foundations from which the predicting behaviour emerges.

environment. Suppose, for example, a person is initially observed at point A; this point we will call the 'present.' Further experiences/interactions with the environment lead the person to point B. At point B, A becomes a 'past'; B, which was formally a 'future', becomes a present and C becomes a 'future'. At point C, B becomes a past; C, which was formally a future, becomes a present and D becomes a future, etc. How this diagram can be used to help us analyse the behaviour of 'anticipating the future' is rather simple. The consequences of the way one covertly and overtly behaves while moving from A to B results in similar or dissimilar behaviour when moving from B to C, etc. As a person interacts with the environment, then, it is evident that the act of anticipating can only arise as a function of previous experiences. Furthermore, this behaviour is observed to occur in the present because the past is over with and because the future has not yet happened.

As a more concrete example of this analysis, the film strip on the left-hand side of the diagram represents a few of the possible stages contained in the exercise below. In the strip a person is shown initially standing in front of a closed door (point A). He then puts his hand on the door handle (point B), opens it and enters through it (point C), and he is finally shown standing on the other side of the door (point D). In the exercise a person at point A is asked to imagine what it is like on the other side of the door of the room that they are currently in. In effect, he/she is asked to imagine what it would feel like to be at point D. The interesting aspect of this request is that a person will almost always acknowledge that of course he/she knows what it feels like to be on the other side of the door! But how can they when that world does not yet exist for them? One can not experience the contingencies associated with point D unless one is at point D. Consequently, the imaginative behaviour which occurs at point A must necessarily differ from the full blown experience of being at point D. In what sense, then, do they 'know' what it is like to be on the other side of the door? The answer to this question represents another major objective of the exercise. That is, the exercise was in part designed to teach the idea that 'know' in this context is a word used to label a feeling of familiarity (i.e., a recurring private behaviour) which arises because of the combined effects of instructions and previously experienced contingencies. As has already been mentioned, the act of taking note of changes in one's private behaviour and relating these changes to the environmental context is a key step in behaving with self-awareness. Finally, given that one can be taught to differentiate between the two classes of behaviour discussed here (i.e, imagining behaviour and 'actual' behaviour[16]), it is an easy step to generalise from the exercise and teach the functional significance of current and historical contexts in the production of other behaviour apart from anticipatory behaviour.

---

[16] In the public arena measurement is a particular type of observational behaviour brought under discriminative control and through it scientists have categories with which to work. But scientific behaviour also includes comparison, i.e., relating one measurement to another. Scientific behaviour in general, then, can be seen as relational observation that is under discriminative control. In the case of private events, the categories one works with are necessarily defined as relative changes. Relative changes can be monitored no matter how ineffable or "fuzzy" the edges of the behavioural categories. When there is sufficient relative change to produce a "noticing response" then a scientific observation can be said to have taken place.

Exercise 2

The Private Events of Past and Future
        This exercise should be conducted in a room that has its windows covered. Select a few volunteers and then read the following instructions slowly to each of them.

Initial relaxation and orientation
The first thing that I want you to do is to close your eyes for about one minute and just relax.

Before you open your eyes I want you to concentrate on the feeling of your presence in this room. I want you to get a summary in your mind's eye of what it means to be you at this particular moment in time.

Enhancement of contextual control
Now that you have an image of your presence I want you to add to it by opening your eyes.

I want you to feel the impact of all of the physical objects that come into contact with your field of view. Concentrate on my presence; on the walls surrounding you; on the lighting in the room; on the presence of others ... . I want you to concentrate if you can on the feeling you have of actually being **IN** a room. That is, there is a world outside of here which for the moment is not accessible to you.

Stimulation of covert behaviour (imagination)
We are now ready to proceed with the next step in this experiment. I want you to **imagine** what it feels like to be outside of this room. Try to create in your mind's eye the **feeling** you would get if you were outside of this room. Imagine that feeling you would get if you were on the other side of the door.

Priming imagining behaviour so that it persists until contact is made with a changed environment
Now that you have gotten hold of that I want you to do something very simple. In a moment I will be asking you to actually leave the room and stand outside the door. Before you go, however, I would like you to pay close attention to my next instruction.

        When you reach the other side of the door I want you to notice the contrast between your imagination of what it would feel like to be there and what it actually feels like.   Also, as this new experience continues to grow I want you to notice how the intensity of your present experience gradually recedes until it is 'just a memory'. In other words, there will come a point when you notice your current experience is just a memory, like the memory you have now of what it feels like to be **outside** of this room.

.... REPEAT THE SECTION ABOVE IF NECESSARY ....

