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THE CONCEPT OF EDUCATIONAL TECHNOLOGY

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ABSTRACT

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THE CONCEPT OF EDUCATIONAL TECHNOLOGY

Questions of concept arise in connection with using the term "educational technology," as evidenced by frequent efforts at definition in the recent literature of educational technology.

"Educational technology" is a complex term which conjoins two distinctive concepts: "education" and "technology." An adequate account of the concept of "educational technology" presupposes an adequate grasp of these two underlying concepts.

Analysis of the underlying concepts "education" and "technology" and the possible logical relations between them shows that only a qualified use of the term "educational technology" can be defended. The notion that "educational technology" is "a systems approach to the facilitation of learning" is here rejected. I argue that "educational technology" refers to that part of educational theory in which organized technical principles are brought to bear on the practices which center around initiating persons into what is worthwhile.

CONTENTS

INTRODUCTION

1. The Nature of the Inquiry

In this thesis I propose to undertake an analysis of the concept of "educational technology." This purpose has built into it the presumption that "educational technology" is an important concept, and that serious questions arise in connection with how it is to be understood. "Educational technology" has emerged as a term which has won increasing acceptance in educational circles, as evidenced both by the frequency with which it is cited in educational literature, and by the emergence of specialized journals such as Educational Technology, The British Journal of Educational Technology, The Journal of Educational Technology Systems, and Programmed Learning and Educational Technology. The choice and adoption of an appropriate term to name that to which "educational technology," among other expressions, is held to refer has been a matter of considerable debate.[1] My purpose here is not to reopen the portion of the debate on

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[1] For an account of the debate on terminology, see James W. Armsey and Norman C. Dahl, An Inquiry Into the Uses of Instructional Technology (N.Y.: Ford Foundation, 1973), Chapter One.

terminology which has to do with selection of the appropriate term. It is rather to investigate what is involved in using the expression "educational technology" (which has already won wide acceptance) by analyzing the conceptual features associated with the expression.

It might be thought that a good way to get clearer about the concept of "educational technology" would be to examine definitions of the term. A number of definitions have been ventured recently in the literature of educational technology.[2] No philosophically worked out definitions have appeared however.[3] In this thesis, I will not be concerned with conducting a major review of the definitions which so far have been offered, but rather with attempting to put forward a philosophical account of the concept "educational technology." What is aimed at, then, is not a study of statements made about educational technology to date, but rather an investigation of the logical conditions connected with using this term intelligibly. I will, however, treat of a selection of definitions of "educational technology" in Chapter Five,

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[2]Donald P. Ely gives a short list of definitions in "Defining the Field of Educational Technology," Audiovisual Instruction 18 (March, 1973):52-53. For others, see Chapter Five of this thesis, as well as my Bibliography.

[3]Somewhat of an exception is a recent paper by P. David Mitchell entitled "The Concept of Educational Technology: Much Ado About Nothing?"; paper presented to the Joint Meeting of the Association of Atlantic Teacher Educators and the Atlantic Educational Research Council, Fredericton, New Brunswick, October 1973. Mitchell's paper does take some philosophical bearings, but it does not aim at a thorough analysis of "educational technology."

in order to show how they stand with respect to the conceptual points made in the thesis.

My aim in this thesis is, therefore, to clarify the concept "educational technology" by means of conceptual analysis. In this respect, my aim is not to set forth a dogmatic definition such as those often given in one or two sentences at the beginning of an essay. Rather I propose to show something of the logical geography of "educational technology." No extended treatise on the nature of conceptual analysis is to be anticipated here; a familiarity with its methods is rather assumed. However, in the last section of the Introduction, I will make some brief remarks about what it involves over against other sorts of attempts at definition. In general, my aim has not been to break new ground in philosophical method as it pertains to educational questions, but rather to extend the application of a method which has already proven fruitful in philosophy of education to the analysis of "educational technology."

In seeking to clarify the concept "educational technology," I have decided to give extensive attention to its constituent concepts "education" and "technology." This is because "educational technology" is a complex expression formed by combining two distinctive concepts. A clear grasp of these concepts is a presupposition of adequately understanding the term. In addition, the expression has been used very unevenly and often very superficially in its short life, so that there is no substantial linguistic

tradition to appeal to, apart from the individual concepts which it conjoins.

In this thesis I will restrict my efforts to the rather formal task of mapping the geography of certain concepts. It will not be my intention to discuss substantive issues relating to such educational matters as curriculum decisions, methods of teaching and learning, technology in the schools, and so on. Empirical questions relating to, e.g., the psychological and sociological dimensions of "educational technology" will not be examined. It is however hoped that this formal mapping will contribute some clarity to understanding "educational technology" which may assist in more precise formulation of empirical inquiries. Thus this thesis does not consider whether in fact technological processes have distorted education in Canadian schools, which is an issue which must be decided in part on empirical grounds, but rather whether there are conceptual features of "education" and "technology" which are in logical conflict with each other, and if so in what way and to what degree. The possibility of such logical conflict could provide guidance in formulating empirical research to determine empirical conditions in which this conflict becomes actualized. However, I will not presume to make my analysis issue in any empirical recommendations, leaving that task instead for psychologists, sociologists, and other empirical investigators.

2. The Structure of the Inquiry

The structure of the approach which I have adopted may be grasped from an overview of the chapters included. In the last section of this Introduction I deal with the question of definition and conceptual clarification in education and indicate the method of inquiry I propose to use. In Chapter One, I set forth in detail R. S. Peters' account of the concept of "education," along with an account of his treatment of justification in education. Chapter Two is devoted to critical comments on Peters' approach and a statement of the light in which his views may be accepted. In Chapter Three, the question of educational theory is examined with particular reference to P. H. Hirst's account. In Chapter Four, I provide an account of "technology" from the standpoints of recent definitions, Aristotle's discussion, and my own account of the technical discourse which I argue underlies "technology." In Chapter Five, I show how the concept of "educational technology" may be grasped in terms of the relations of the concepts "education" and "technology" and in terms of the nature of educational theory. I examine a selection of definitions of "educational technology" with respect to my criteria of "educational technology" and draw conclusions regarding their adequacy.

A few words may be said about the rationale for structuring my approach this way. My discussion of definitions and questions of concept in education is intended to provide a general perspective for viewing the character of the tasks which I am undertaking. R. S. Peters' analysis of education

is next examined. I have chosen to treat of his position in depth, rather than reporting more briefly on a collection of different attempts to conceptualize "education." I take Peters' analysis to be paradigmatic of the analytic approach, showing both its strengths and weaknesses. My treatment of his approach provides an opportunity to introduce important features of analysis near the beginning of the thesis. Another reason for considering the concept of "education" first is that in terms of the philosophy of education today, we are on much firmer ground with this concept that with any of the other areas of consideration which follow. Chapter Two on criticisms of Peters is intended to show the major features of the debate which his analysis has generated, and to determine whether his account is acceptable, and if so, with what reservations. It also provides an additional opportunity to discuss certain problems connected with the nature of conceptual analysis. Immediately related to the concept of "education" is the study of education and, in particular, "educational theory." In Chapter Three, I examine P. H. Hirst's account of educational theory as a "practical theory" which is aimed at contributing to practical discourse about education. The features of practical discourse discussed here look forward to my discussion of technical discourse (which I argue is one kind of practical discourse) in the next chapter. The nature and structure of educational theory as set forth in Chapter Three introduces the epistemological background for my account of how

"educational technology" is situated with respect to educational practice. In Chapter Four I explore the epistemological character of "technology" and situate it with respect to practical discourse. This account of technology prepares the way for my final chapter on "educational technology." Here the conceptual foundations which have been laid are brought to bear on the clarification of "educational technology" in terms of its connections with "education," "technology," and educational theory. Finally, some recent attempts at defining "educational technology" are examined for their adequacy. For this task, the conceptual ground covered in formulating criteria of "educational technology" will be seen to be essential, justifying the reservation of this exercise for the concluding passages of the thesis. A brief assessment of what has been accomplished concludes the thesis.

The Bibliography includes works cited in the text of the thesis, works drawn on but not cited, and works thought relevant and helpful for further research but drawn on little, if at all, in my text. For convenience, I have classified it into sections containing works on "education," "technology," "educational technology," and "philosophy." The section on "philosophy" is an exception to the general plan of the Bibliography, listing only works drawn on or judged to be particularly relevant. Philosophical works pertaining directly to the other three topics will be found in those sections. In my judgement, it would add little to the usefulness of this Bibliography to lengthen the philosophy

section by adding relevant general works on philosophy not used here, since these are well known, and the justifiable inclusions would demand a list of unwieldy length.

3. The Method of Inquiry

I have announced that I propose to show something of the logical geography of "educational technology." In the course of the thesis, I will undertake to discuss what I believe to be some of the major questions of concept which arise in connection with "educational technology." It may therefore prove helpful to discuss in a preliminary way some questions centering around definition and the clarification of concepts, and to give some attention to the relevance of these sorts of questions to educational discussions.

Interest in clarifying a concept is often evidenced by the activities centering around defining a word which stands for the concept in some specifiable sense. Israel Scheffler has presented a noteworthy account of the nature and purpose of definitions in education which merits attention here.[4] Scheffler professes to be interested in the logical features of educational definitions. He examines what force statements of definition may have in arguments, what kind a validity they may confer, and how their inferential uses may be criticized.

Scheffler makes an initial distinction between scientific definitions and general definitions. Scientific

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[4] The Language of Education (Springfield, Illinois: Charles C. Thomas, 1960).

definitions are said to be situated within networks of other scientific statements, including hypotheses, reports, laws, and theories. Scientific definitions are intimately connected with these other statements and must be evaluated in terms of their theoretical adequacy, and thus in terms of their situation within these networks. He claims that their acceptability does not depend on their reflection of conventional usage, rhetorical or social effects, or ability to help laymen understand scientific matters. They are technical statements which serve the purposes of scientific discourse and are addressed to members of the scientific community. In contrast, general definitions lack this technical character and serve specifiable purposes connected with practical discourse. They are addressed to the general public or to practitioners and they have the character of general communications. For example, educational definitions may be offered "in curriculum statements, in enunciations of program and objectives, in interpretations of education addressed to the general public, in debates over educational policy."[5] General definitions are said to include stipulative definitions, descriptive definitions, and programmatic definitions. Scheffler restricts his account of educational definitions to their characterization as general definitions.

