The Irish Journal of Education, 1988, *xxii*, 2, pp 66-90

TEACHING AND THE LIMITS OF TECHNIQUE: AN ANALYSIS OF THE BEHAVIOURAL-OBJECTIVES MODEL

Joseph Dunne
St Patrick's College Dublin

This paper analyses the operative assumptions of the behavioural objectives model and questions its claims to provide effective direction for the practice of teaching The model s attempt to create a technical language as a context free interpretation proof medium for analysing designing and replicating teaching activity is outlined It is argued that despite its apparent sophistication the model offers little that can inform the judgments and decisions of teachers The poverty of its implicit conception of the texture of the teaching engagement and particularly of the teacher pupil relationship is demonstrated Its weakness is connected with its adherence to instrumentalism a form of rationality which is analysed and shown to be uncongenial to a domain of practice such as teaching Claims that the model is value neutral are contested and some of its latent value commitments are exposed Finally the context for a fuller philosophical interpretation and critique of the behavioural objectives approach is summarily indicated

I take it that one of the most constructive tasks for a philosopher, in the field of education, is critical analysis of non-philosophical work in the field – of theories, viewpoints, or movements that claim to illuminate or re-orientate educational practice If the philosopher is to contribute to the development of education – or rather if others involved in the field are to feel the value or force of this contribution – such second-order work is unavoidable This, at any rate, is how things appear from the vantage-point of one who works as a philosopher of education, not in a philosophy department, but in the education department of a college preparing students to become teachers

Accordingly, the purpose of this paper will be to examine a model of teaching which has occupied a central place in the theory of curriculum, of instruction, and of evaluation since the 1950s This is the behavioural-objectives model, which tries to constitute teaching as an effective technology based on i) a systematic analysis of the behavioural outcomes intended by the teacher or curriculum developer, ii) a strict designing of instructional strategies to achieve

these outcomes, and iii) accurate evaluative or diagnostic procedures to determine the effectiveness of these strategies (in other words, to measure discrepancies between the actual outcomes of instruction and the pre-specified objectives), and thus to provide a basis for redirecting future instruction

A clear, precise, and explicit pre-formulation of objectives is, in this view, the primary requirement for effective teaching, and everything else in the teaching activity is to be governed by it Objectives state the intended outcomes of teaching purely as pupil learning, without reference to teacher activity, for teaching is conceived as a transitive activity, the effectiveness of which is to be judged solely by its measured effects on those whom it seeks to change – i e , the pupils Moreover, these pre-formulated objectives must indicate not areas of content or subject-matter, but rather observable, and preferably measureable, behaviour that pupils will be able to perform in relation to different areas of content – behaviour that must be precisely stated in advance so that afterwards unequivocal judgments can be made as to whether it has occurred, that is, as to whether the teacher has been successful (where 'to be successful' means 'to achieve one's objectives')

The foremost exponents of the behavioural-objectives model are American, though their ideas have been widely exported abroad, and educationalists on this side of the Atlantic have not, indeed, been notably protectionist in relation to them The antecedents of these ideas go back to the beginning of the century and to the attempts that were made then to forge a new science of education that would replace the mixture of rhetoric, traditional lore, and practical know-how that had constituted the old pedagogy More proximately, the seminal work of the contemporary movement is generally regarded as Ralph Tyler's (19) *Basic principles of curriculum and instruction* Another volume that was eventually to become very influential – though, like Tyler's book, not immediately – was the *Taxonomy of educational objectives The cognitive domain*, edited by Benjamin Bloom (2) A companion volume to this, the *Taxonomy of educational objectives The affective domain* (11), was published in 1964, and from about that time onwards, what had been a relatively insignificant emphasis within the educational establishment began to harden into a coherent movement with a reforming – not to say crusading – purpose One of the most prolific authors of the movement, W James Popham (16), had this to say

> Until the last few decades, educators have been approaching the task of describing educational objectives with the hand-axe mentality It should not

> be surprising that the overall quality of instruction has been almost as primitive as that practised by those Aboriginal tool-makers American educators have generally engaged in the same level of discourse regarding the specification of educational goals that one might derive from the grunts of a Neanderthal We are at the brink of a new era regarding the explication of instructional goals, an era which promises to yield fantastic improvements in the quality of instruction One can only sympathise with the thousands of learners who had to obtain an education from an instructional system built on a muddle-minded conception of educational goals (pp 32-33)

I shall analyse a number of the most important texts of Popham and some of the other authors who, largely under the auspices of the American Educational Research Association, have come together to explicate and promote this vision of teaching These authors share a common set of assumptions which underlies all their work They are alike, too, in that none of them is careful to reflect on, or make explicit, what these assumptions are Rather, their work is in the direction of greater refinement of detail and greater technical sophistication But the basic model that has provided the framework for this accretion of detail has itself remained stable It has not been subjected to any major scrutiny or re-evaluation by the authors of the school The reason for this is that it contains a set of intuitions about teaching with which they readily and unreflectively concur Its rationale seems obviously logical and in no need of justification On the contrary, it provides a basis for criticizing other approaches that lack its clarity and consistency Hence, the only task of these authors is to extend the range and subtlety of this logic and, indeed, to develop it as a framework through which all of teaching can be comprehensively rationalized

In this paper, I shall unravel the network of assumptions and intuitions that are embedded in this conception of teaching and make explicit the logic or form of rationality that governs it I shall do this through an analysis of a representative range of texts, from which I shall quote many significant passages The frequency of these quotations may have the benefit of giving someone who is not familiar with this literature some sense of its tone and characteristic idiom The quotations, in any case, are unavoidable if I am to present my interpretation as one that emerges from a reading of these texts and which can be reconstructed inductively from them, and not simply as an abstract model which is artificially thrust upon this view of teaching in order to make some kind of 'philosophical' sense of it My purpose in the paper, however, will be more than interpretative, I shall also raise the critical question of the adequacy of these assumptions as a

basis for conceptualizing the nature of teaching And in the concluding section, I shall try to locate my critique within the context of contemporary philosophy, pointing out, in summary fashion, one important strand of current philosophizing whose resources might be used to amplify my critique and to make it more systematic