Priming a potential new imagining behaviour so that it persists until contact is made with a second change in the environment
When you reach this point I want you to prepare yourself for the next stage of the experiment. I want you summarize in your mind's eye the feeling you have as you stand

there. Having done that I want you to imagine what it will feel like to be on the other side of the door.

When you are ready I want you to open the door and enter. As you enter I want you to notice the contrast between what it actually feels like and what you thought it would feel like.

Summary of instructions

Are you clear as to what you are to do? Just to summarize: firstly, I want you to pay attention to the 'decrease' in the intensity of your current experience and the initial 'increase' in the intensity of your new experience. Then, after you have adapted to the new experience I want you to return. As you return I want you to notice the initial 'increase' in the intensity of the next new experience and the 'decrease' in intensity of the feeling you got from being outside of the room.

Priming self-consciousness

One final point. As you return, you may notice a special relationship between yourself and me. If you do feel this I would like you to consider the possibility that I know of something that is going on inside your head. **End of instructions**

Send your volunteers out of the room one at a time and wait a few minutes after he/she returns before sending the next one. Do not allow a discussion to develop until everyone has gone through the exercise. It is advisable to work with a limited number of people (about three or four) in a session. When all volunteers have returned you can begin a class discussion. Below is a list of possible topics you could cover:

1.   Did anyone feel slightly 'paranoid' or separate from the group as they returned to the room? (This only happens sometimes, more so with shy individuals.)
2.   Did everyone appreciate the contrast between their imagination of an experience and the actual experience itself?
3.   Imagination of an **IN** or an **OUT** experience was only possible given the previous experimental history with these or similar experiences.
4.   Emphasise the power of the environment to produce the changes which were experienced; without the **NEW** interaction with the environment there would have been no **NEW** experience of that environment.
5.   How many times a day do similar transitions between experiences occur without the attention that was given to them to-day? What would be the benefit of giving more attention to the ways in which we change in particular contexts[17]?
6.   Talk to the class members who didn't participate in the experiment and draw attention to the power of verbal behaviour to move humans across space and time. Talk about the volunteers as if they were no longer in the room. (It can also help if you talk to the class about a volunteer while he/she is talking.) This helps to

---

[17]   Insofar as this exercise helps to draw attention to contingencies responsible for "futuring" and "pasting" behaviour it serves as a useful introduction to other writings concerned with similar issues. Consider, for example, the following two quotations:
"The essence of meditation is nowness. Whatever one tries to practice, is not aimed at achieving a higher state or at following some theory or ideal, but simply, without any object or ambition, trying to see what is here and now. One has to become aware of the present moment. . . ." (Trungpa, 1969, quoted in Brandon, 1990, p. 63)
"Living in the here and now is behaviour derived from the Zen experience. Guilt and anxiety are children of the past and future. To the extent that a person dwells upon the should-have-been or might-be of life at the expense of living life in the reality of the present, he suffers." (Keefe, 1975, quoted in Brandon, 1990, p. 63)

focus your listeners' attention to the demands made on the scientist in his/her attempt to be objective.

7. Draw attention to the variability in verbal reports from the volunteers in the experiment.

8. Verbal reports are not effective in producing changes comparable to those produced by direct contact with the environment. To start a discussion on this and on the general notions of contingency-shaped and rule-governed behaviour ask your volunteers to communicate to the class the changes which occurred within them during the experiment. Draw attention to the fact that unless the rules of the procedures are followed there can be no 'understanding' of the effect of the contingencies.

9. If you are working with an advanced class, discuss the problems posed by the study of private events.

10. Terminate the session by discussing the diagram of the behavioural stream and show how it can be used to develop the concept of the three-term contingency.

There may be issues that are raised in discussion with your class that can be incoprorated into sessions with other classes. A goal to keep in mind is that you should gather as much information as possible so that with future classes you can improve your chances of teasing students into believing that you can read their minds.

Exercise 3

'W'-ing

> 'Methodological behaviorists, like logical positivists, argued that science must confine itself to events that can be observed by two or more people; truth must be truth by agreement. There is a private world of feelings and states of mind, but it is out of reach of a second person and hence of science. That was not a very satisfactory position, of course. How people feel is often as important as what they do' (Skinner, 1989, p. 3)

This statement by Skinner would undoubtedly come as a surprise to students who have been led to view behaviourism as 'black-box' psychology. Their teachers who are responsible for propounding this view may be admonished for doing so. However, as is well known, punishment by itself does not result in the establishment of new behaviours; other contingencies must be implemented so that the desired behaviour ensues. If we work with the premise that 'the rat is always right,' then the teachers, who themselves were former students, are responding as a consequence of the combined effects of personal environmental histories and the instructional contingencies to which they were exposed in the classroom. Any misrepresentation by them may, perhaps, be an indictment of the existing imbalance between the plethora of methodologically sophisticated procedures designed for studying public behaviours and the paucity of procedures concerned with private events. The three exercises described here were conceived as possible ways of redressing this imbalance. They provide scope for discussions of behavioural interpretations of the relationship between public and private behaviours by arranging contingencies within the classroom so that students can see at first hand the effects of those contingencies.