Scheffler characterizes stipulative definitions as legislating how a term is to be understood in a particular

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[5]Ibid., p. 12.

discussion or a discourse of a certain type. Non-inventive stipulation refers to cases where the term has had a prior usage, whereas inventive stipulation refers to cases where the term has had no prior usage. Stipulative definitions are employed for economy of utterance, for the convenience of having abbreviated terms or labels for particular meanings. Their success in providing such economy and convenience is their chief justification, Scheffler claims.

According to Scheffler, descriptive definitions endeavor to explain the terms defined by giving an account of their prior use and functioning. They are typically offered as clarifications when questions about the meaning of a term arise. Such definitions aim to provide a rule which explains how the term is normally used. A clarification of its usage in relation to other familiar terms may be offered. A characteristically philosophical enterprise involves formulating a definition for a term which is already being applied appropriately in particular instances, "the point being to distill the guiding principle of such application and to show its interconnection with others."[6] Scheffler proposes that descriptive definitions are justified or valid to the extent that they reflect and explain predefinitional usage.

Scheffler regards programmatic definitions as expressions of practical programs. They trade on the practical social orientations associated with the typical group of referents of certain terms. The program implicit in such a

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[6]Ibid., p. 17.

definition may include recommending that these practical orientations (1) be extended to new referents, (2) be withdrawn from certain presently included referents, or (3) are only appropriate for the present class of referents. For example, an attempt might be made to extend the favorable social orientations towards "profession" by defining "profession" in such a way as to include an occupation not previously accorded the title "profession." When a definition is programmatic, the chief point of its use is its practical or moral force, and not just its usefulness as an abbreviation or its accuracy in reflecting previous usage. Scheffler contends that programmatic definitions require appraisal in terms of the programs of action they embody.

Scheffler points out that the same linguistic formula may express a stipulative, descriptive, or programmatic definition depending on the situation in which it is used. He also attempts to show, on logical grounds, to what extent different definitional uses may overlap on the same occasion in the same definitional formula. This attempt, which draws on the distinctions between kinds of definition which he has sought to establish, is not entirely convincing in its detail. For example, he insists that descriptive and stipulative definitions may not overlap, yet it is possible to think of situations in which speakers might wish to stipulate that the coventional usage of a term is to be retained. On the question of justification, he rightly points out that when definitional uses overlap in the same definition, the

definition must be appraised separately in terms of the kind of judgement appropriate to each use.

Scheffler argues that definitions cannot yield practical consequences by themselves. While they may point to programs of action, accuracy of definition does not ensure the acceptability of the program. An enormous range of definitions, each suggesting different practical consequences, are compatible with accuracy. Because educational definitions are used for practical purposes, it is dangerous to import scientific definitions into education. The purpose and validity of scientific definitions lie in the adequacy of their contribution to theoretical networks. Using them for descriptive, stipulative, or programmatic purposes distorts them because the purposes and criteria of these practical definitional uses are different.

Scheffler's classification of definitions is interesting but not compelling. John Hospers[7] provides an account of definitions which invokes similar categories (stipulative, reportive, and persuasive), but he also treats of ostensive definitions--definitions which point directly to the thing being defined. Unlike Scheffler, Hospers makes no prior distinction between scientific and general definitions. Scheffler's supposition that a sharp distinction can be drawn here strikes me as questionable. The claim that scientific definitions are continuous with the

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[7] An Introduction to Philosophical Analysis, 2nd. ed. (London: Routledge & Kegan Paul, 1967). See especially pp. 18-62.

theoretical networks in which they occur does not conflict in any obvious way with their use in educational theory. Assuming that the appropriate forms of justification are used, such use would appear to be logically permissable. Clive Beck[8] has sharply criticized Scheffler on this issue:

> on the one hand, scientific definitions often have to be made with an eye to familiar usage among academics and technologists, to their ability to enlighten scientists in neighboring fields, and to their social and rhetorical effects within the academic community and beyond. Science is not the clean-cut, isolated activity we have often imagined it to be. And, on the other hand, "general definitions" should and very often are set in a relatively complicated network of theory: theory which is relatively informal, perhaps, but which is nevertheless of first importance. Similar restrictions against taking definitions out of their theoretical context apply in each case.[9]

Beck argues that because educational definitions must be set in a network of educational theory, there is seldom a place for descriptive definitions in educational theory. While prior usage of terms may be given due weight, educational definitions typically have a stipulative character. When descriptive definitions are tightened up with respect to how they rule in borderline cases, they too become stipulative, Beck claims. He proposes that "The paradigm case of an educational definition is an empirically sound, theoretically adequate, value-laden proposal for word usage that has important implications for educational practice."[10] I believe Beck has provided a more plausible account of the nature of

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[8] Educational Philosophy and Theory (Boston: Little, Brown, and Co., 1974).

[9] Ibid., p. 233.

[10] Ibid., p. 235.

educational definitions and their relation to educational theory and practice. Scheffler's insistence that only general definitions are to be admitted into educational discussions is, I believe, largely unwarranted.

At the beginning of this section, it was stated that definitions often indicate interest in clarifying a concept. The meaning of this claim can now be stated more clearly. Of the definitional formulations examined, some are more clearly connected with clarifying concepts than others. Descriptive or reportive definitions would appear to be a central case of conceptual clarification in that they purport to demonstrate what people conventionally mean when they use a term. Stipulative definitions announce the particular concept to which a speaker intends to refer when using a word, regardless of how the word may have been used before. Programmatic or persuasive definitions may result in conceptual confusion when they shift the cognitive meaning of a term without announcing the shift.

As Beck has pointed out, offering definitions is only part of the activity of defining. Conceptual analysis may comprise a range of definitional activity without necessarily issuing in the sort of short definitional utterance found in dictionaries. John Wilson[11] has provided some concise remarks on this form of activity. "Questions of concept" arise in connection with puzzlement about the

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[11] Thinking with Concepts (Cambridge: Cambridge University Press, 1963).

meaning of words. He observes that while it is misleading to speak of the meaning of a word, any concept "occupies an area which can be roughly located and mapped, even if the frontiers are not in all cases very precise."[12] Crucial to this mapping is the point that some cases of the use of a word are more central; they lie nearer to the heart of the concept than other uses. The activity of conceptual analysis is characterized by the mapping out of the geography of concepts, in which primary and central uses are distinguished from derived and borderline uses. This typically involves examining model, contrary, related, and borderline cases of using the concept. Invented cases may be considered. The social context of the concept in question or anxieties underlying its use may be examined. In considering possible meanings, practical results in everyday life or results in language may be examined. Wilson does not mean to identify concepts with words or the meaning of words. Rather,

> the logical limits of a concept may be the same as the limits to the range of meaning of a particular word: for instance, the limits of a man's concept of justice are the same as the limits within which he uses and understands the word "justice." This is not to say that the concept and meaning are identical: but it is to say that they are, as it were, parallel to each other, or that they cover the same logical area.[13]

It is definitional activity in the broader sense of conceptual analysis which Wilson discusses that will occupy us in this thesis. The aim is not to produce a one or two sentence definition of "educational technology." It is rather to

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[12] Ibid., p. 12. [13] Ibid., p. 58.

describe the logical geography which any such definition needs to account for, if it is to be adequate. The activity of conceptual analysis can be seen at work in Peters' treatment of "education," which we will consider presently.

That questions of concept arise in educational discussions can be seen from the recent controversy over what senses of the terms "education" and "educational technolgy" are correct. While my discussion of recent efforts to define "educational technology" will be reserved for Chapter Five, it may prove helpful to quickly review here some of the recent controversy over "education." William K. Frankena[14] has distinguished several senses of "education," including (1) socialization or enculturation, (2) the fostering of worthwhile dispositions or states of mind, and (3) the fostering of whatever dispositions the learner may desire. He characterizes the first sense as a neutral, social science sense, while the second sense is a committed, normative sense. The third sense is the "free" approach wherein the student is free to develop whatever dispositions he may consider desirable or relevant. Michael Oakeshott[15] has distinguished between "education" as (1) growth, or actualizing a potential, (2) initiation, a transaction between the generations,

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[14] "The Concept of Education Today," in Educational Judgements, ed. James F. Doyle (London: Routledge & Kegan Paul), pp. 19-32.

[15] "Education: The Engagement and Its Frustration," in Education and the Development of Reason, ed. by R. F. Dearden, P[aul] H. Hirst, and R. S. Peters (London: Routledge & Kegan Paul, 1973), pp. 19-49.

(3) socialization in the sense of apprenticeship to adult life for such extrinsic purposes as keeping society running smoothly, (4) self-indulgence--the "free" approach, and (5) learning, technologically assisted. R. S. Peters[16] has distinguished between "education" in the sense of a process leading up to the emergence of an educated person and in the sense of the vast range of child-rearing practices. John Dewey[17] and more recently Lawrence Kohlberg[18] have discussed "education" in terms of growth and development,[19] contrasting this view with such formalist conceptions of "education" as the transmission of knowledge. Israel Scheffler has noted the return to prominence of the sense of "education" which identifies it with transmission of knowledge to the student. He observes that this trend is exemplified in particular in "educational technology, the development of devices, programs, and new curricula for the more efficient packaging and distribution of knowledge."[20] Within the field of educational

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[16] "Education and the Educated Man," in Education and the Development of Reason, pp. 3-18.

[17] Democracy and Education (N.Y.: Free Press, 1966), Chapter Four.

[18] Lawrence Kohlberg and Rochelle Mayer, "Development as the Aim of Education," Harvard Educational Review 42 (November, 1972):449-96.

[19] R. F. Dearden has critiqued education as growth in "Education as a Process of Growth," in Education and the Development of Reason, pp. 65-84.

[20] "Concepts of Education: Reflections on the Current Scene," in Reason and Teaching (Indianapolis: Bobbs-Merrill Co., Inc., 1973), p. 59.

technology, "education" is used in the sense of learning. Thus, educational technology is said to be concerned with a "systematic approach to learning,"[21] its central goal being to "facilitate and improve the quality of human learning."[22] Finally, it has often been pointed out that "education" in the sense of an enterprise of process or activity or social institution is to be contrasted with "education" as the study or discipline of education.[23] This latter sense of "education" is held to be clearly subsidiary to and dependent on the former sense.