VERIFICATION CONTEXT FREE LANGUAGE, AND THE IDEAL OF REPLICATION

The most obvious and avowed feature of the behavioural-objectives position, from which we can begin our analysis, is its operationalism Objectives for teaching must be operationalized, i e , formulated in terms that indicate not inaccessible inner acts or states but rather observable 'operations', 'behaviour' or 'performances' – all used interchangeably in the literature – that the students will be expected to display Operationalism in this context, it may be noted, is to be distinguished from behaviourism, for it involves not so much a metaphysical denial of the reality of inner events as a methodological commitment to translate any statements containing reference to them into operational statements This

> involves translating verbs that are open to inference into action verbs that entail direct observation Thus, while 'understands', 'appreciates', 'learns' and the like are perfectly good words that can be used in an initial, general statement of an objective, they should be further clarified by the use of active or operational verbs that are not open to mis-interpretation The following are examples of such point-at-able verbs to state, to recognise, to distinguish (true statements from false), to match (dates with battles) (3, pp 33-34)

Although this operationalism is to be distinguished from behaviourism, it still carries a number of strong implications in the practical context of teaching It implies that all teaching objectives must either be translated into operational terms or else dropped altogether from a teacher's prospectus This seems to imply that all valuable objectives can be so translated whatever, if anything, has to be dropped is educational chaff And this implication, which I have just expressed in value terms, is only a version of the more general claim that all cognitive processes can be adequately and exhaustively resolved into behavioural performances There is the further implication, or assumption, that knowledge can be analysed into a definite number of component elements This is the 'principle of decomposition' or of 'analysis' which, when applied to teaching, assumes that a sequence of atomistic objectives will aggregate over time into intellectual virtues such as the habit of inquiry, rigour, judgment, and

style, or else that these terms have no reference and so the teacher has nothing to strive for except the extended list of discrete behaviours

While these assumptions derive from the term 'behavioural' and are all, I believe, problematic, I do not want to enter the philosophical battle-grounds on which controversies surrounding them have already been played out I shall concentrate, rather, on another assumption which is related to operationalism, and thus to 'behavioural', but stems more directly from the second term, *viz* 'objectives' This other assumption is what might be called practical verificationism – the stipulation that a well-formed statement of objectives must contain an indication of the evidence that would be required to verify whether or not it has been fulfilled This stipulation may seem less open to criticism – as being simply reasonable – than operationalism and, in fact, it underlies, and seems to make plausible, the adoption of operationalism To question its tenability, then, as I hope to do, is to essay a quite radical critique of the behavioural-objectives position

Verificationsm underlies the adoption of operationalism because it lays down a requirement for evidence, and operationalism – by stipulating observable operations (or behaviour) rather than unobservable mental or inner states – offers a procedure which ensures that the required evidence will always be available The pressure for such verification seems to stem from the concept of an objective, it seems to be a necessary feature of an objective that one should always have a means of knowing exactly whether, or to what extent, it has been achieved Thus, the really significant point about operationally-stated objectives is not just that they indicate the operations that the student is to perform, if the objective is to be judged as fulfilled, their real point is that they indicate the operations that must be carried out by anyone who would verify whether an objective has been achieved As Gagne and Briggs (8) put it 'When defined in this precise way, definitions of objectives communicate to another person "operations" he must carry out in order to observe the achievement of the objective Precisely described objectives are those which make observations of another person possible' (p 119) Or, in the words of Bloom *et al* (3) 'The overt behaviour or the procedure for observing it must be described so that all who read the description can agree whether or not a given student's performance or product testifies to the presence of the objective in question' (p 33) What is most significant here is the stress not on verification *per se*, but rather on that form of it which can be carried out, unencumbered, by the detached observer This notion of the detached observer, introduced by Gagne and Briggs with the phrase

'another person', and by 'all who read the description' in Bloom *et al* (3) represents the most inwardly 'scientific' aspect of the behavioural-objectives movement I shall analyse a number of significant issues bound up with it

First of all, 'communicability' becomes highly important, and very stringent standards of communication are introduced It is no longer enough that a teacher, as framer of objectives, should understand what she means by a particular formulation, or that this formulation should be relied on to communicate her objectives to another teacher who is familiar with the same situation Rather, the teacher – as framer of objectives – ought, it seems, to envisage herself as being in virtual communication with a detached observer, who can be presumed to share none of her context or situation Hence the objectives-statement – in specifying for such a potential observer what he or she would need to do to inform himself or herself whether or not the objective has been achieved – must exclude any terms which are determined by a particular context or are in any way open to diverse interpretations 'When an objective has been operationalized in terms of behaviours, so that readers can reliably agree on whether the student's performance or product fulfills the objective, then the objective is sufficiently specific' (3, p 36) And Bloom had already written that 'the major purpose in constructing a Taxonomy of Educational Objectives is to facilitate communication' and, of course, for him and his associates the paradigm of communication is unequivocally 'scientific' He introduces his *Taxonomy* by invoking scientific precedent 'Biologists have found their taxonomy markedly helpful as a means of ensuring accuracy of communication about their science' (2, p 1), and the classifications of educationalists, it would seem, should be no less precise than those of biologists

The ideal of this type of precision is systematically to exclude ambiguity, so that the communication based on it can occur without any problems of interpretation And so, to quote Mager (12), 'an objective that communicates best will be one that describes the student's intended performance clearly enough to preclude misinterpretation' (p 21) Or as Gagne and Briggs (8) put it 'Carefully defined objectives, however, should have only a single meaning and the same meaning for all literate persons Accordingly, they must in a sense have a technical meaning, conveying precise information about human performances' (p 76) The purpose of this technical language is not only to communicate unambiguously, but to make the realities described completely explicit. There can remain no trace of what has been called the 'irretrievably tacit' (see 14, 15) What must be overcome, likewise, is any boundedness by particular contexts –

any relativizing or qualifying to be done by users of this language in deference to a particular context in which they use it All such differences must be expressed within this language itself, or suppressed altogether Thus can all users of the language truly become detached observers, and thus can all misinterpretation be avoided – precisely by precluding the need for interpretation itself A technical language needs no hermeneutics The comfortable power conferred by such an absence of complexity is, perhaps, best suggested by Mager (12), never the most subtle of our authors 'But remember the iron-clad rule of objective writing if there is disagreement about the meaning don't argue about it, fix it' (p 68)