Earlier it was noted that many of the conclusions reached by scientists are initially contingency-shaped. The problem of teaching, then, is a problem of disseminating these conclusions in light of the fact that there are differential effects associated with contingency-shaped and rule-governed behaviour. Accordingly, there may be occasions when one must be careful not to fall into the trap of expecting students to dutifully remember these conclusions without them ever tasting the hunt that inspired them. In this final exercise we explore issues concerned with the labelling of private events (see Skinner 1953, Chapter 17). The word 'explore' is chosen deliberately because the exercise is designed to provoke questions in students rather than to supply them with answers.

Priming an appreciation of the contrast between 'external' stimulus control and 'internal' stimulus contol.

In this exercise I want to explore the idea of 'separateness.' To start with, I would like you to consider the simple notion that your presence is part of my environment and that my presence is part of your environment.

As you each see me now, you can discern the edges of my being. You can see where my body begins and where it ends. To some extent, I appreciate your perspective of me because I perceive something similar when I look at each of you. However, when I close my eyes and look into the darkness I can no longer see any edges; mind you, I can feel the semblence of edges that form parts of my body. From here, though, I don't fully appreciate the edges which you see in me.

Now I would like you close your eyes and to look for your own edges in the way that **I** have just done.

So close your eyes.

<u>Stimulation of covert behaviour.</u>
For the rest of the time I would like you to keep your eyes closed until I tell you to open them.

In this section I will be asking you to concentrate on various parts of your body. Let's start with your feet.

I want you to concentrate on the feeling in your feet. Without moving your feet, I want you to concentrate on the tightness of your shoes around them. Now, if you can, I want you to trace in mind's eye the outline of the shoe around your foot.

Next, I want you to concentrate on your ankles.

Now the calves of your legs.

And now your knees.

Moving up a little higher, I want you to concentrate on your hips as they press against the seat of your chair.

I want you to feel the expanse of your back.

And now your shoulders.

I now want you to concentrate on your arms, and then your hands. Some of you have your hands on the desk, while some of you are supporting your head with your hands. I want you to feel the point of contact whichever way you hands are positioned.

Now, still keeping your eyes closed and without moving, I want you to concentrate on the feeling you have of a person beside you. Notice how it feels as if you are actively doing something. You can actually feel a change taking place on that side of your body. I'll give you a second or two until you have accurately localised this activity.

<u>Tacting a feeling.</u>
I now want to do something very simple. I want to give this feeling an arbitrary name. I want to call it 'W.' At this very moment, then, I can quite freely conclude that you are all 'W'-ing.

If I were to ask you if you knew what it means to 'W,' you would be able to answer affirmatively. So, again, to 'W' is to persist in that which you are doing just now.

<u>Using the tact as a basis for stimulating further covert activity.</u>
Now that you are able to 'W' you can appreciate, perhaps, a small increase in awareness of yourself. Consider for a moment an interesting possibility that might follow from this. Wouldn't it be fascinating if our society could teach us to identify and label a host of experiences like this?

<u>Making a link between newly-stimulated covert activity and previously-stimulated covert activity.</u>
The funny thing is, it has already done so. I have just demonstrated this to you: foot; ankle; calves; ...   Can you feel them again?

<u>Using recently learned behaviour as a basis for stimulating 'questioning behaviour' and 'imagining behaviour.'</u>
There is an interesting problem here. I cannot feel what you are feeling, yet I taught you how to label a feeling that only you have access to. How was I able to do this? Indeed, how was I able to design the exercise in the first place?

<u>Shaping 'understanding behaviour.'</u>

Keep your eyes closed.

When your eyes were open at the start of the exercise you were aware of our separateness. Now you are sensitive to the energy of my words as if they somehow reached inside of you and moved you around. You may also have noticed that those times in which you were moved around in a familiar way were the times when you would probably feel inclined to use the word 'understanding' to characterise this familiarity. In other words, 'understand' is a word you use to describe something you do, much the same way that you would use 'W.'[18]
Imagine for a moment the difficulty you would have in explaining to someone the nature of 'W'-ing. After you leave this class, for example, imagine telling your friends that you 'W'-ed to-day. It would be like using words to describe to an Eskimo what a banan tastes like. The understanding of 'W'-ing comes from the doing of it.