This review of recently discussed senses of "education" reveals several distinct and recurrent senses of "education." The senses which most require examination in relation to the task of analyzing "educational technology" are socialization, initiation, development, and learning. The issues underlying the notion of "education" as transmission will be discussed under the aforementioned senses, while the "free" or self-indulgent notion of "education" will not receive direct attention here.

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[21]Norman MacKenzie, Michael Eraut, and Hywel C. Jones, Teaching and Learning, an Introduction to New Methods and Resources in Higher Education (Paris: Unesco and the Internatinal Association of Universities, 1970), p. 139.

[22]Association for Educational Communications and Technology, "The Field of Educational Technology: A Statement of Definition," Audiovisual Instruction 17 (October, 1972):37.

[23]Beck, Educational Theory and Philosophy, p. 300; Frankena, "The Concept of Education Today," p. 20; Oakeshott, "Education: the Engagement and its Frustration," p. 19; D. J. O'Connor, "The Nature and Scope of Educational Theory (1)," in New Essays in the Philosophy of Education, ed. Glenn Langford and D. J. O'Connor (London: Routledge & Kegan Paul, 1973), p. 47.

The existence of these diverse and conflicting senses of education poses a question of concept, in Wilson's useful phrase. Which sense or senses of "education" may be said to be central and which are peripheral or non-starters? We require an account of the rules or conditions for using the term "education" correctly. A chief aim of analysis is to make such conditions or criteria explicit. Adequate criteria of "education" must meet the following logical conditions: 1) they must rule in what we count as the central cases of "education;" 2) they must rule out cases which are clearly non-educational; 3) they must offer guidance for deciding on odd or borderline cases; 4) in all cases, they must show why a particular case is to be ruled in or out--the ruling must not be arbitrary. To illustrate, when John Dewey advocated "growth"[24] as an account of the concept of "education," some objected that his account did not rule out the development of criminal tendencies, a case obviously contrary to the central meaning of "education." Dewey attempted to remedy this deficiency in Experience and Education[25] by proposing "continuity" and "interaction" as criteria of "education." These criteria did not fare well, because it was still possible to make out a case for the criminal life which accorded with his criteria. The concept of "education" must be articulated in such a way that it yields criteria which clearly rule

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[24] Democracy and Education, Chapter Four.

[25] N.Y.: Collier Books, 1963, Chapter Three.

out such obvious contrary cases. We now turn to the most prominent recent attempt to accomplish this, in the writings of R. S Peters.

CHAPTER ONE

THE CONCEPT OF EDUCATION: PETERS' ANALYSIS

1. Introduction

R. S. Peters has presented and defended his view of education in numerous writings.[1] His most extensive account is to be found in Ethics and Education. The view presented there has, however, been progressively modified and elaborated in two later writings, "Education and the Educated Man," and "The Justification of Education." The account of Peters' position presented here will be drawn chiefly from these three writings. I will deal in turn with his approach to analyzing the concept "education," the criteria which he proposes, his re-examination of the criteria, the model of education which informs his position, and his treatment of justification. In Chapter Two I will present some of the major criticisms which have been aimed at Peters' position on "education." My conclusions about Peters' position, criticisms of it, and conditions for its acceptance will be reserved for the latter part of Chapter Two. The task of the present chapter

[1] See Bibliography.

is to present Peters' position, and I shall refrain as much as possible from making critical comments here, saving these for Chapter Two.

2. The Concept of Education

Peters introduces his discussion of the concept of "education" with a defense of the sort of approach which involves formulating criteria:

> The uses of a word are not always related by falling under a definition as in geometry where definitions are provided for terms such as "triangle". Rather they often form a "family" united "by a complicated network of similarities overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail."[1] This is particularly true of the sorts of terms in which philosophers are interested; for they are usually very general terms, which have developed a life of their own in various contexts.[2]

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[1]Wittgenstein, L. Philosophical Investigations (Oxford, Blackwell, 1953), p. 32.

Peters claims that "education" is this sort of term, and that criteria must be formulated rather than a neat definition sought. "Education" is said to have criteria coextensive with central uses of the term. The formulation of these criteria is an effort to clarify what binds together these uses and to show how central and peripheral uses may be distinguished. This effort consists in describing customary usage rather than stating how the term must be used.

The other major point which Peters makes at the outset is that "education" is not a word which has meaning on the model of a name associated with a typical referent. While

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[2]Ethics and Education (London: Allen & Unwin, 1970), p. 23.

something is happening when education is taking place, no particular kind of activity is necessitated. Any of a diverse range of activities may be involved:

> "Education" is not a term like "gardening" which picks out a particular type of activity . . . It [education] picks out no particular activity or process. Rather it lays down criteria to which activities or processes must conform.[3]

Peters is arguing here that there is no special process which gives meaning to the concept of education. Rather its meaning resides in criteria which must be satisfied.

In arriving at a formulation of the criteria of education, Peters deals with the normative, cognitive, and procedural or task aspects of education. Each of these must be briefly dealt with to show what considerations have had bearing on his formulation of the criteria.

The normative aspects of education which Peters discusses center around his claim that "education" has built into it the criterion that something worthwhile should be achieved. "Education" is said to be like reform in this respect, for it would be a contradiction to say that a man had been educated or reformed but had in no way changed for the better. More particularly, "education" implies the transmission of something worthwhile in a manner which is morally acceptable. Peters emphasizes that the connection between education and what is thought valuable is a purely conceptual point; no commitment to particular

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[3]Ibid., pp. 24-25.

standards of value is thus legislated.[4] Peters concedes that there is a more neutral sense of "education" in which the social scientist uses the term to describe the educational system of a community. But while the social scientist does not announce his approval by using the term, there is the implication that the community he is describing consider their educational system to involve what is desirable. The neutral social science sense is thus a derivative of the central cases of using the term "education," which refer to what is thought valuable.

Peters proposes a distinction between achievement and task senses of using the term "education," noting that it is used in both senses. The task senses refer to trying, while the achievement senses refer to succeeding. In the case of "education," Peters claims that the tasks and achievements are connected with the normative aspects of the concept. Thus to "educate" requires achievements which are worthwhile, and educational tasks are required to be conducted in a manner which is morally unobjectionable. Both senses are embodied in central uses of the term: "Educational practices are those

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[4] Ethics, p. 25. It is puzzling what Peters intends by "purely conceptual" here. His point seems to be that "education" is tied conceptually to "worthwhile," but not to any particular notion of "worthwhile," or to any set of standards for deciding what is worthwhile. Yet Peters argues implicitly, it seems to me, that at least some standards are necessary if "worthwhile" is to be used intelligibly at all: these are the standards presupposed by practical discourse. Peters' treatment of how the values of education are to be identified and justified will be considered below under "Justification in Education."

in which people try to pass on what is worth while as well as those in which they actually succeed in doing so."[5] The criteria associated with the task aspects of "education" are considered further in Peters' treatment of educational processes. The multiplicity of worthwhile achievements which education may include leads Peters to consider the problem of aims in education.

Peters claims that much confusion results from seeing the normative feature built into "education" in terms of extrinsic ends. He argues that disputes about the aims of education are properly not disputes about ends lying outside the concept, but about what achievements give content to the notion of being an educated man. "Education" is unlike "training" in this respect, for "training" typically refers to specific extrinsic ends, such as acquiring specific skills and preparing for a job. To ask about the aims of training would be to ask for such extrinsic ends, whereas asking about the aims of education is to ask about what is worthwhile achieving. To ask for the extrinsic ends of education is like asking about the purpose of the good life, for "'education' implies the transmission of what is of ultimate value."[6] Peters claims that the conceptual distinction between "education" and "training" is unaffected by the fact that some people may speak of education in a looser sense which is equivalent to training.

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[5]Ibid., p. 26.

[6]Ibid., p. 29.

Under the cognitive aspects of education, Peters considers knowledge and understanding, breadth, and cognitive perspective. Additional distinctions are drawn between "education" and "training." He argues that we would not call a person "educated" who merely had acquired some skills or who was well informed. For a person to be called "educated", he must possess a body of knowledge which is more than just a collection of facts, and he must have some understanding of "the 'reason why' of things."[7] His knowledge must not be inert in the senses that it transforms his way of looking at things and that commitment to the internal standards of the forms of knowledge is involved. Furthermore, his way of seeing things cannot be characterized by a narrow, specialized outlook. His knowledge must be connected with a coherent pattern of life. The term "educated" would be withheld from a person lacking such cognitive perspective. This suggests the additional requirement of breadth of knowledge.

Peters argues that "training" lacks the wider cognitive implications of "education." It has reference, rather, to "the acquisition of appropriate appraisals and habits of response in limited conventional situation."[8] By way of example, he suggests that "educating" the emotions would have reference to the conceptual features which distinguish the various emotions. It would involve getting people to achieve a different view of the world which would inform their emotional responses to it. "Training"

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[7]Ibid., p. 30.

[8]Ibid., p. 33.

the emotions implies no such transformation of views, but rather learning the proper emotional restraint or appropriate emotional expression for various situations. Peters stresses the point that "training" has application to specific ends. One may be "trained" as a cook or soldier, but not trained in a general sort of way. This is because "training" pertains to the acquisition of a particular skill or competence, for example cooking, fighting, or riding bicycles. Persons are described as "educated" in relation to having acquired a wide range of cognitive characteristics, and not just in relation to having acquired some specific skill to be exercised in connection with a particular function or end. While it is true that cooks and soldiers may become "educated" as well as being "trained," Peters argues that it would be peculiar to speak of being "educated" for cooking or fighting.

Under the heading "Criteria of Educational Processes" Peters considers the procedural or task aspects of education. He is concerned to find if there are additional criteria which characterize the tasks of education as distinct from its achievements. His discussion here centers on the manner of education, the ways of initiating persons into what is worthwhile. He notes that the manner of education was stressed at the expense of content in the child-centered movement's protest against the traditional approach to education, which stressed matter almost exclusively.