Now, if such a language can be found for teaching, then the most interesting consequence is that any instance of a teaching episode by a teacher (T1) can be observed by another person and reconstructed verbally by her or him in such an exhaustive manner that if this verbal reconstruction is given to another teacher (T2) then, by reference to it alone, the latter should be able to replicate the activity of T1 without her or his having seen the latter's activity or having spoken to her or him at all In the case of objectives, what this means is that a particular set of objectives is not conceived as feeding immediately, directly, and irretrievably into a particular instance of teaching activity Rather, it is to be mediated through this technical language, which ensures unambiguous communication and thus the possibility of replicating any number of identical instances of teaching

Such an abstract algebra of teaching is not, in fact, overtly suggested by any of our authors, but it seems to represent the ideal which, in principle, they are trying to approximate And indeed, in one of their discussions of operationalism it is stated explicitly as the psychologist's most reliable approach to 'intelligence'

> Thus, whenever the psychologist uses the word 'intelligence' in his work, the reader has been appraised of the extent and limited meaning that can properly be attached to the construct Further, anyone wishing to replicate the psychologist's findings can exactly reproduce the construct in other samples, because the method for measuring it has been spelled out and can be followed like a recipe in a cook-book (3, p 24)

It is clear that this is meant to serve as a model for the teacher's approach in conceiving all cognitive processes that are to be framed as objectives, nor is any modification of it suggested for the latter task

That such an exact technical language might be available or constructable for educational discourse is, to say the least, highly questionable What I particularly want to question, however, is the extent of the ambitions which are entertained for such a language For the language is conceived not merely as a language for analysis, but also, and especially, for structuring and guiding the actual activity of teaching itself This is a very large claim For even if such a language were available for analysing activity *post factum*, it does not follow that it can be used in an architectonic manner to actually design and construct the activity *in actu* But, for the behavioural-objectives movement, it is intended to serve both of these functions

Teaching activity, in the behavioural-objectives scheme, is located squarely between two other processes the forming of objectives, which precedes it, and evaluation, which occurs after it (this had been the core of Tyler's celebrated 'rationale') Now, the essential claim implicit in the model is that the basic problems of teaching can be clarified by these two adjoining analytic activities that the latter offer, as it were, a secure *terra firma*, on either side of the flux of teaching itself, on which one can anticipate, plan, and control the moves one will make or, in the case of evaluation, discover how one has fared in one's previous controlled moves and thereby have further data to inform one's new plans

THE UNBRIDGED GAP BETWEEN ANALYSIS AND ACTION

Given this, the fundamental question to put to the behavioural-objectives position is what kinds of inferences can be made from the results achieved in these pre- and post-analyses for the conduct of teaching itself? I want to examine carefully the behavioural-objectives texts to see what answer they provide But before doing so, let me sharpen the question itself with the help of a few pointed remarks of philosophers First, there is Kierkegaard's famous remark that while life can be analyzed backwards, it must be lived forward Or consider Wittgenstein's (20) remark about the disjunction between the logical analysis of language and language-in-use

> The proposition and the word logic deals with are supposed to be something pure and clear-cut and yet, the more narrowly we examine actual language the sharper becomes the conflict between it and our requirement. For the crystalline purity of logic was, of course, not a result of investigation, it was a requirement. The conflict becomes intolerable, the requirement is now in danger of becoming empty – we have got onto slippery ice where there is no friction and so, in a sense, the conditions are ideal, but also, just because of

> that, we are unable to walk We want to walk, so we need friction Back to the rough ground!' (pp 105-107)

Or there is Collingwood's (4) remark about the relationship between the grammatical analysis of language and language as actually spoken

> We think that the grammarian, when he takes a discourse and divides it into parts, is finding out the truth about it and that, when he lays down rules for the relations between these parts, he is telling us how people's minds work when they speak This is very far from being truth A grammarian is not a kind of scientist studying the actual structure of language, he is a kind of butcher, converting it from organic tissue into marketable and edible joints Language – as it lives and grows – no more consists of verbs, nouns and so forth than animals – as they live and grow – consist of forehands, gammons, rump-steaks and other joints (p 257)

Or again, we find in Newman's (13) *Grammar of assent* a 'distinction between ratiocination as the exercise of a living faculty in the individual intellect and mere skill in argumentative science', where the former 'is more or less implicit and without the direct and full advertence of the mind exercising it' and involves 'processes of reasoning [which] are in fact too multiform, subtle, omnigenous, too implicit, to allow of being measured by rule [since] they are after all personal' (pp 240, 233)

Returning now to the behavioural-objectives model, let us see what answer may be available to our question The most obvious advantage of objectives for the teacher would seem to be that they provide a definite idea of where one is going and a reliable compass in getting there It is true that a precise objective does, in a sense, keep the teacher 'on target' – Gagne's phrase – but it seems to me that if a teacher asks the more fundamental question, 'how do I know if the targets I have set are appropriate or worthwhile?' then it is not obvious what help this approach can provide

To pursue this question, I shall analyse an example from Popham (17) 'at least 90% of the class will answer 80% or more of the multiplication problems correctly' With objectives as precise as this, Popham maintains, a teacher can 'pit his instructional effectiveness against these standards' (p 15) My question is how does one decide, in the first place, on this standard and not on some other one? How is one to avoid arbitrariness in the setting of standards? Popham (17) writes 'We might assert that a fifty per cent proficiency level is demanded or we might set an eighty per cent proficiency level or even a one hundred per cent level In any event, we must indicate exactly how well an individual student must

perform in order for his performance to be considered acceptable' (p 16) One might infer from this that the important thing is to specify some number and that the actual number chosen is inconsequential Popham can hardly intend such arbitrariness, and yet the only evidence he gives of even recognising that there is a problem here is contained in the following 'It is extremely difficult, particularly for the beginning teacher, to establish precisely how well students should do on examinations or other behavioural measures However, in time, it is usually possible to reach a more or less defensible decision regarding what minimum-proficiency students should display on assessment devices' (17, p 15) There is not a word about anything that this model can contribute to the making of such 'more or less defensible' decisions