<u>The skin does not separate you from the world, it unites you to it: An appreciation.</u>
To close this session I want to return for a moment to the idea of separateness. I have here a few quotations from a book by Fritjof Capra called 'The Tao of Physics.' In this book Capra relates the conclusions of some modern nuclear physicists with some conclusions reached by Eastern philosophers and mystics.
To help prepare you for these quotations, I would like you, still with your eyes closed, to focus on the space which separates our physical bodies.
Physicists now tell us that if the molecules which constitute this space are divided into atoms and these atoms are further divided, and so on, we reach a point when there is no separately existing matter.

Here is the first quotation:

'When we dividesome gross (or composite) matter, we can reduce it to atoms. But as the atom will also be subject to further division, all forms of material existence, whether gross or fine, are nothing but the shadow of particularisation and we cannot describe any degree of (absolute or independent) reality to them.' (p. 292).

Here's another:

---

[18] See Morris, 1990 and Schnaitter, 1987.

'In ordinary life we are not aware of this unity of all things but divide the world into separate objects and events. This division is, of course, useful and necessary to cope with our everyday environment, but it is not a fundamental feature of reality. It is an abstraction devised by our discriminating and categorizing intellect. To believe that our abstract concepts of separate 'thing' and 'events' are realities of nature is an illusion' (p. 277).

And another:

'It is an artificial attitude that makes sections in the stream of change, and calls them things ... When we shall know the truth of things, we shall realise how absurd it is for us to worship isolated products of the incessant series of transformations as though they were real or eternal. Life is no thing or state of a thing, but a continuous movement or change' (p. 278).

May I remind you here that 'w'-ing was not a static event but a process of change that was localised within you.

Another quotation:

'The Buddist does not believe in an independent or separately existing world into whose dynamic forces he could insert himself. The external world and his inner world are for him only two sides of the same fabric, in which the threads of all forces and of all events, of all forms of consciousness and of their objects, are moven into an inseparable net of endless, mutually conditioned relations' (p. 143).

And the last one:

'Noting is more important about the quantum principle than this, that it destroys the concept of the world as sitting 'out there,' with the observer safely separated from it by a 20 centimeter slab of plate glass. Even to observe so miniscule an object as as electron, he must shatter the glass. He must reach in. He must install his chosen measuring equipment. It is up to him to decide whehter to measure position or momentum. To install the equipment to measure the one prevents and excludes his installing the equipment to measure the other. Moreover, the measurement changes the state of the electron. The universe will never afterwards be the same. To describe what has happened, one has to cross out that old word 'observer' and put in its place the new word 'participator.' In some strange sense the universe is a participatory universe' (p. 141).

<u>Stimulation of post-session investigative behaviour.</u>
I will leave you now with an interesting question. How separate are we really, and to what extent do we help to determine the nature of each other's consciousness?[19]

<div align="center">You may open your eyes now.</div>

<u>Conclusion</u>

Although the public behaviour of a person can be controlled and thus predicted without referencing associated private behaviour, this does not in any way condemn private behaviour as unworthy of investigation (cf. Hayes & Hayes, 1992). On the contrary, it may be the case that an overriding concern for truth by public agreement has usurped the usefulness of prediction and control as important guidelines for exploring the private behaviour of the observer. Alternatively, it may be simply that there is still much to be done to address the difficulties in developing suitable teaching gambits to complement the existing philosophy of radical behaviourism. Wann (1964) noted these difficulties when he paraphrased Skinner's general approach to the problem of privacy:

> 'The 'boundary' for public-private is not the skin, but the line between the verbal community's being able to reinforce behavior differentially and its not being able to do so, or able to only with great difficulty' (p. 107).

Much of what Skinner said in the analysis of private events could be viewed as a commentary on the legacy of our childhood. The challenge to the teacher is to make his arguments persuasive. One way to do that is to take control of private events in the manner outlined here. To do so means continuing, in a sense, with the practices previously employed by our parents. The seriousness with which we adhere to the notion that self-knowledge is of social origin can be judged best by how we teach it. Said another way, the suggestion that the 'verbal community can solve the problem of privacy to the extent that it can establish a best fit in its shaping of verbal terms for private events' (Chiesa, 1994, p. 189) will find more support if it moves beyond the level of description to practical examples. Perhaps the experiences of behaviour analysts working in clinical settings will prove esssential for the development of such practicals (Cordova & Koerner, 1993; Follette, Bach, & Follette, 1993; Hayes & Wilson, 1993; Kohlenberg, Tsai, & Dougher, 1993).