In canvassing the possibilities for criteria associated with the tasks of education, he considers the tasks

of the teacher and the tasks of the learner. The tasks of the learner are said to be prior. While the learner must eventually come to care for what is worthwhile, he need not be initiated into commitment to it by any particular methods. The tasks of the learner center around certain processes of learning which can only be fully specified in relation to the achievements (e.g. commitment to science as a worthwhile activity) in which they culminate. The teacher's tasks center around getting these learning processes going. The teacher's success is thus to be characterized in terms of the achievements of the learner. "Teaching" involves a concern with methods appropriate for bringing about these achievements, and thus with methods that respect the learner in certain ways: "To teach, in the standard sense, is at some points at least to submit oneself to the understanding and independent judgement of the pupil, to his demand for reasons, to his sense of what constitutes an adequate explanation."[9] Peters claims that while "teaching" is an activity, "educating" is not: rather, it implies that whatever activities may be involved satisfy certain criteria. Teaching may convey matter or result in achievements which do not meet the criteria of education. For example, the art of forgery might be taught, but this would be ruled out as "education" because what is transmitted would not be regarded as worthwhile. Teaching mathematics to the exclusion of everything else would violate the requirement for cognitive perspective.

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[9] Ibid., p. 39.

The criteria unique to the tasks of education which Peters makes explicit are seen to be connected with the nature of the processes involved. Certain techniques of instruction are ruled out because of moral objections connected with respect for the learner. The learner must understand what is expected of him, and the manner of his initiation into an activity must be meaningful. On these grounds some forms of drill involving mindless repetition would be ruled out. Conditioning would be ruled out on the grounds that the learner must be witting of what he is undergoing and enter into the activity with at least a minimum of voluntariness. While indoctrination might also be said to involve disrespect for the learner, some degree of comprehension and voluntariness is involved. The lack of respect for the learner which it involves is better characterized under the normative and cognitive criteria previously established. The criteria associated with the tasks of education are then the minimal criteria of wittingness and voluntariness to which the techniques and procedures of education must conform. Peters here rejects the possibility of counting as criteria of educational processes the procedural principles sometimes extracted from particular notions of the achievements of education, such as growth, self-direction, and leading out. He stresses the importance of not allowing what is implied by the achievement senses of education to spill over into what is implied by its task senses.

Peters sums up as follows the criteria he takes to be implicit in the central cases of "education:"

These are:

(i) that 'education' implies that transmission of what is worthwhile to those who become committed to it;

(ii) that 'education' must involve knowledge and understanding and some kind of cognitive perspective, which are not inert;

(iii) that 'education' at least rules out some procedures of transmission on the grounds that they lack wittingness and voluntariness on the part of the learner.[10]

Peters is also explicit about the limitations of conceptual analysis in educational discussions:

> a much clearer grasp of the fundamental issues underlying current controversies is made possible by mapping the area of the concepts and revealing the contours of the criteria built into them. But a detached and clear-sighted view of the shape of issues and institutions is all that conceptual analysis provides. It cannot of itself determine the lines of practical policy.[11]

In Peters' view, the activity of conceptual analysis does not issue in any substantive recommendations; it merely clarifies the concept in question.

3. Education, The Educated Man, and the Two Concepts of Education

In "Education and the Educated Man"[12] Peters reconsiders certain difficulties with the criteria he has sought to clarify. He proposes to inquire "whether any

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[10] Ibid., p. 45.

[11] Ibid.

[12] This essay first appeared in 1970 in Philosophy of Education Society of Great Britain, Proceedings IV, four years after Ethics and Education was first published. Here I refer to a reprinted version of the essay, previously cited in my Introduction.

conditions which begin to look like logically necessary conditions for the correct application of the term 'education' have been provided."[13] He considers possible objections to the cognitive and value conditions and ways of simplifying the analysis which they suggest. When this effort proves to reach an impasse, he elaborates the distinction between "education" and the "educated man" and proposes that which conditions are seen to be fundamental depends on which of two concepts of education one is interested in.

Under objections to cognitive conditions, Peters considers the cases presented by "specialized education" and "Spartan education." He speculates that these cases can be viewed as instances in which one of the several conditions for using the term "education" is withdrawn by connecting it with a countermanding word. "Specialized education," he suggests, might simply be regarded as withdrawing the usual requirement for breadth of knowledge. "Spartan education" is an instance of using the term to refer to passing on whatever a society regards worthwhile, without any emphasis on knowledge and understanding being implied. In this extended sense, "education" is used to refer to child-rearing, various forms of training, and even the passing on of simple skills and folklore.

These objections to the cognitive conditions lead Peters to examine the possibility that the value criterion is

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[13] "Educated Man," p. 4.

the only logically necessary condition for the concept of "education." In view of the example of "Spartan education," it might be supposed that it is only contingent that we value knowledge and understanding. He points out that this simplification of the analysis can handle the case of "Spartan education," for only a commitment to what is thought valuable is now required. Spartan education involved commitment to some things thought valuable, but not knowledge and understanding. The possibility of retaining only the value condition gains further plausibility in terms of the connection between initiation[14] into what is thought worthwhile and "knowledge of the good" which "consists of seeing things under certain aspects which constitute intrinsic reasons for engaging in them";[15] that is, seeing what it is in things that makes them worthwhile. He suggests that this supports the dispensability of the cognitive conditions if they are thought of as requiring only depth and breadth of understanding.

Objections to making the value condition either fundamental or logically necessary at all are next considered. These include the fact that we can use "education" in an external, descriptive sense as in the social sciences. We can talk of "poor" or "bad" education. The question arises as to how to draw the line between cases where the job is

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[14] I deal briefly with Peters' view of "education" as "initiation" in a later section of this chapter.

[15] "Educated Man," p. 6.

being botched or the values involved are inadequate, and cases which should not be counted as education at all. Further, many people regard being "educated" as an undesirable state and assume no connection between education and what is valuable. Rather, they have no use for the knowledge and understanding associated with it. Peters supposes that these objections seriously detract from the plausibility of making the value condition the sole criterion of education. To him, they appear to call into question whether the connection between "education" and what is thought worthwhile is fundamental or logically necessary.

Peters next considers the suggestion that the cognitive conditions are the logically necessary ones, the value condition being contingent on them. In this case, to be "educated" is to have knowledge and understanding. Being "educated" is thought valuable as a contingent matter because in our culture we value knowledge and understanding for their own sake and for what they contribute to industry and our general quality of life. Such an account takes care of those who regard education as a bad thing, for they simply believe knowledge and understanding makes no valuable contribution to their lives. This version also permits us to speak of educational systems without necessarily approving of what is going on. "Poor" or "bad" education would refer to the efficiency of transmitting knowledge or the worth of what was being transmitted. Education would be the knowledge industry.

The chief objection to this way of simplifying the analysis is that "education" has a long history of use without connection to the cognitive conditions. This older use still survives in speaking of "Spartan education" or using the term to refer to a wide range of child-rearing practices. The tightening up of the concept appears to be connected with such developments as the coming of industrialism and universal compulsory schooling. Yet the older use of "education" still survives.

Peters concludes that there are considerations pulling both ways, and thus an impasse appears to have been reached in these attempts to simplify the analysis. He turns to the distinction between "education" and the "educated man" as a way of avoiding this impasse.

Peters explains that in his original analysis he assumed the connection between "education" and the development of an "educated man," but failed to appreciate how widespread the older use of the word was. He notes that it was only in the 19th century that "educated" came to refer to the all-round moral, intellectual, and spiritual development of a person. The notion of such a cultured person existed previously, but until then it was not usual to pick out this concept with the word "educated." The older use of "education" referred to bringing up children and animals, as well as to schooling. While this older use continues, the ideals of the "educated man" have taken root in educational circles, Peters claims. Thus it has become natural for educators to conceive of what

they are doing in terms of the development of such a person and the concept of "education" has been tightened up on account of this association.

In the light of this historical background, Peters suggests that how the impasse regarding which conditions are fundamental is to be resolved depends on whether interest centers around "education" or "the educated man." In the case of "education," he proposes that the value condition is the obvious choice, because the more general sense of education which refers to any process of rearing or instructing still survives. However, he speculates that the connection between education and what is thought valuable did not become a conceptual one until the industrial age when education came to be associated with institutionalized processes of instruction concerned with transmitting knowledge.

Where the interest in analysis centers on what it means to be "educated," the conditions associated with knowledge and all-round development become fundamental. Peters recounts that the ideal of the "educated man"

> emerged into prominence when the importance of specialized knowledge became manifest in the nineteenth century. As a reaction against utilitarian specialization it upheld the value both of the disinterested pursuit of knowledge and of all-round understanding and development.[16]

When education is regarded as being concerned with the development of the "educated man," the value condition becomes indissolubly linked with the cognitive conditions. Value

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[16]Ibid., p. 11.

may be ascribed to the pursuit and possession of knowledge in several respects. Knowledge may be seen as "an absorbing and challenging activity, as illuminating other pursuits, and as incorporating the intrinsic value of truth."[17] Peters notes that both theoretical and practical activities involve sensitivity to standards connected with the point of the activity. Such standards as clarity, relevance, consistency, and correctness are associated with the pursuit of truth.[18] Peters concludes that in view of this the value condition of "being educated" depends on various aspects of the cognitive conditions.

Peters observes that breaking the connection between "education" and the development of the "educated man" removes the difficulties connected with the objections to the criteria of education which he has considered. One may thus speak of "specialized education" or "Spartan education" but not an "educated Spartan," for they were not educated men. When "education" is used in the general, more undifferentiated sense, there is no difficulty in talking about specialized kinds of education. Peters notes that if education is viewed as connected with the development of an "educated man," specifications of the aim of education must be tautological or function as persuasive definitions, as he has previously

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[17] Ibid., p. 12.

[18] This anticipates Peters' treatment of non-instrumental value in education, treated of below in the section on justification.

argued. Statements about someone's aim, or an aim, may be taken as specifications of what the attributes of an "educated man" are thought to be. However, if the more general notion of education is adopted, it is not odd to speak of driver education or view one aim of education as getting a good job. But Peters claims that this involves viewing educational processes from the outside, linking them with goals intrinsic to the concept of the educated person. In this respect, he observes that "Talking about an 'educational' process suggests much less than talking about an 'educative' one."[19] That is, we may speak descriptively of an "educational" process, but an "educative" process calls to mind the achievements associated with the "educated man."[20]

Peters next examines what point there might be in sorting out these two concepts of education. He observes that both concepts are in current use. He suggests that the attempt to make the more differentiated concept more explicit may shift people's attention towards giving due weight to the values associated with it. He argues that drawing attention to the connection between "education" and the "educated man" and reserving such terms as "training" and "instruction" for use when such a connection is not envisaged should aid communication in service of the ideal. He notes that the question of whether it is desirable to

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[19]"Educated Man," p. 15.