Popham does seem to think, however, that once decisions are made and implemented, then an evaluation of the outcomes of these decisions can provide feedback that will contribute to the making of subsequent decisions of this kind Evaluation will provide what seems to have been missing in the first instance, *viz* empirical evidence 'On the basis of an evaluation made of the learner's post-instructional behaviour, the teacher is able to reconsider the quality of his curricular decisions as well as his instructional decisions and to correct deficiencies in these decisions only when empirical evidence shows that decisions are sound does the teacher reach some degree of certainty regarding these decisions' (17, p 12) The problem about this, however, is that whatever empirical evidence is thrown up by an evaluation about the 'learner's post-instructional behaviour' will have to be interpreted for its significance with respect to the act of instruction, and guidance for such an interpretation is not forthcoming from this evidence itself If the initial standards set for instruction were arbitrary, there is no way that subsequent empirical evidence, on its own, can exorcise this arbitrariness from them at a later stage

Let me illustrate my point by reference to Popham's example Suppose the result of the evaluation is that only ten per cent of the class answer eighty per cent of the multiplication problems correctly How is this to be interpreted? How is its significance for the teacher's activity to be judged? It could mean that the objective was too difficult for the class and that it should now be scaled down Or it could mean that it was, in fact, an appropriate goal for the class, in which case instruction may have been incompetent, if so, we still have to find out in what respects Or perhaps, for a complex set of reasons maybe unknown to the teacher, members of the class were distracted on this particular day from their normal level of attention and achievement Any number of factors may have

intervened to produce the results that the evaluation gave back as empirical evidence Accordingly, the teacher has to make a complex set of judgments, based on much more than the evidence of the learner's post-instructional behaviours, before he or she can rationally revise his or her decisions It is simply not the case that 'empirical evidence' of the kind provided by the approved form of evaluation 'shows that decisions are sound' There is huge over-simplification going on here and it is only thinly disguised by the numerical exactitude in which it decks itself out It is hard to resist quoting Wittgenstein's (20) remark at the end of *Philosophical investigations* 'For in psychology there are experimental methods and conceptual confusion The existence of the experimental methods makes us think we have the means of solving the problems which trouble us, though problems and method pass one another by' (p 232e)

Apart from the general 'targeting' value claimed for objectives, there is the more specific guidance that is to be derived from decomposing objectives into their simpler sub-elements and arranging these into a sequence This is the procedure of 'task- analysis' which 'takes the "macro" performance and breaks it down into "micro" behavioural components which are the building blocks of instruction' (3, p 26) In doing this, 'prescribing the most efficient set of hierarchical steps to be learned then becomes essential' (p 26) There are, however, formidable practical difficulties in carrying out these detailed task analyses – a fact which Popham (17), indeed, acknowledges instructional psychologists who have worked with this problem have developed exotic laboratory procedures for approaching the task but, for most classroom teachers, they have relatively moderate advice to offer' (p 31)

Apart from questions about the practicability of this procedure – and in this overall approach a really exhaustive analysis, if it were feasible, clearly would be the ideal – I may point out that it remains in any case a very formal exercise In other words, it is a 'logical' analysis of knowledge content It does not take any account of the contingencies of teaching situations in which the 'content' has to be taught It is an analysis conducted entirely on ice and has nothing to say about how it is to be translated to the rough ground of the classroom This is not to deny that it might be helpful to a teacher in clarifying certain problems of teaching But on its own, or even in conjunction with the empirical evidence available from evaluation, it would leave answers to all the teachers' questions of the form 'What shall I do?' massively under-determined

THE NEGLECTED DIMENSION RELATIONSHIP AND PROCESS

One asks, therefore what else does the objectives model offer to the practising teacher? When one examines what is said in these texts, one sometimes finds common-sense advice that is quite unexceptionable, but which is not derived from, or in any clear way dependent on, formulated objectives But I would like to examine 'four learning principles' suggested by Popham, which are essentially connected to a specification of objectives These are *revelation of objectives* ('informing the students of the goals of the instructional sequence'), *perceived purpose* (promoting 'the student's perception of the purpose or value of the learning activity or "a set" or pre-disposition which increases the student's inclination to learn'), *appropriate practice* ('the student must have an opportunity to practice the kind of behaviour implied by the objective'), and *knowledge of results* ('the student should be given an indication of whether his responses are correct as quickly as possible') (17, pp 26-30) What is striking about these principles is the degree to which they presuppose that at all stages of the teaching-learning process, the teacher can communicate with the pupil overtly and directly about a clearly objectified content of knowledge, apparently unhampered by the fact that the relationship between him or her and this content must *per definitionem* be qualitatively different from the pupils' relationship to it In elaborating on the revelation of objectives principle, for instance, Popham (17) writes 'With very young learners it would be better perhaps to give examples of the kind of things they will acquire at the end of an instructional period, that is, to show them the kind of words they will be able to read or indicate the kinds of arithmetic problems they will be able to solve' (p 26) But is it not often the case that a pedagogic situation is constituted as such precisely by the fact that such showing or indicating are, in the first instance, not possible because the student still has to develop to the state where such a showing or indicating would make sense to him or her? Or again, in elaborating on the second principle, Popham (17) writes

> There are several methods of promoting the student's perception of the value of the subject matter The teacher can do this by a rather straightforward explanation of why the subject matter will be important to them This is referred to as promoting perceived purpose through deduction The teacher might also wish the students themselves to infer why the objectives are important This is referred to as promoting perceived purpose through induction The teacher can also hold out the promise of good grades, or some other rewards, and thus promote perceived purpose through the use of extrinsic rewards The teacher might also merely urge the students to 'study