Skinner (1990) said that one of his great aims in life was 'to discover what it means to be a knower.' (p. 103). Many students come to psychology on similar quests. It is hoped that exercises like the ones described here may function as establishing operations (Michael, 1993) that provoke self-experimentation by students (cf. Neuringer, 1984). After all, looking at it from a student's point of view, if they can be shown that an every-day activity like walking through a door presents a veritable gold mine of opportunities for exploration, they might be more intrigued by what our discipline has to offer. In conclusion, it is important to remember that the art of teaching behaviour analysis involves more than the design of contingencies to enable students to remember the facts of behaviour. It also involves an appreciation that the students we teach will be the ones who develop our discipline further:

> 'You don't draw people into science by saying that science is the basis of technical innovation - which it is - because that's too remote when you are at school. But if

---

[19] See Blackman, 1991

you can say, these are the big questions we are asking and we are making progress, and you can help us to answer some of the questions, then you are making science come alive' (Efstathiou, 1993, p. 33).

References

Barnes, D. (1989). Behavior-behavior analysis, human schedule performance, and radical behaviorism. The Psychological Record, 39, 339-350.

Blackman, D. E. (1991). B. F. Skinner and G. H. Mead: On biological science and social science. Journal of The Experimental Analysis of Behavior, 55, 251-265.

Brandon, D. (1990). Zen in the art of helping. London: Arkana.

Briggs, J. P., & Peat, F. D. (1984). The looking glass universe. Fontana Paperbacks.

Capra, F. (1975). The Tao of Physics. Berkley: Shambala

Catania, A. C. (1991). The gifts of culture and of eloquence: An open letter to Michael J. Mahoney in reply to his article, 'Scientific psychology and radical behaviorism.' The Behavior Analyst, 14, 61-72.

Chiesa, M. (1994). Radical behaviorism: The philosophy and the science. Boston: Authors Cooperative, Inc., Publishers.

Cordova, J. V. & Koerner, K. (1993). Persuasion criteria in research and practice: Gathering more meaningful psychotherapy data. The Behavior Analyst, 16, 317-330.

Creel, R. E. (1987). Skinner on science. In S. Modgil & C. Modgil (Eds.), B. F. Skinner: Concensus and controversy. New York: Falmer Press.

Day, W. F. (1969). On certain similarities between the philosophical investigations of Ludwig Wittgenstein and the operationism of B. F. Skinner. Journal of The Experimental Analysis of Behavior, 12, 489-506.

Efstathiou, G. (1993). 26th June, New Scientist. IPC Magazines Ltd., Reed Publishing Europe.

Epstein, R. (1984). Simulation research in the analysis of behavior. Behaviorism, 12, 41-59.

Epstein, R. (1985). Animal cognition as the praxist views it. Neuroscience & Biobehavioral Reviews, 9, 623-630.

Eysenck, H. J., Arnold, W. J., & Meili, R. (1975). Encyplodia of psychology: Volume 2, L-Z. London: Fontana

Follette, W. C., Bach, P. A., & Follette, V. M. (1993). A behavior-analytic view of psychological health. The Behavior Analyst, 16, 303-316.

Hayes, S. C., & Brownstein, A. J. (1986). Mentalism, behavior-behavior relations and a behavior-analytic view of the purposes of science. The Behavior Analyst, 9, 174-190.

Hayes, S. C., & Brownstein, A. (1987). Mentalism, private events, and scientific explanation: A defense of B. F. Skinner's view. In S. Modgil & C. Modgil (Eds.), B. F. Skinner: Concensus and controversy. New York: Falmer Press.

Hayes, S. C., & Hayes, L. J. (1992). Some clinical implications of contextualistic behaviorism: The example of cognition. Behavior Therapy, 23, 225-249.

Hayes, S. C., Hayes, L. J., & Reese, H. W. (1988). Finding the philosophical core: A review of Stephen C. Pepper's world hypotheses: A study in evidence. Journal of The Experimental Analysis of Behavior, 50, 97-111.

Hayes, S. C. & Wilson, K. G. (1993). Some applied implications of a contemporary behavior-analytic account of verbal events. The Behavior Analyst, 16, 283-301.

Hineline, P. N. (1990). The origins of environment-based psychological theory. Journal of The Experimental Analysis of Behavior, 53, 305-320.

Johnston, M. (1989). Did I begin? New Scientist, Dec. 9, 39-42

Johnston, M. K., & Pennypacker, H. S. (1980). <u>Strategies and tactics of human behavioral research</u>. Hillsdale, NJ: Erlbaum.

Keenan, M., & Toal, L. (1991). Periodic reinforcement and second-order schedules. <u>The Psychological Record, 41</u>, 87-115.