[20]This is a distinction particularly relevant for elucidating the meaning of "educational technology," to be discussed in Chapter Five.

promote the values associated with the second more specific concept cannot be decided by conceptual analysis. Such questions can be considered only by turning to an ethical discussion. Peters' justification of these values will be dealt with in a later section of this chapter.

4. Education as Initiation

Peters' treatment of "education" as "initiation" needs only brief treatment here as I do not envisage the treatment of educational metaphors to be an important part of the thesis. However, it may give a better idea of what model informs Peters' discussion of education. It may also help to suggest how other models of education might be fitted into Peters' criteria.

Having made the criteria of education explicit, Peters advises that a synthetic sketch is required to draw together the implications of the analysis and prepare the way for the problems of justification.[21] He observes that both the traditional and child-centered views of education proved to be inadequate caricatures of what education involves. He connects the achievements of education with the development of mind: "An educated man is one who has achieved a state of mind which is characterized by a mastery of and care for the worth-while things that have been transmitted, which are viewed in some kind of cognitive

[21] In this sketch, Peters assumes the connection of 'education' and the educated man.

perspective."[22] The question, then, is how the development of this sort of educated mind is to be conceived. He examines features of a broad range of accounts of the development of mind, including those of Plato and Aristotle, Descartes, Kant, Marx, Hegel, the British Empiricists, and Piaget. Noting the importance of such features as reasoning, the emphasis on consciousness, the role of experience, the notion of individual centers of consciousness, and the importance of public traditions, he stresses the necessity of a conception of mind which does justice to both the individual and social dimensions of the development of mind.

The need to account for the individual and the social leads Peters to support the notion of "initiation" as an appropriate metaphor for the development of mind. While the activity of the individual is essential, initiation into public forms of thought and awareness becomes the avenue for development beyond rudimentary conceptual skills:

> Each of these differentiated modes of thought and awareness is characterized both by a content or 'body of knowledge' and by public procedures by means of which this content has been accumulated, criticized, and revised. Each has its own family of concepts peculiar to it and its own distinctive methods of validation.[23]

Peters argues that these forms of awareness are intersubjective in character, involving initiation into public traditions, and are not just the product of maturation or moulding or growth. Dialogue is involved. Education is pictured in terms of such

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[22] Ethics, pp. 46-47.

[23] Ibid., p. 50. This is P[aul] H. Hirst's view of the forms of knowledge which will be discussed in Chapter Three.

an initiation: "education consists essentially in the initiation of others into a public world picked out by the language and concepts of a people and in encouraging others to join in exploring realms marked out by more differentiated forms of awareness."[24] The learning of language is an essential aspect of this initiation into a public heritage which begins early in the life of the child. Teaching, in the early stages of initiation, is largely concerned with getting pupils on the inside of a form of thought and awareness. In later stages, teacher and pupil share the explanation of a common world, and the difference between them is only one of degree. Regarding the emphasis on the individual often stressed in education, Peters argues that self-realization is appropriately viewed in terms of options within a range of worthwhile activities and modes of conduct. Creativeness and inventiveness must likewise be seen against a background of competence in public traditions.

With respect to the criteria of education, Peters notes that "initiation" is consistent with the second group of criteria which stress depth of understanding. Initiation also accords with the requirement of voluntariness and wittingness which the third criterion imposes on educational processes. Initiation does not however suggest the transmission of something worthwhile, for one may be initiated into gambling, devil-worship, and so on. In order to comply

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[24] Ibid., p. 52.

with the first criterion, "worthwhile" must be added. The description of education as initiation into worthwhile activities or modes of thought and conduct does justice to all three criteria, Peters claims.

5. Justification in Education

Peters argues that questions of justification necessarily arise in connection with the concept of education, but that conceptual analysis cannot decide on matters of justification:

> 'Education' has notions such as 'improvement', 'betterment', and 'the passing on of what is worth while' built into it. That education must involve something of ethical value is, therefore, a matter of logical necessity. There is, however, no logical necessity about the particular values ascribed in particular societies to the variable of 'being worth while'. The justification of such values, too, must go beyond the realm of conceptual analysis into that of ethical theory.[25]

In "The Justification of Education"[26] Peters embarks on such an excursion into ethical theory. He is concerned to discover what values are specific to being educated and how these values may be justified. He remarks that it is in connection with the concept of education associated with the development of an educated man that important questions about educational values arise. The more general concept of education "can be accorded any kind of instrumental value, and so is not of any

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[25] Ibid., p. 91. Peters presumably wants to distinguish between ethical theory and the analysis of ethical concepts (which he might regard as just part of ethical theory).

[26] In The Philosophy of Education, ed. R. S. Peters (London: Oxford University Press, 1973), pp. 239-67.

significance for its valuative suggestions."[27] The educated man, it may be recalled, does not merely possess skills. His view of the world is transformed by knowledge and understanding which is not just specialized in one area. He does things for their own sake; he has a sense of standards; he cares. The processes which lead to the achievements constitutive of the educated man are not to be regarded as mere means to ends. For in most cases the logical relationship of means to ends is such that "the values of the product are embryonically present in the learning process."[28]

With regard to how educational values may be justified, Peters first examines instrumental justifications. Use to the community or to the individual is the most common kind of justification of anything in our society, he observes. In this manner, knowledge and understanding might be justified as being in the interest of the community and the individual because of the satisfactions which it promotes and the evils it mitigates. Knowledge implies saying what is thought true, and telling the truth is essential for communication. Giving evidence is important because it contributes to a predictable form of social life. Understanding also aids predictibility, and facilitates adaptation in a rapidly changing technological society. Breadth of understanding might be claimed to be a quality which makes employees more efficient or more humane and civilized.

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[27] Ibid., p. 240. [28] Ibid., p. 241.

Peters points out that it is not so easy to give an instrumental justification of the non-instrumental attitude which is also part of being educated. This attitude involves doing things for their own sake, having a concern for features of the means which may be employed, and caring about the internal standards of the activity which are constitutive of performing it well. Peters supposes that this attitude might be justified by claiming that people who adopt it perform their work better and render better service to the public. But such an instrumental conception of an activity is purely external and disregards how the participants view it. Peters claims that this view from the outside is what is involved in the manipulator's attitude.

While instrumental justifications make the worth of anything dependent on its individual or social benefit, they cannot, Peters argues, give an account of what consititutes such benefit. Pleasure and satisfaction may be claimed to constitute such benefit, but they are in fact inseparable from things that are done, and offer no external form of justification. Thus the claim that things are done for pleasure and satisfaction abandons the instrumental form of justification and places emphasis on doing things for their own sake. This leads Peters to examine whether knowledge and understanding can be judged non-instrumentally, as part of what is constitutive of a worthwhile level of life.

Noting that questions of non-instrumental or intrinsic value are often posed in terms of what is worthwhile, Peters

points out that "worthwhile" may draw attention to the absorbing and enjoyable features of activities, or alternatively, to what is regarded as being of ultimate value.

Under the first sense of "worthwhile," activities or states of mind may be valued because they are absorbing, interesting, fascinating, or enjoyable and associated with the absence of boredom. In this manner, knowledge and understanding might be justified because their possession makes life less boring. They transform activities and the way they are viewed, making them more complex and providing added dimensions of interest and pleasure. Knowledge is also inseparable from planning, ordering, and systematizing, which are intrinsically satisfying activities. The pursuit of knowledge is not subject to the limits of cyclic bodily conditions or scarcity or perishability of the object which may characterize other pursuits such as sex or collecting antiques. Theoretical activities also offer endless possibilities for developing skill and discrimination.

Yet such arguments tend to be one-sided, Peters points out. Emphasis on complexity, duration, and open-endedness ignore the value of the simple, the evanescent, and the routine and familiar. Further, if this form of argument is relied on exclusively, a purely hedonistic defense must be given of science and wisdom in politics. Peters concludes that appeal to the first sense of "worthwhile," although important, is just one way in which education may be

justified. A more well-rounded perspective requires considering the other sense of "worthwhile."

In the second sense of "worthwhile," the concern for truth is "regarded as having a worth which is independent of its benefit."[29] Indeed, Peters suggests, concern for truth might be regarded as a state of mind whose value is such that it provides a criterion of benefit. He argues that there is a group of virtues inseparable from attempts to decide questions by appeal to truth, including "truth-telling and sincerity, freedom of thought, clarity, non-arbitrariness, impartiality, a sense of relevance, consistency, respect for evidence, and people as the source of it."[30]

Concern for the truth is relevant to the justification of knowledge and understanding, because justification as an activity would be unintelligible without such concern. In order to justify doing X rather than Y, X and Y have to be distinguished in some respect. The search for truth is presupposed in the sense that obvious misconceptions about the activities must be removed. "There is a presumption, in other words, that it is undesirable to believe what is false and desirable to believe what is true."[31]

Giving a reason for doing X rather than Y requires showing X to have a feature lacked by Y which makes it more

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[29] Ibid., p. 251.

[30] Ibid., p. 252. These are the "values of reason."

[31] Ibid.

valuable. Achieving clarity about such an issue involves rejecting arbitrary assertions and irrelevant considerations, and inquiring into the evidence which supports generalizations. These procedures are presupposed by the search for relevant reasons. They are "constitutive of the search for truth"[32] and not matters of individual preference. If value were not ascribed to such procedures, rational discussion would be unintelligible as a public practice.

Peters considers three sorts of difficulties associated with ascribing value to the concern for truth. In the first place, the value of justification might be questioned. However, such questioning presupposes its value, for it involves giving reasons for and against it, which is itself a justificatory activity. Making a case against it presupposes it; the alternative is an arbitrary rejection not based on reason. Thus a commitment to the value of justification and the search for truth is involved in the very sort of questioning which might seek to deny the value of justification--it is a presupposition of reasoning. Peters points out that this argument makes a case for no particular kind of knowledge but indicates the importance of knowledge which is relevant for assessing belief, conduct, and feeling.