> diligently' or to 'work hard', thereby promoting perceived purpose through exhortation Whether it is through deduction, induction, extrinsic rewards, or exhortation – or possibly a combination of these – the teacher should attempt to increase the student's motivation to achieve the instructional objectives (pp 27-28)

I find it difficult to know how to comment on this passage, which I have quoted at some length, because of its being typical of Popham's writing, and a revealing illustration of the triteness of his whole approach It seems to be a basic assumption that a problem becomes tractable if it is made explicit, and that everything can be made explicit, not just, as heretofore, for the purpose of analysis by the teacher herself, but even, as in this case, for communication between her and the pupil Completely absent from this view of the pedagogic relationship is any notion of depth or of dynamic tension There is no sense that there might be at work in this situation something that cannot be made the object of talk, but must, rather, be lived through – a kind of sub-soil which nourishes the fruits of explicit purposes but which is not itself a fruit Popham seems to have no concept of the teacher-pupil relationship as a reality Rather than any bonds uniting in an 'internal' relationship – that is, one in which the two sides are in some way constituted by the relationship itself – the dominant image seems to be of two separate entities juxtaposed to each other and relating externally to an objectified *tertium quid*, in this case the 'content' of instruction

Indeed, so external is the teacher-pupil relationship imagined to be that there is complete agnosticism about the possibility of making any connection between teacher activities and processes that might as a consequence be going on in the pupil There is no suspicion that, to change images, the teacher-pupil relationship might set up its own field of psychic gravitation, with its own forces of attraction and repulsion that must affect, one way or another, whatever 'content' looms up within it Popham gives no hint that the effectiveness of his teacher's words – 'study diligently' or 'work hard' – is determined not just by their overt meaning but by the field of emotion into which, as a performative utterance, they are necessarily inserted There is no appreciation of feelings as constitutive of the pedagogic relationship and as determinative of what can transpire within it On the contrary, feelings are allowed to exist only as the content of objectives that the teacher, with full explicitness, can plan and control Listing the advantages of 'precise objectives', Popham (17) writes 'promoting interest or positive learner-affect towards the subject matter even these types of goals can be operationalized and measured ' Having been thus operationalized and

formulated into objectives, they can then, according to Popham's first principle, be 'revealed' to the student, who would presumably be told something like this 'At the end of the lesson your eyes will be brighter and your smile will be broader' And, of course, if the other three principles were called into play, they might be told to 'work hard' at smiling, be given appropriate practice at smiling, and be given an indication of whether they have been smiling correctly

Anyone supposing that I have just been indulging in caricature may be given pause by this solemn extract from Mager (12) 'suppose, for example, one objective for a bank teller says – "be able to smile visibly when serving a customer" That sounds rather trivial when one reads the words But suppose you know for a fact that unsmiling tellers lose customers? There is nothing trivial about going bankrupt – or about losing a job' (p 98)

I have been suggesting that there is something very linear and static about the concept of the pedagogic relationship that underlies Popham's four principles and that this has to do with the fact that they are derived, with the advantage of unearned hindsight, as it were, from pre-stated terminal objectives And, in making this point, I have adverted to a whole dimension which is missing from this picture of teaching If we examine the case further, however, we discover that this dimension is not just missing, it is, rather, deliberately excluded Judgments about the effectiveness of instruction are to take no account of the medium in which it is conducted As Popham (16) puts it 'Our assessment of teaching competence, therefore, should be based on the instructor's ability to achieve desired ends, and should not relate at all to his use of particular means' (p 44) Elsewhere the same point is made by Sullivan (18) Commenting adversely on the fact that some methods or procedures become cherished in themselves, irrespective of any effort to verify with hard evidence their effects on students, he writes 'The popularity of these programmes and programme components is often based more upon some sort of intrinsic appeal or other elusive factors than upon empirical evidence of their effectiveness' (p 66) What these passages clearly imply is that instruction is not to be given any consideration as a process, except insofar as it is strictly determined by the objectives that have been set for it These objectives, it seems, must govern it *in toto*, their effective achievement is the sole criterion and court of appeal for all instructional decisions

THE LOGIC OF INSTRUMENTALISM

At this point it is clear that these authors do not have a conception of teaching as a specific mode of activity which involves a specific mode of intentionality and is amenable only to a specific type of evaluation Rather, their primary commitment is to a conception of effectiveness as something that is determined by objectives-guided evaluation, and they then adopt a conception of teaching which is congruent with this Their conception of effectiveness involves a whole logic of action and since this logic now comes to determine the nature of teaching it will be worthwhile to make it explicit I shall first outline what might be called its 'pure form', and then ask to what extent the behavioural-objectives view of teaching succeeds in realizing this form Finally, I shall point out what seem to me to be the severe limitations of this logic as a framework for understanding teaching

This logic is based on a clear separation of ends and means, and a complete subordination of the latter to the former It may be called an instrumentalist logic in that, once ends have been established, everything else that enters into the system is a means, or is instrumental to these ends A means is always a *mere* means, in other words, within this system it is deprived of any other purposiveness it may have and is strictly subservient to the ends of the system itself And, indeed, it is inappropriate to speak of it as having any inherent finality towards these ends, rather, it is externally manipulated towards the achievement of ends which are quite separate from it Moreover, as a means, it can always be conceived as neutral If value judgments are to be made – and such judgments can be made only by transcending the logic of this system – then they must be made about ends, means are merely instrumental to these Rather than being answerable to questions of value – which go outside the system – means are answerable to questions of efficiency, which is an intra-systemic concern having to do with the achievement of ends with the least (or most economic) mobilization of means The fact that there is no intrinsic connection between ends and any particular means implies that, in principle, any means can be replaced by any other, efficiency being the sole criterion of such substitutions