Kohlenberg, B. S., Hayes, S. C., & Hayes, L. J. (1991). The transfer of contextual control over equivalence classes through equivalence classes: A possible model of social stereotyping. <u>Journal of The Experimental Analysis of Behavior, 56</u>, 505-518.

Kohlenberg, R. J., Tsai, M., & Dougher, M. J. (1993). The dimensions of clinical behavior analysis. <u>The Behavior Analyst, 16,</u> 271-282.

Krishnamurti, J. (1986). <u>The awakening of intelligence</u>. London: V. Gollancz Ltd.

Krishnamurti, J. (1988). <u>The first and last freedom</u>. London: V. Gollancz Ltd.

Lee, V. L. (1981). The operant as a class of responses. <u>Scandinavian Journal of Psychology, 22</u>, 215-221.

Lee, V. L. (1985). Scientific knowledge as rules that guide behavior. <u>The Psychological Record, 35</u>, 183-192.

Lee, V. L. (1988). <u>Beyond behaviorism</u>. Hillsdale, NJ: Lawrence Erlbaum.

Lee, V. L. (1989). Comments about the isolation of behavior analysis. <u>The Behavior Analyst, 12</u>, 85-87.

Leigland, S. (1989a). On the relation between radical behaviorism and the science of verbal behavior. <u>The Analysis of Verbal Behavior, 7</u>, 5-18.

Leigland, S. (1989b). A functional analysis of mentalistic terms in human observers. <u>The Analysis of Verbal Behavior, 7</u>, 5-18.

Lonigan, C. J. (1990). Which behaviorism? A Reply to Mahoney. <u>American Psychologist, 45</u>, 1179-1181.

MacLeod, R. B. (1964). Phenomenology: A challenge to experimental psychology. In T. W. Wann (Ed.) <u>Behaviorism and phenomenology</u>: <u>Contrasting bases for modern psychology</u>. University of Chigao Press.

Marr, J. (1983). Memory: Models and metaphors. <u>The Psychological Record, 33</u>, 12-19.

Michael, J. (1982). Distinguishing between discriminative and motivational functions of stimuli. <u>Journal of The Experimental Analysis of Behavior, 37</u>, 149-155.

Michael, J. (1993). Establishing operations. <u>The Behavior Analyst, 16,</u> 191-206.

Moore, J. (1975). On the principle of operationism in the science of behavior. <u>Behaviorism, 3</u>, 120-138.

Moore, J. (1980). On behaviorism and private events. <u>The Psychological Record, 30,</u> 459-475.

Moore, J. (1981). On mentalism, methodological behaviorism, and radical behaviorism. <u>Behaviorism, 9</u>, 55-77.

Moore, J. (1985). Some historical and conceptual relations among logical positivism, operationism, and behaviorism. <u>The Behavior Analyst, 8</u>, 53-63.

Morris, E. K. (1985). Public information, dissemination, and behavior analysis. <u>The Behavior Analyst, 8</u>, 95-110.

Morris, E. K. (1980). Contextualism: The world view of behavior analysis. <u>Journal of Experimental Child Psychology, 46</u>, 289-323.

Morris, E. K. (1990). What Mahoney 'knows.' <u>Americal Psychologist, 45</u>, 1178-1179.

Morris, E. K. (1992). The aim, progress, and evolution of behavior analysis. <u>The Behavior Analyst, 15</u>, 3-29.

Morris, E. K., Higgins, S. T., & Bickel, W. K. (1982). Comments on cognitive science in the experimental analysis of behavior. <u>The Behavior Analyst, 5</u>, 109-125

Neuringer, A. (1981). Self-experimentation: A call for change. <u>Behaviorism, 9</u>, 79-94.

Neuringer, A. (1984). Melioration and self-experimentation. <u>Journal of the Experimental Analysis of Behavior, 42,</u> 397-406.

Neuringer, A. (1991). Behaviorism: Methodological, radical, assertive, skeptical, ethological, modest, humble, and evolving. <u>The Behavior Analyst, 14,</u> 43-47.

Nicholl, M. (1984). <u>Psychological commentaries on the teachings of Gurdjieff & Ouspensky.</u> Boston: Shambhala Publications.

Schnaitter, R. (1987). Knowledge as action: The epistemology of radical behaviorism. In S. Modgil & C. Modgil (Eds.), <u>B. F. Skinner: Concensus and controversy.</u> New York: Falmer Press.

Schneider, S. M., & Morris, E. K. (1987). The history of the term *Radical Behaviorism*: From Watson to Skinner. <u>The Behavior Analyst, 10,</u> 27-40.