Secondly, it might be objected that the value of the breadth of knowledge is not established by this form of argument, Peters observes. While it shows the value of some knowledge, it does not make a case for the breadth of

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[32] Ibid.

knowledge associated with the educated man. Peters argues that the case for breadth of knowledge derives from the link between justification and the forms of knowledge. If a case is to be made for choosing between X and Y, it depends on how X and Y are conceived. How they are viewed depends on the forms of knowledge available and the extent to which the individual is initiated into them. Choosing between X and Y is not a mere matter of observation. Peters argues that a person should not be deprived of a range of forms of knowledge which might throw light on the alternatives open to him. Greater potential for viewing and appraising options is offered by forms which have more far-ranging influence on conceptual schemes and understanding and more far-ranging cognitive content.

Thirdly, Peters examines the possibility that only the instrumental value of attempts to discover what is true has been established. He asks whether knowledge and understanding are only instrumental to answering "Why do this rather than that?" Are they only empirically necessary conditions like having a healthy body? He argues that initiation into knowledge and understanding is logically related to such questioning. The values of reason which are embodied in knowledge and understanding are the very values presupposed by such questioning, writ large. Attempts to discriminate alternatives with clarity and precision have the values of reason immanent in them. The value does not reside in acquiring knowledge per se but in the procedures

implicit in justification. "It is being claimed that what is valuable is inherent in the demand that what is done, thought, or felt should be rationally scrutinized."[33] This argument for the value of knowledge based on the values of reason points, in addition to breadth of knowledge, to the value of cognitive perspective. It suggests that what one knows and understands should be "interrelated in terms of consistency, relevance, evidence, implication, and other such rational connections."[34]

Peters concludes that "the demand for justification presupposes the acceptance of the values implicit within it."[35] Education, then, consists in initiation into the forms of knowledge and understanding which are relevant to justification. Thus, insofar as processes of education are processes which lead to knowledge and understanding, they are "implementations, through time, by means of learning, of the values and procedures implicit in justification."[36]

This second type of non-instrumental account of what is worthwhile in education is a transcendental form of argument "which attempts to make explicit what a person is committed to who makes use of his reason in attempting to answer the question 'What ought I to do?'"[37] It is thus an account in which justificatory principles are sought in the

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[33] Ibid., p. 260. [34] Ibid., p. 261. [35] Ibid., p. 262.

[36] Ibid. [37] Ethics, p. 153.

presuppositions of practical discourse. These presuppositions are the values and procedures of reason which are embodied in the forms of knowledge and understanding relevant to justification. Instrumental arguments and hedonistic arguments are not ruled out, but their deficiencies are shown and the importance of supplementing them with a form of argument based on the presuppositions of reason is defended.

The values of education thus center around the values of reason and the forms of knowledge and understanding which embody them and are relevant to justification. Their justification lies in the fact that these values and procedures of reason are presuppositions of any justificatory activity. Their value is presupposed by a commitment to justification and the pursuit of truth. This transcendental form of argument provides the crucial support for Peters' justification of the achievements which culminate in being an "educated man."

CHAPTER TWO

PETERS' ANALYSIS RECONSIDERED: CRITICISMS AND QUALIFICATIONS

1. Introduction

In this chapter I will consider a representitive selection of criticisms of R. S. Peters' writings. These criticisms are chiefly concerned with two major aspects of Peters' work: his criteria of education and his transcendental approach to justification in education. Inquiry into Peters' approach to formulating criteria of education turns out to involve raising major questions about the nature of conceptual analysis, especially with respect to what clarifications it may offer concerning the evaluative meaning of words. Concern with problems relating to value is also to be seen in the questions which are raised about Peters' transcendental arguments. A major thesis would be required for an adequate examination of each of these two major areas of inquiry. Here I may only briefly indicate some of the questions that have been raised and inquire to what extent they may affect the use which I hope to make here of the distinctions raised by Peters:

2. Criticisms of Peters' Analysis of "Education"

Harold J. Franz[1] has criticized the narrowness of Peters' criteria and his tendency to further narrow the criteria in his exposition. Franz takes Peters' emphasis on the centrality of the achievements of the learner to be a reduction of the range of meaning of "educate" to what is accomplished by the learner. He claims that "the success of 'educate' is not individual, it is cultural,"[2] pointing out that this is implied by Peters' view of education as initiation. "Educate," in its major usage, is predicated of teachers and institutions. Franz argues that the achievement sense of "educate" is not central, because achievements have to do with unique and definite time instants. The dominant sense of "educate" is defined by the qualities and relations of the state of "being educated." He claims that this state is not even adequately encapsulated by Dewey's notion of growing and learning throughout life. He suggests that

> "Educate" requires the implication of cultivation in the student of selected and commended criteria, an act which is more than an act of learning. There are, of course, norms and standards which must be fulfilled in order to predicate a given state as in the case with marking of an achievement. The difference between these comes in the manner of fulfilling. There is no achievement of educating, but a continual deepening or excelling.[3]

While there is a point in time where one may be regarded as

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[1]Harold J. Franz, "The Criteria of 'Being Educated'," Educational Theory (Fall, 1972):395-402.

[2]Ibid., p. 397.

[3]Ibid., pp. 397-98.

"educated" in a minimal sense, the education is never achieved or accomplished in the sense of being completed.

Franz raises questions about Peters' treatment of the normative features of education. He doubts that Peters' notion of intrinsic worthwhileness can sort out the variety of claims which can be made about what is good. He argues that Peters attempts to remedy the vagueness of worthwhileness as a criterion by making the criteria of cognitive value tighter. Franz doubts that this approach to amending the argument is sufficient. He believes that Peters' requirement of knowledge and understanding in depth and breadth unpacks the notion of wholeness in terms of a rational unity only and fails to suggest whether anything beyond theoretical awareness is required. Franz is dissatisfied with this emphasis on the cognitive aspects of education. He suggests that the importance of a criterion of aesthetic value connected with educating has been overlooked by Peters. Agreeing with Maritain, Franz asserts that "any attempt to specify what is the ideal education requires a comprehensive and adequate theoretical map of experience."[4] He argues that Peters' restriction of the cognitive criteria to the theoretical cannot do justice to what this involves. Thus Franz doubts that what he calls Peters' "pluralist" theory of value can be adequately supplemented by merely tightening up the cognitive criteria.

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[4]Ibid., p. 401.

As an alternative, Franz offers the notion of "a way of life" as a way of giving content to what is worthwhile. The justification of particular goals or values is necessarily carried on from within a value system which constitutes a way of life. Particular values must be vindicated in terms of their accord with a way of life. He situates "education" within the context of this notion: "To 'educate' is to get the student to commit to a way of life."[5] He holds the criteria of education to be largely procedural, clustering around what is involved in "the selection, commending and cultivation of a way of life."[6] He criticizes Peters for minimizing the procedural criteria, and he denies that ethical and cognitive criteria are central to the concept: "Education is an ideal-oriented task, not because we can justify the components as intrinsically worthwhile, but because the criteria we use are largely procedural and the substance of the act is therefore optional."[7]

Franz's criticisms deserve several remarks here. He appears to agree with Peters that education is connected with questions of value, but he seeks to handle the matter in a fashion which escapes the narrowness to which Peters has committed himself. Franz's criticism of Peters' treatment of the achievement aspects of education appears to involve a confusion. Peters does not characterize education as an achievement; rather he claims that the notion of "being educated" is given content by the achievements associated with

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[5]Ibid., P. 402. [6]Ibid. [7]Ibid.

the educated man. The whole process is not regarded as an achievement; rather a group of achievements is seen to be involved, and a very open-ended group of achievements at that.[8]

While I find salutary Franz's cautions about the incompleteness of specifying "education' in terms of only cognitive values, I cannot agree with his characterization of Peters' treatment of the cognitive criteria. Peters does not restrict education to theoretical knowledge. It involves "knowledge of the good" in the sense of sensitivity to the standards connected with the point of an activity. Peters argues that such a knowledge of the good is involved in both theoretical and practical pursuits, and that theoretical understanding may transform practical pursuits: thus, "Being educated . . . involves a capacity for absorption and enjoyment which is connected with sensitization to standards which structure activities and pursuits."[9] I read Peters as claiming not that education has merely to do with the cognitive, but that the cognitive achievements associated with being an educated man transform other sorts of pursuits which may indeed range from theoretical activities to pursuits with little intrinsic cognitive content at all, such as eating or sex.

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[8]For examaple, "Being 'educated' marks a group of achievements which are internally related to a family of tasks." (Peters, Ethics, p. 13.)

[9]Peters, "Educated Man," p. 13.

Franz's recommendation of the notion of the selection, commending, and cultivation of a way of life as the central notion in education would seem to amount to opting for Peters' more undifferentiated concept of education which refers to passing on of whatever a community may consider worthwhile. "Commending a way of life" is another way of talking about passing on whatever a community regards worthwhile. This implies an attempt to unpack education in terms of what is presupposed by the selection, commending, and cultivation of a way of life. This is an interesting suggestion, but it would require extensive exposition to fill it out adequately, and this Franz has not done. He would have to show how the presuppositions of this sort of pursuit involve principles relevant to educational judgements. This sort of pursuit appears to be equally as vague as questions concerning worthwhileness. Further, commitment to pursuing questions connected with a way of life appears to be much easier to escape than commitment to practical reason. There is, however, a sense in which questions about a way of life are coextensive with practical reason, for they are questions of the form "What ought I to do?" and "Why do this rather than that?" Attempts to answer such questions involve the values of reason and the procedural principles to which Peters has referred. In fact, Franz lays emphasis on procedural criteria, but Peters has shown their insufficiency for providing a full account of the use of the term: the tasks of education can only be fully accounted for in

connection with the achievements in which they culminate.[10] Thus it appears that Franz's program either lands him in the commitment to practical reason and the pursuit of truth which characterize Peters' more differentiated concept of education, or else he is committed to the selection, commending, and cultivation of a way of life without the giving of reasons being required, which sounds arbitrary indeed.