Insofar as the system exists in the real world, of course, efficiency is not entirely an intra-systemic affair The primary end of every system is to survive, and this can be done only by taking account of the usual scarcity of time and resources available from the supporting environment The double reference of the concept of efficiency to a formal subordination of means to ends within the

system on the one hand and, on the other hand, to the more contingent, less formal, requirement of retaining the greatest possible autonomy of the system with respect to the 'external' environment (which, of course, by definition is not subject to the logic of the system itself) leads to an interesting tendency This tendency becomes manifest when self-interpretations of the system are offered when, in other words, *theorists* not only apply the system but write reflexively as, almost inevitably, they must, about it For, characteristically, they prefer to emphasise the 'formal' logic of the system and, in doing so, they can easily underestimate the influence actually exerted by external factors on the moves made within the system When this happens, the real 'interest' of these factors is disguised or concealed The system has then taken on, in this respect, an 'ideological' role

The 'end-means' system is most crucially related to its environment through receiving from the latter the ends that formally constitute it Given certain ends, such a system can come into operation, but it does not and cannot generate its own ends Nor, for the same reason, can it criticize its own ends, for, being founded on them, it cannot, by definition, contain any elements contrary to them Since both the generation and the validation of such a system can derive only from a source external to itself, it is, for this reason, always provisional and contingent But this contingency and provisionality can never be reflected within the system itself, within the system, its own logic is absolute

While the ends derive from a source external to the system itself and are thus substantially independent of it, nonetheless, if they are to function as ends within it – if, that is, they are to be definite enough to specify a set of means which can be designed to accomplish them – they may have to undergo a process of modification, and the form of this modification will be dictated by systemic requirements Indeed, this operation of 'priming' ends or 'translating' them from the 'crude' state in which they may be presented by the external environment into the more refined state in which they can be systematically correlated with means may be thought of as the first essential step in constructing this system A nice problem that can derive from it is whether the pre-system ends are faithfully reflected in the systematic version, whether, in other words, the process of translation has not also been a process of distortion This problem may be very awkward because of the different perspectives, either from within or without the system, from which it may be answered

What follows from all this, quite clearly, is a radical separation of two types of questions one about the relations between ends and means, which I shall call 'technical' questions, and the other, about ends themselves, which I shall call 'critical' questions This radical separation becomes most apparent in the way the whole discourse of the system excludes critical questions about means The only criticism that can arise is criticism of ends, which therefore calls the whole system into question, and which, precisely for this reason, the system itself is not obliged to answer There can be no critical questions about means And with respect to technical questions about the deployment of means, there will be an effort to construct a clear-cut calculus which can be uniformly applied to yield conclusive decisions without the need for judgment or discrimination on anyone's part There will be no room for decisions which, to adopt an image of Newman, are based on different strands of evidence, coming from different directions, none of which stretches right through the nexus but all of which, taken together in a particular and perhaps unique assemblage, constitute a strong evidential nexus It is the systematic exclusion of such decisions and of the corresponding need for judgment that is, perhaps, the most inward ambition of this instrumental or technical logic

Finally, I may point out that this logic is a logic of *action* and that its most appropriate application is in those fields where action is intended to effect a product which is then completely detachable from the action itself The paradigm case of this is manufacturing industry For here there is a clearcut distinction between production and consumption which nicely coincides with the disjunction between means and ends In effect, the producer is supplying to the market those products for which the consumer is willing to pay, but it is no part of the latter's concern, *qua* consumer, to enquire about how these goods have been produced There is a specialization of roles here, institutionalized in social life, which supports the separation of outcomes and process, of ends and means

THE BEHAVIOURAL OBJECTIVES MODEL AS AN EXEMPLARY CASE OF INTRUMENTALISM

Having exposed the basic structure of this instrumentalist logic and the most favoured context for its application, I shall now ask how well the behavioural-objectives model may be interpreted as an attempt to apply this logic in the field of education I may begin by taking up the two passages – one from Popham (16) and the other from Sullivan (18) – which were the immediate point of

departure for my 'logical' excursus 'Our assessment of teaching competence should be based, therefore, on the instructor's ability to achieve desired ends and should not relate at all to particular means' and 'the popularity of these programme components is often based on some kind of intrinsic appeal or other elusive factors, rather than upon empirical evidence of their effectiveness' Clearly, what is being said in both of these extracts is that a means has no inherent purposiveness, which would make it 'particular' and therefore 'elusive', and no justification, therefore, apart from the extrinsic one of its being effective in attaining ends, which are products and, as such, quite separate from whatever means may be used to attain them An example of this language of production is to be found in Bloom *et al* (3)

> The teacher has in mind a model of the outcomes of instruction He may even have worked it out to the point that he can list and check off an inventory of the characteristics of the end product He also tries to help the student become aware of the final model and to strive to attain it as the goal of learning (p 13)

In a similar vein, the same authors speak of the role of evaluation in education as 'a system of quality control in which it may be determined at each stage of the teaching-learning process whether the process is effective or not and if not, what changes must be made to ensure its effectiveness before it is too late' (p 8)

I have been saying that these authors make a clear-cut separation of ends and means, and deny any intrinsic purpose to means on the grounds that verified effectiveness in achieving given ends is the only relevant basis for selecting means (or 'methods') No method then, can, *a priori*, be either excluded or preferred to any other method What seems strange, however, is that, having thus 'de-mystified' all methods and made them equally answerable to a uniform standard, the authors do not go on to draw what might seem the obvious consequence of this They do not attempt to establish empirically significant correlations between certain ends and certain methods and, in the absence of such established correlations, systematization is far from complete The attitude to methods, indeed, remains pluralistic It would seem that this instructional system will offer no evidence to a teacher to support the selection of any one set of methods rather than any other And so, it is always left to the teacher to find situation-based reasons for the selection of methods I am very far from objecting to this, of course, but I think it is fair to ask of the behavioural-objectives proponents whether this indeterminacy, just at the point of maximal impact for a practising teacher, is not a miscarriage of the intention that lay behind all the

precision and sophistication of their pre-formulated objectives and evaluation procedures