Schoenfeld, W. N., & Farmer, J. (1970). Reinforcement schedules and the 'behavior stream.' In W. N. Schoenfeld (Ed.), <u>The theory of reinforcement schedules.</u> New York: Appleton

Schwenk, T. (1990). <u>Sensitive chaos.</u> London: Rudolf Steiner Press.

Skinner, B. F. (1945). The operational analysis of psychological terms. <u>Psychological Review, 42,</u> 270-277.

Skinner, B. F. (1953). <u>Science and human behavior.</u> New York: Free Press

Skinner, B. F. (1964). Behaviorism at fifty. In T. W. Wann (Ed.) <u>Behaviorism and phenomenology: Contrasting bases for modern psychology.</u> University of Chigao Press.

Skinner, B. F. (1966). What is the experimental analysis of behavior? <u>Journal of The Experimental Analysis of Behavior, 9,</u> 213-218.

Skinner, B. F. (1974). <u>About behaviorism.</u> New York: Knopf.

Skinner, B. F. (1977). Why I am not a cognitive psychologist. <u>Behaviorism, 5,</u> 1-10.

Skinner, B. F. (1985). Cognitive science and behaviorism. <u>British Journal of Psychology, 76,</u> 291-301.

Skinner, B. F. (1988). The operational analysis of psychological terms. In A. C. Catania & S. Harnard (Eds.) <u>The selection of behavior: The operant behaviorism of B. F. Skinner: Comments and consequences.</u> New York: Cambridge University Press.

Skinner, B. F. (1989). <u>Recent issues in the analysis of behavior.</u> Ohio: Merrill Publishing Co.

Skinner, B. F. (1990). To know the future. <u>The Behavior Analyst, 13,</u> 103-106.

Smith, L. D. (1986). <u>Behaviorism and logical positivism: A reassessment of the aliance.</u> Standford: Standford University Press.

Smith, N. W. (1985). Heredity and environment revisited. <u>The Psychological Record, 35,</u> 173-176.

Spinelli, E. (1989). <u>The Interpreted world.</u> London: Sage Publications

Terrell, D. J., & Johnston, J. M. (1989). Logic, reasoning and verbal behavior. <u>The Behavior Analyst, 12,</u> 35-44.

Ulrich, R. (1975). Toward experimental living, phase II: 'Have you ever heard of a man named Frazier, Sir?' In E. Ramp & G. Semb (Eds.), <u>Behavior analysis: Areas of research and application.</u> Englewood Cliffs, NJ: Prentice-Hall, Inc.

Wann, T. W. (1964) (Ed.). <u>Behaviorism and phenomenology: Contrasting bases for modern psychology.</u> University of Chigao Press.

Watt, A., Keenan, M., Barnes, D., & Cairns, E. (1991). Social categorization and stimulus equivalence. <u>The Psychological Record, 41,</u> 33-50.

Williams, J. L. (1986). The behavioral and the mystical: Reflections on behaviorism and eastern thought. <u>The Behavior Analyst, 9,</u> 167-173.

Wyatt, W. J. (1990). Radical behaviorism misrepresented: A reply to Mahoney. American Psychologist, 45, 1181-1183.

Zuriff, G. E. (1985). Behaviorism: A conceptual reconstruction. New York: Columbia University Press.

Appendix 1

<u>Koyaanisqatsi & The Behavioural Stream</u>

The film Koyaanisqatsi (directed by Godfrey Reggio) contains some fascinating time-lapse photography of life in a city. Because behaviour is shown to occur at a high rate, students are confronted with overall patterns that make it difficult to engage in mentalistic analyses. By way of an introduction to this section of the film the following passage can be read to students:

> Imagine for a moment that you have been given a special privilege. On a day of your choosing you are invited to sit on top of a hill overlooking a small village. The village is normal in appearance, with cottages, a school, a church, a few shops, and a pub.
>
> Imagine now that you are on the hill beneath the shade of a tree resplendent in a profusion of tiny blossoms. You close your eyes and concentrate on the rhythm of your breathing. The more you concentrate on this rhythm the more you find your breathing slowing down. The movement of every scented inhalation is accompanied by an infusion of relaxation that fills your body from the top of your head to the tip of your toes. With the sound of every exhalation you discover forgotten traces of tension in your body and you watch dispassionately as they flake gently away from you. You begin to feel warm and secure and you notice your skin sensitive to the caresses of the air circulating around you.
>
> When you feel ready to open your eyes you do so and you focus your attention expectantly on the village. Removed in time and in space from the people in the village you prepare yourself to watch life flow past at an incredible rate.
>
> The sky changes and beneath flickering cycles of night and day the village is shrouded in the pulse of the changing seasons. From within each household synchronized streams of life emerge, continuously shaping and being shaped by their physical and social embankments. Children passing through adult children etch a myriad of patterns across the plane of your perspective. Eventually the changes arising throughout the entirety of each villager's life appear before you in one frozen image as a mesh of giant interconnected snowflakes, each with their repetitions of form.
>
> Gazing at the majesty of this scene you find yourself filled with a sense of wonderment. Untold secrets are now at your disposal and you need only go down into the village to collect them. You close your eyes once more and quieten yourself in readiness.
>
> With calmness and clarity of mind attained you again open your eyes and scan the intricacies of the frozen movement. Your awareness of its impending dissolution prompts you to carefully harness your attention so that you can focus effectively on particular features. You don the protective clothing of disciplined and systematic thinking and make your way down into the village.