More serious challenges to Peters' "criteria of education" approach arise from doubts which several writers have expressed concerning Peters' handling of conceptual analysis. A. J. Watt[11] has criticized the doctrine that education is worthwhile for its own sake, and expressed doubt that conceptual analysis can establish this. F. N. Dunlop[12] has questioned Peters' program of making explicit the conventions of linguistic usage. He proposes that a philosophically significant treatment of a concept ought to show how it is forced on us by the nature of reality. G. Reddiford[13] has developed the distinction between conceptual

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[10] Ethics, pp. 37-38. Peters does not regard procedural principles as unimportant, but he insists that their educational importance is to be grasped in connection with the achievements of the learner.

[11] "Conceptual Analysis and Educational Values," Educational Philosophy and Theory 5 (October, 1973):27-37.

[12] "Education and Human Nature," Philosophy of Education Society of Great Britain, Proceedings IV (January, 1970):21-44.

[13] "Conceptual Analysis and Education," Philosophy of Education Society of Great Britain, Proceedings VI (July, 1972):193-215.

connections and logically necessary conditions. He argues that Peters has been able to establish only conceptual connections between education and value and knowledge. John Earwaker[14] has inquired into how the knowledge and value conditions are connected, and he has offered a four-fold classification of concepts of education based on these connections. James Lund[15] has rejected Peters two-concepts approach to education. He has sought an approach presupposing the unity of the concept. Abraham Edel[16] has discussed Peters' two-concept approach with respect to the nature and and limits of conceptual analysis. Jonas Soltis[17] has pointed out the way in which value issues challenge the paradigm of conceptual analysis. These inquiries amount to a fairly broadranging criticism of the type of use to which Peters has put conceptual analysis. I propose to consider each of these criticisms in turn.

Watt raises issues about both Peters' general claims about how criteria relate to education, and about the value criterion in particular. He contends that Peters' dichotomy

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[14]"R. S. Peters and the Concept of Education," Philosophy of Education Society of Great Britain, Proceedings VII (July, 1973):239-59.

[15]"On Education: An Introduction," Man and World 7 (August, 1974):279-92.

[16]"Analytic Philosophy of Education at the Crossroads," in Educational Judgements, ed. James F. Doyle (London: Routledge & Kegan Paul, 1973), pp. 232-57.

[17]"Analysis and Anomalies in Philosophy of Education," Educational Philosophy and Theory 3 (October, 1971):37-50.

between words which pick out a class of referents and words which lay down criteria is false. Laying down criteria and picking out a class of referents amount to the same thing: "A word can pick out a particular class of referents only by laying down criteria to which anything must conform to be a referent."[18] Like education, gardening (Peters' example of a word which picks out a particular activity) picks out no particular activity: tilling, planting, watering, weeding, pruning, and hoeing are among the activities which may be involved. These activities belong to gardening in the sense that they conform to the criteria of gardening. Watt writes, "To set criteria is ipso facto to mark out a class or type, however roughly."[19] I believe Watt's view here is correct and offers valuable clarification. That education lays down criteria is not unusual; it is rather a basic feature of any concept that there are conditions for using it correctly. This point is not damaging for Peters' overall approach, but it demonstrates that it is misleading to claim that there is anything special about a concept having criteria.

More particularly, Watt argues against Peters' conceptual claim that "education" is only used appropriately with respect to what is intrinsically valuable. While it may be a linguistic fact that the word "education" is a favorable normative term, Watt doubts that its exclusive

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[18] "Conceptual Analysis and Educational Values," p. 29.

[19] Ibid.

reference to what is of intrinsic value can be a linguistic fact. He denies that the linguistic fact of favorable normative usage can support the conceptual truth that the achievements of the educated man are valuable in themselves. He criticizes Peters for treating the normative force of "education" as part of its designation. He argues that "education" is not a word like "excellent" or "deplorable" which lack designation and have only normative force. It is contradictory to say "That is a bad book, but there's nothing wrong with it," but "My son has been educated, more's the pity; he's a useless, selfish snob" involves no contradiction.[20] In short, Watt claims that conceptual analysis cannot yield the conclusion that education is intrinsically valuable. Watt's arguments here are interesting but inconclusive. Given the undifferentiated concept of "education" which Peters describes, he is quite correct. This is how his example "My son has been educated . . ." gets its leverage: a more adequate concept of education might well exclude calling someone "educated" in such a case. Yet it is arguably a linguistic fact that "education" is used in the second more specific sense to mark out a group of intrinsically valuable achievements. There

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[20] Ibid., pp. 34-35. Watt's example of "a bad book" is only contradictory if the same set of standards is being referred to by both "bad" and "wrong"--but there is no reason why this must be the case. In his example, "bad" might refer to conventional moral appraisals, while "wrong" might refer to some distinct ethical or aesthetic principle to which the author of the statement is appealing. Similarly, Watt's "selfish snob" example might indeed be contradictory if the speaker has Peters' strong sense of education in mind.

is no apparent reason why a concept may not in fact pick out a group of non-instrumental values. The concept of "fine art" would appear to be another case. It would indeed be odd if a person admitted that a certain painting was clearly an example of fine art, yet claimed that it had only an instrumental sort of value. We would doubt that he had the concept of "fine art."

Dunlop has raised questions about what Peters is doing when he does conceptual analysis. Pointing out that "concept" may apply to a word, thought, idea, thing, or natural class of things, he claims that concepts are more philosophically significant if "forced on us by the nature of reality."[21] Dunlop argues that conceptual analysis should do more than show how certain people use words. He speculates whether Peters' notion of concept is "something like 'a distinction which is somehow forced on us by the nature of the world.'"[22] He observes that this appears to be denied in Peters' statement that "I would count as a conceptual connection one that appertains to the general use of a concept in public language."[23] Dunlop claims that the central, paradigmatic uses of a concept "touch reality": "we must have these concepts if we are (to be) human."[24] He

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[21] "Education and Human Nature," p. 23.

[22] Ibid., p. 29.

[23] "Aims of Education, a Conceptual Enquiry; Reply," in Philosophy and Education, Proceedings of the International Seminar, March 22-25, 1966 (Toronto: Ontario Institute for Studies in Education, 1967), p. 30; quoted in Dunlop, p. 33.

[24] "Education and Human Nature," p. 38.

insists that "an argument about the concept of education ought to start from a consideration of what being human is, or must be."[25]

Two sorts of comments must be made here. First, arguments from the nature of reality have the unenviable metaphysical task of showing what the nature of reality is or must be thought to be, which is far beyond anything envisaged here or by Peters himself. Dunlop seems to assume that some sort of easy and direct access to the nature of reality is available. Yet the history of philosophy, and indeed recent science, shows that a more difficult to establish foundation could hardly have been chosen. Secondly, Peters does indeed have a concept of human nature in mind, but he does not err in making his arguments depend on it in any naturalistic sort of way. He regards man as a "rational animal": "human life is a context in which the demands of reason are inescapable."[26] By this observation he does not commit himself to arguing naturalistically, as in the Greek doctrine of function. Rather, the fact that "human life already bears witness to the demands of reason"[27] serves as the starting point for his transcendental argument. Dunlop expects far too much of conceptual analysis, and he appears

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[25] Ibid.

[26] Peters, "Justification," p. 253.

[27] Ibid., p. 255.

to be flirting with both naturalism and metaphysical speculation which can hardly provide a firm support for reasoning about education.

Reddiford inquires into the logical status of the connections which hold between "education" and "value" and "being educated" and "knowledge and understanding." He examines what kind of truth may be involved in such connections. He points out that conceptual truths are not empirical truths (de facto true) or truths of logical necessity (knowable a priori). The provision of logically necessary conditions for using a term results in a weak definition; logically sufficient conditions yield a strong definition. Logically necessary conditions, he claims, typically have the character of analytic statements, and it is often not possible to produce such conditions. In such a case one must be content with conceptual connections whose truth, while informative about the world and/or the way we think about the world, is not empirically or logically necessary truth. While allowing that there are logically necessary conditions for the use of any word, Reddiford argues that such conditions only "specify the conditions under which anyone can meaningfully say anything in any area of discourse or within any conceptual framework."[28] These formal conditions do not entail any substantive criteria which must be satisfied; they rather specify what is required to use

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[28]"Conceptual Analysis and Education," p. 197.

a word meaningfully at all. Reddiford argues that this is much more minimal than what interests Peters and himself.

He argues that the meaning of a term like "education" cannot be examined apart from the conceptual systems within which it is used. The same term may be used in different conceptual systems. In one system, "education" may refer to knowledge, understanding, and regard for the values of reason, while in another system concerns about technological manpower and social mobility may be paramount. Reddiford argues that conceptual truths are the expression of the conceptual connections and relationships within a conceptual system. While claiming that they are necessary truths, he disagrees with Dunlop that conceptual truths are forced on us by the nature of the world: "Their necessity (i.e. their being more than de facto) lies in their expressing relationships within the conceptual frameworks that we employ and must employ, granted what is a contingent matter that we see things in the ways that we do and have the purposes that we have."[29]

Reddiford shows how his account leads to a revision of what is involved in the correct and incorrect use of a term. The correct-incorrect distinction has not to do with logical necessity and self-contradiction, but with mistakes which may be made in using a word, and with procedures for correcting usage. Correctness has reference to particular

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[29] Ibid., pp. 202-3.

conceptual frameworks within which people regularly accept or reject different usages. Maps of such usage can be made and criticized; "conceptual analysis" consists of such techniques of criticism, Reddiford writes. Peters' identification of the conceptual connections of "education" with "knowledge" and "value" thus has reference to the conceptual system to which he is committed, in which the correctness of using the word "education" has centrally to do with these particular connections. Yet other conceptual connections are possible within other conceptual systems.

Reddiford's proposal is an interesting account of what is involved in Peters' efforts. His suggestion that "conceptual connections" is a more appropriate expression than "logically necessary conditions" hinges, however, on the rather narrow specification he has given to "logically necessary conditions." He has identified the latter with formal logic, whereas I believe Peters' usage is closer to what Reddiford means by "conceptual connections." His view that correctness and meaningfulness have reference to conceptual systems is a useful one, which shows how conceptual change and divergent usages of a term within different situations are possible. It suggests a relativization of Peters' accomplishments which may be somewhat misleading. A commitment to any sort of rational inquiry would appear to land one, at least embryonically, within Peters' sort of conceptual system. I conclude that Reddiford's attempts to work out what is involved in conceptual connections are

interesting yet lead to no decisive modification of Peters' position as sketched here.

