IN DEFENCE OF BEHAVIOURISM:

A Skinnerian reinterpretation of Stenhouse's
ethological theory of intelligence, supported
by a Galilean philosophy of science.

A thesis presented in partial
fulfilment of the requirements
for the degree of Master of Arts
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CONTENTS

ABSTRACT

This thesis attempts to justify a Skinnerian interpretation of intelligence. The justification has three major themes. Firstly it is argued that Skinnerian behaviourism has the status of scientific knowledge comparable to Newtonian mechanics. Secondly it is argued that Stenhouse's ethological theory of intelligence has a number of defects, so that a behaviourist theory which retains the strengths of the ethological theory while avoiding those defects is to be preferred. Thirdly it is argued that certain widely received accounts of scientific knowledge are mistaken; an alternative account is presented. This venture into philosophy of science underlies the other two themes and is presented first.

The supposition that science may be represented in terms of general laws of the form 'All swans are white' is critically examined, following Toulmin's analysis which is illustrated with three exemplars of scientific knowledge.

A Galilean ideal of science is then elaborated. The ideal is formulated in terms of scientific knowledge following Toulmin, and illustrated with three exemplars of scientific knowledge. The processes of revolutionary science, normal science, technology, and justification of theories, are interpreted in terms of the ideal alluded to above with further illustrations. Convergences with de Bono's 'lateral thinking' are suggested. Criticisms of statistical 'social science' are noted. The conventional contrast between physical and social science is critically examined.

A formulation of Skinnerian behaviourism is presented, to demonstrate that behaviourism conforms to the Galilean ideal of science. Various criticisms

of behaviourism are responded to.   The proposed criteria
for justification of theories are applied to behaviourism.

Stenhouse's ethological theory of the nature and
evolution of intelligence is criticially examined.   The
divergent development of ethology and behaviourism from
reflexology is outlined. Skinner's critique of Pavlov's
concept 'inhibition' is applied to Stenhouse's 'P-factor'.
The use of metaphors in science is discussed.   De
Bono's 'special memory surface' is noted as an alternative
to the usual mechanical or electronic storage systems as
a metaphor for memory.

Skinner's analysis of the nature and evolution of
intelligence is elaborated. Stenhouse's factors and
especially the P-factor are reinterpreted in behaviourist
terms.   It is argued that a behaviourist theory of
intelligence is preferable to Stenhouse's ethological
theory in terms of the Galilean ideal of science.

Educational and political implications of various
philosophical and theoretical positions are also noted.

PREFACE

While this thesis is organised around and
concludes with a behaviourist reinterpretation of
Stenhouse's theory of intelligence, that reinterpretation
is confined to one final chapter. The preceding four
chapters discuss various issues as listed in the
Abstract (principally in the philosophy of science both
generally and as applied to behaviourism and ethology),
which may be of wider interest apart from the support
they give to the final chapter.

The existing treatments of these issues vary:
some are merely informal and fragmentary, some while
substantial have been neglected by more recent writers,
and some express what I will argue are seriously
misleading views as to the nature of science. In view
of this situation it seemed necessary to discuss some of
those issues at length in order to clarify and defend
the presuppositions of the final chapter; other related
issues are discussed briefly by way of digressions. At
best those first four chapters may contain some
substantial contribution on one or two issues in the
philosophy of science; however failing that the
bibliography and page-specific references may still
prove useful.

Perhaps the most prominent of those issues, both
within this thesis and at large, is the scientific status
of behaviourism. Thus the short title 'In defence of
behaviourism', while not reflecting the structure or
conclusion, does indicate a major theme of some wider
interest.

Certain key terms may conveniently be elaborated
at this point.

'Behaviourism', and hence 'behaviourist', refer
here to the science of behaviour developed by

B.F. Skinner and outlined in Chapter 3. This usage
differs from that of Skinner (1974), who used the term
'behaviourism' to refer to the philosophy of that
science. In this thesis the philosophy of behaviourism
is considered to be part of the philosophy of science in
general.

'Science' refers to the tradition identified with
Galileo, Newton, Mendel, Darwin and many others. It is
a complex behavioural phenomenon, in some aspects
comparable with and merging into myths (Feyerabend 1961;
1975) and common idiom (cf Toulmin 1953:39 on certain
metaphors as the ghosts of dead theories). While it
would be difficult to gain assent to any strict definition
of science, particular works identified with particular
persons (eg. Newtonian mechanics) may generally be
accepted as exemplars of science from which an ideal form
of science may be abstracted. A theory may be said to
be 'scientific' to the extent that it conforms to such an
ideal. Science may be analysed into products and
processes. In Chapter 2 there are identified the
products 'primary knowledge' and 'secondary knowledge',
and the processes 'revolutionary science', 'normal
science', 'technology' and 'justification of theories'.

Likewise the term 'technology' is not restricted
to the applications of physical sciences to the design of
hardware; the term is used to refer to the application
of any scientific theory to any practical problem. For
instance, an application of behaviourism to the solution
of instructional problems in schools, regardless of
whether or not any gadgetry or even numerical measurement
are involved, counts as technology in this sense.

A 'theory' is a coherent body of (justified or
hypothesised) primary knowledge, together with its
associated secondary knowledge (if any exists). One
exemplar of a theory is Newtonian mechanics.

The conventional dichotomy between 'science' and 'social (or behavioural) science' is not observed, in keeping with the view that behaviourism is not in principle different from physical sciences such as Newtonain mechanics.   That the dichotomy is usually founded on a lack of familiarity with physical sciences was indicated by Popper (1966:292n44(2)):

> "And it turns out that those who believe that intuitive understanding is a method peculiar to sciences of 'human behaviour' hold such views mainly because they cannot imagine that a mathematician or a physicist could become so well acquainted with his object that he could 'get the feel of it', in the way in which a sociologist 'gets the feel' of human behaviour".

The positions labelled 'Aristotelian' and 'Galilean' may not conform in all respects to the views of Aristotle and Galileo respectively.   The term 'Aristotelian' is used follwing Revusky (1974:693); the term 'Galilean' is used (in place of Revusky's 'Platonic') following Cardwell (1972:36).

In view of the diverse topics treated and the volume of the relevant literature, a comprehensive literature review would be unwieldy.   As each topic is raised some of the literature relevant to that topic is reviewed and other relevant items are noted without comment.