I move now to something that does follow from the ends-means separation A very practical consequence for Popham (17) is that the teacher might best confine his or her attention to means, and not become involved at all with problems of ends If the preparation of behavioural objectives is considered to be too time-consuming a task,

> There are other courses of action available in deciding upon instructional goals For instance, such agencies as the Instructional Objectives Exchange maintain large 'banks' of instructional objectives, from which the teacher may select objectives that are appropriate to his own instructional situation By selecting objectives, rather than generating them himself, the teacher is relieved of the responsibility of preparing exhaustive – and exhausting – sets of instructional objectives, but he can still direct his instructional efforts towards measureable goals (p 14)

What is most revealing about this passage is the way it gives clear priority to technical over critical considerations It is desirable to relieve the teacher of the responsibility of making choices, so that she or he can direct her or his attention to measurable goals And, in this technical-bureaucratic view, knowledge is an alienated, already constituted product which one gets from some accredited agency, and is not something that persons discover or construct in community together (And, of course, if the teacher is so domesticated, how much more is the pupil who, at a further remove again, is on the receiving end of these deposits?) In this new dispensation of Popham, the teacher's task has been radically fragmented No longer an experienced person in her or his own domain, she or he now functions within a context that is determined by outside experts She or he has become a manipulator of means, or a technician – indeed, a sub-technician (the master-technician being the banker) Freire's (6) banking metaphor in *Pedagogy of the oppressed* is here perfectly exemplified

THE CLAIM TO NEUTRALITY COVERT PHILOSOPHICAL COMMITMENTS

I shall bring this paper to a close by following up one consequence of the conceptual distinction between ends and means, and of the methodological separation of critical and technical discourses that is based on it This separation is carried to the point where proponents of the behavioural-objectives approach categorically exclude all considerations of the justification of ends from their work and limit themselves solely to technical problems of formulating ends,

indicating general strategies for achieving them, and measuring success in doing so This refusal to become involved with problems about the validation of ends then allows them to interpret their work as being value-neutral This interpretation is quite explicit in the introduction to the *Taxonomy* 'It was further agreed that in constructing the Taxonomy every effort should be made to avoid value judgements about objectives and behaviours Neutrality, with respect to educational principles and philosophy, ought to be achieved by constructing a system which, insofar as it was possible, would permit the inclusion of objectives from all educational orientations' (2, pp 6-7) And a similar claim is made by Popham (16) 'The only defensible kind of instructional model must be based on an assessment of whether or not the learner's behaviour is actually altered These are neutral instructional models, in the sense that they are not tied to the attainment of particular objectives The purpose of goal-referenced instructional models is to achieve more efficiently whatever goals have been selected' (p 38)

Let us examine this claim to neutrality Our authors seem to assume that they have devised a system which, in principle, is equally hospitable to all methods and objectives, all ends and means But the question arises as to whether this whole system, as an elaborate instrumentality, is not itself a method that predisposes the work of the teacher in a quite definite manner and, in fact, excludes reliance on some particular methods And, similarly, it can be asked whether the system can, in fact, accommodate indifferently all objectives, or whether it does not exclude objectives that have not already taken on a particular countenance

The fact that the system only permits ends that are student-behavioural outcomes and that these must, moreover, be stated precisely enough to allow accurate evaluation, entails that all objectives are essentially closed Thus, they circumscribe the degree of initiative that can be exercised by the student Here are some typical objectives from Mager (12)

> Be able to write a musical composition with a single tonal base, within four bars The composition must be at least sixteen bars long and must contain at least twenty-four notes You must apply at least three rules of good composition in the development of your score
>
> Describe at least three characteristics in which criterion-referenced instruction differs from conventional instruction

> Anticipate at least three commonly-held conceptions about C R I and offer suitable rebuttals, describe at least two benefits that might accrue to your specified audience from the use of C R I (p 84)

These objectives will certainly suggest a didactic style of teaching with very direct guidance by the teacher And they will certainly exclude any method that relies on improvisation or which allows the teacher to follow up suggestions from students, which may or may not lead to beneficial, though unanticipated results For this latter kind of method, in fact, implies a different kind of objective than that prescribed by the behavioural-objectives system one that has not been formally endorsed in advance, but is rather discovered within the teaching situation and pursued, even while its whole significance or value is not yet fully apparent, either to the teacher or to the student I am suggesting that the behavioural-objectives system does not just contain ends and means in such a way that the means are always at the service of the ends Rather, the whole end-means system itself can be looked at as one complex instrumentality or means And the question then is what is the end that it, as a total system, serves?

From the viewpoint of this question, which looks to the system as a whole, all the explicit and particular objectives which the system seems designed to achieve are themselves seen as instrumental to the achievement of some wider vision, which is not articulated within the system at all When Mager (12), for instance, writes, 'Objectives are useful tools in the design, implementation and evaluation of instruction' (p 19), he clearly implies that there is a basic view of instruction to which objectives themselves, and not just teaching methods or 'learning activities', are instrumental In a more general philosophical context, William Barrett (1) writes 'There is no such thing as a pure technique that isolates itself completely from the insight that decides what that technique is about and what it is for Technique has no meaning apart from some informing vision' (p 80) And, again 'Every technique is put to use for some end and this end is decided in the light of some philosophic outlook or other The technique cannot produce the philosophy that directs it' (p 105)

This brings me to the final question of the paper what is the insight, the informing vision, the philosophic outlook that guides the behavioural-objectives system? The elements of an answer to this question have, I hope, been building up throughout the paper Now I should like to indicate how the results of my analysis might be taken up into the more general concerns of contemporary philosophy and to suggest some critical categories that might be helpful for

articulating the historical project that is being carried forward, unwittingly perhaps, by the behavioural-objectives movement