Once the film is finished you can inform the students that behaviour analysts are engaged in the development of a holistic perspective which views human behaviour as inseparable from the context in which it is observed. This perspective is critical of traditional assumptions implicit in the mentalism of mainstream academic psychology.

Tell the students that a useful exercise for them would be to consider how the 36 million minutes of each of their lives on earth would appear from the hill. Like one of the villagers, they also would be seen as the focal point of changes that follow the contours of the environment through which they pass. It follows from this that if this is the case for them, then it is necessarily so for other people who behave in ways that are classified as scientific; that is, it must not be forgotten that a scientist is also a child who has been taught to relate to the world in specific ways? This realization begs a question as to what becomes of the term 'explanation'?

At this point you can refer to a segment which shows the throbbing of the traffic in a city. Point out the fact that each of the people sitting in the cars is a unique individual, 'free' to make decisions about when to start and stop the car. Note that any reference to what the drivers are thinking does not supply an explanation for their behaviour. Instead it leaves unanswered the question as to why the driver is thinking in this way. You can refer to the current context in terms of how the city is designed (buildings and traffic lights) and the sequence in which the lights change colours as contributing to decisions that are made by each driver. Point out that if the buildings were organised differently, and/or if the light sequences were reorganised you would end up watching a different pattern of driving behaviour. This means that the explanation for the new and old patterns that are observed is to be found in the way in which the environment is organised. Be sure to mention the fact that you are not dismissing the personal experience of the drivers i.e.; they are not black boxes. You are merely looking at the way in which current context determines that experience. At this point you can refer to the role played by historical factors in the development of your explanation (This analysis is contextualistic in character; see Morris, 1980, 1992; Hayes, 1987, 1988; Hayes & Hayes, 1992; Hayes, Hayes, & Reese, 1988). That is, buildings had to be build (end-products of architects' and town palnners' behaviours), cars had to be built, drivers had to be trained to respond to traffic lights. These historical factors evolved into the situation that was observed. At this point you can show another clip of the film on the car assembly line and work through a similar analysis for the explanation of the behavioural pattern being observed. At this point you could fastforward a video of an animal on a schedule[20]. This easily reveals patterns that can be discussed while at the same time keeping mentalistic analyses at arm's length. Once you have worked through the video material you can introduce the diagrams on the behavioural stream and work through the basic argument again.

---

[20] Members of the behavioral community should take note of the fact that there is no commercially produced video material for classroom use of animal performances on the basic schedules of reinforcement. Teachers who do not have access to animal facilities, or who may also not have training in specific areas of Applied Behaviour Analysis, have a difficult task of persuading students to be interested in the ways that behaviour can be controlled by contingencies when demonstrations are not abundantly available for classroom use.

References

Hayes, S. C. (1987). A contextual approach to therapeutic change. In N. Jacobsen (Ed.), Psychotherapists in clinical practice: Cognitive & behavioral perspectives. New York: Guildford.

Hayes, S. C. (1988). Contextualism and the next wave of behavioral psychology. Behavior Analysis, 23, 7-22.

Hayes, S. C., & Hayes, L. J. (1992). Some clinical implications of contextualistic behaviorism: The example of cognition. Behavior Therapy, 23, 225-249.

Hayes, S. C., Hayes, L. J., & Reese, H. W. (1988). Finding the philosophical core: A review of Stephen C. Pepper's world hypotheses: A study in evidence. Journal of The Experimental Analysis of Behavior, 50, 97-111.

Morris, E. K. (1980). Contextualism: The world view of behavior analysis. Journal of Experimental Child Psychology, 46, 289-323.

Figure Captions

Figure1:   A possible representation of a traditional perspective on 'objectivity.' Two observers are shown looking down of highly condensed versions of the behavioural streams of a human and of a rat.

Figure 2:   Snapshots in time of the behavioural stream of an imaginary person engaged in Exercise 2. See text for details.