The main question at issue is the relationship between knowledge and action, and how this relationship is to be construed in the case of that form of action we call teaching It will be remembered that for the Greeks this relationship was worked out mainly in the triple division of *episteme, techne,* and *phronesis Episteme* was theory or science concerning unchangeable things and therefore essentially unrelated to action, *techne* was productive knowledge or skill in reproducing the material conditions of life, and *phronesis* was the realm where deliberation, self-reflection and judgment led to good and appropriate action (or *praxis*) of a non-productive kind in the general conduct of life and affairs This classical constellation has been rudely shattered Modern theory or science is concerned to explain the world of nature and, particularly since the late 19th century, has linked up with productive knowledge so that the old *techai* have been supplanted by modern techniques, powerfully underpinned by science And, as this has happened, there has been the further tendency to assimilate the realm of *praxis* to this new, ambitious, and ever-expanding world of technique

Now, I would interpret the behavioural-objectives movement as being an exemplification within the field of education of this more pervasive, cultural, and historical phenomenon, what has been called 'the expansion of the rational form of science and technology to the proportions of life-form, to the historical totality of a life-world' (9, p 90) Accordingly, I would look to those movements in contemporary philosophy where the critique of technique has been under way, where critical reflection has attempted to understand the limits as well as the validity of technique and, in particular, has attempted to demonstrate the essential irreducibility of *praxis* to technique I mention very briefly the suggestiveness of Jurgen Habermas's work in this connection He tries to show how the empirical-analytical sciences produce technical recommendations that can lead to control of objective or objectified processes, but cannot furnish answers to practical questions 'From the outset, all practical questions which cannot be answered adequately by technical prescriptions but which, instead, also require a self-understanding within their concrete situation go beyond the cognitive interest invested in empirical science' (10, p 246) Practical questions are inevitably posed within a horizon of tradition, values, and norms, and entail interpretations and commitments that cannot be technicized And so, technique – if all valid grounds for decisive action are restricted to the objective necessities and imperatives it produces – takes on an *ideological* role it hides the prior

commitments about human interaction, about the distribution of power in society, about the participation of citizens in decision-making, that lie behind, and are supported by, its absolutization Habermas (9) makes the point that insofar as technical advances introduce new interpretations of human needs, these 'can be ratified only in the consciousness of the political actors themselves Experts cannot delegate to themselves this act of confirmation from those who have to account with their life histories for the new interpretations of social needs and for accepted means of mastering problematic situations' (p 75) This kind of stress on the consciousness of citizens as a centre of knowledge, reflection, and choice obviously poses a very formidable educational challenge I do not see how it could be met by an educational system that had itself succumbed to the kind of technicism that is inscribed in the behavioural-objectives system

Apart from Habermas's philosophy, which I accept is not without its difficulties, I would like to mention very briefly the more general critique of rationalism that has been going on in philosophy, especially the rehabilitation of Aristotle's notion of *phronesis* (perhaps most notably in Hans-Georg Gadamer's book, *Truth and method*), the emphasis on the experienced and reflective person, rather than the expert, the highlighting of the unavailability of any technique that one has at one's disposal for dealing with the abundance of meaning that may come to one through an encounter with a classic text, or with another person Work such as this should help to illuminate educational issues * Indeed, it would seem that contemporary education or, at any rate, that aspect of it that I have been analysing, is infinitely the poorer for being so much out of touch with such work and its informing vision

*I explore the philosophical work mentioned here in *Back to the rough ground Phronesis and techne in modern philosophy and in Aristotle* (5) The present paper which was presented to the Irish Philosophy Society in 1979 was the point of departure for this book which is intended to provide a philosophical context for a critique of technicist approaches not only in education but also in fields such as community development psychotherapy, and organization and management practices

REFERENCES

1 Barrett, W J *The illusion of technique* London William Kimber, 1979

2 Bloom, B S (Ed) *Taxonomy of educational objectives The classification of educational goals Handbook 1, Cognitive domain* London Longman, 1956

3 Bloom, B S , Hastings, T , & Madaus, G F *Handbook of summative and formative evaluation* New York McGraw Hill, 1971

4 Collingwood, R G *Principles of art* Oxford Clarendon, 1958

5 Dunne, J *Back to the rough ground Phronesis and techne in modern philosophy and in Aristotle* South Bend IN University of Notre Dame Press, in press

6 Freire, P *Pedagogy of the oppressed* Harmondsworth, Middlesex Penguin, 1972

7 Gadamar, H -G *Truth and method* Translated by G Barden & J Cumming London Sheed & Ward, 1977

8 Gagne, R M , & Briggs, L J *Principles of instructional design* (2nd ed) New York Holt, Rinehart & Winston, 1974

9 Habermas, J *Towards a rational society Student protest, science and politics* London Heinemann, 1971

10 Habermas, J *Theory and practice* Translated by J Viertel London Heinemann, 1974

11 Krathwohl, D R , Bloom, B S , & Masia, B B (1964) *Taxonomy of educational objectives The classification of educational goals Handbook II Affective domain* New York McKay, 1964

12 Mager, R E *Preparing instructional objectives* (2nd ed) Belmont, CA David S Lake, 1975

13 Newman, J H *An essay in aid of a grammar of assent* Edited by Nicholas Lash Notre Dame University of Notre Dame Press, 1979

14 Polanyi, M *The tacit dimension* New York Doubleday, 1967

15 Polanyi, M *Personal knowledge Towards a post-critical philosophy* London Routledge & Kegan Paul, 1973

16 Popham, W J Objectives and instruction In W J Popham, E W Eisner & H J Sullivan, *Instructional objectives* American Educational Research Association Monograph Series on Curriculum Evaluation 3 Chicago Rand McNally, 1969

17 Popham, W J *Criterion-referenced instruction* Belmont, CA Fearon, 1973

18 Sullivan, H J Objectives, evaluation and improved achievement In W J Popham, E W Eisner, H J Sullivan, *Instructional objectives* American Educational Research Association Monograph Series on Curriculum Evaluation 3 Chicago Rand McNally, 1969

19 Tyler, R W *Basic principles of curriculum and instruction* Chicago University of Chicago Press, 1949

20 Wittgenstein, L *Philosophical investigations* Translated by G E M Anscombe and edited by G E M Anscombe & R Rhees Oxford Blackwell, 1976