Earwaker professes to be interested in whether Peters has provided the concept of education or merely a concept of education. He is curious about what the relation between the knowledge and value criteria may be, and whether the latter indicates evaluative meaning or positive approval. He wonders whether what Peters has offered amounts to a prescription under the guise of analysis, in that it only tells part of the story. Earwaker reviews the arguments presented by Peters which show how either criterion can be made the sole one, with the other becoming merely part of a specification of it. Thus knowledge and understanding might be part of a specification of what is valuable. Earwaker is particularly interested in those cases where "education" has the character of dis-value, e.g. in some of the statements of de-schoolers and radical student culture, or in the case of the practical, hardheaded man in the street who rejects education as "irrelevant" or "sissified."

Noting that Peters has admitted "education" may be detached from both the knowledge and value conditions, Earwaker proposes a four-fold classification of concepts of education. This classification allows not only that the value and knowledge conditions may or may not be met, but that either may be met independently of the other. He illustrates this with the following diagram:[30]

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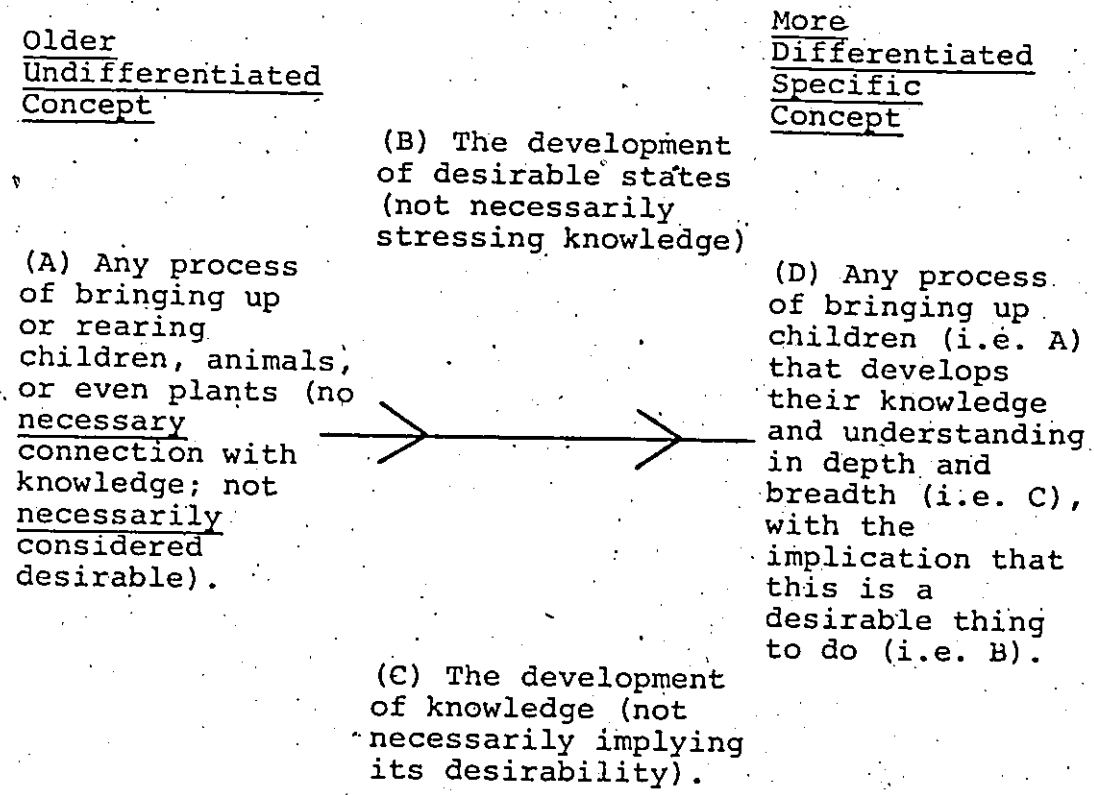
[30]"R. S. Peters and the Concept of Education," p. 246.



Earwaker characterizes Peters' two-concept view in terms of a shift from A to D, with B and C being regarded as deviations. Earwaker argues that there are instead these four basic concepts distinguishable within the logical geography of "education." He points out that these are in fact different ways of tightening the concept up, a subtlety which Peters disregards. He revises his diagram to show these possibilities:[31]

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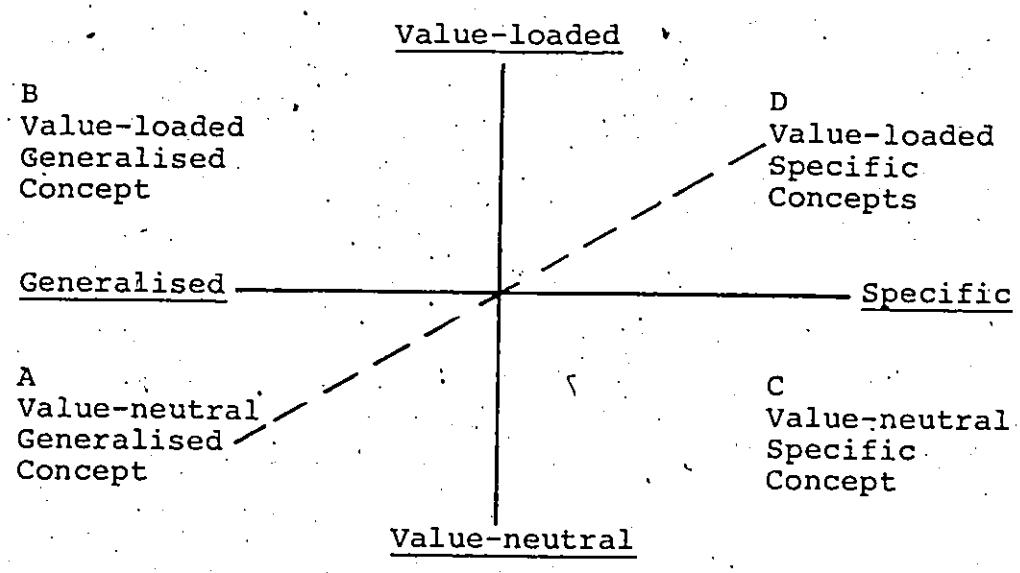
[31] Ibid., p. 248.



While Peters' progression from A (Education as "rearing") to D (Education in the "educated man" sense) combines increasing value-loadedness with increasing specificness, it is clear that this is not necessarily so. Highly valued general concepts and neutral specific conceptions are among the possibilities. A specific conception need not be primarily cognitive either. Earwaker's second chart also substitutes value-loadedness for desirablility, allowing that both approval and disapproval may be built into the concept.

Acknowledging that he has analyzed only the form which the concept "education" may take, Earwaker suggests what meanings may be connected with the different positions in his diagram. A is a purely descriptive, general term which might be used to refer to, e.g., American schools or what goes on in them, or to what mothers do with their children. B is that sense in which education is roughly equated to learning, where the desirability of a whole gamut of things a child may learn is emphasized. Earwaker believes its

deficiency is not in being non-cognitive, but in being so imprecise as to be not satisfactorily defined at all. C is a quite precise and clear, but neutral, label which is most often equated with schooling. It is the sense in which one might speak about comparative education or educational systems without implying any evaluation of what is involved. Earwaker agrees with Peters that the more philosophically interesting meanings involve both precise specification and built-in evaluation. These are the meanings which cluster around sense D. Earwaker notes that this sense includes both Peters' "educated man" sense and most of the positions taken by other contemporary educational writers, for both cognitive and non-cognitive specification, and positive and negative evaluation may be involved: "Thus R. S. Peters, the de-schoolers, and almost everyone else who has ever thought about it, direct our attention away from mere learning (too generalized) and away from mere schooling (ignores value-dimension) onto some kind of specific, evaluative concept of type D."[32]

Earwaker concludes that four different concepts of education, and not just four different views, are operative in our use of the word in various contexts. Further, the central uses of education in category D cannot be distinguished by logically necessary conditions. Appeal to discussion

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[32]Ibid., pp. 252-3.

and consensus is required, Earwaker asserts. He claims that "Peters, by trying to analyse the content of 'education' as well as its form, lays himself open to the charge of going beyond mere analysis altogether and offering a stipulative definition of his own."[33] Earwaker believes that the analysis of education involves "setting out the complete range of possible meanings."[34] He shows that Peters has clearly not done this, having satisfied himself with making explicit a current concept of education. Earwaker has, he hopes, offered an analysis which shows how speaking of education as "socialization," "learning," "individual development," and so on involve not mistakes of usage but choices within the range of possible meanings.

Earwaker, I believe, has done an exemplary job of setting out the possible meanings of education. His claim that Peters has presented only a partial view in his criteria and his two-concepts approach appears justified. However, I do not think Peters may be faulted for claiming to have presented the only possible meanings of education: he does not claim to do that. In making his case for what may be taken as the central senses of education, Peters has also made explicit the conceptual framework within which he is operating, which includes a fundamental commitment to reasoning and truth. If we read Peters as arguing for the only justifiable conception of "education," or as purporting

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[33] Ibid., p. 254.

[34] Ibid., p. 256.

to merely show the range of possible meanings it may take, then Earwaker's remarks constitute a damaging argument indeed. However, I read Peters as aiming for the more modest accomplishment of describing a conception of education which has considerable linguistic currency (as he has established in his examples of usage) and which admits of a throughgoing rational defense (which he has attempted in his transcendental argumentation). My main criticism, then, of Earwaker is that he does not admit the legitimacy of what Peters is doing. I agree with and support his account of the range of meanings of "education" and I consider this a valuable contribution, although I do not agree with his conclusion that four concepts of "education" are operative. I would prefer to understand his distinctions as four clusters of meaning within the one concept. I wish, however, to assent to the legitimacy of Peters' more delimited efforts, though I would not support any claim made by Peters to be accomplishing the larger task proposed by Earwaker.

Much briefer remarks may be directed at the critical positions adopted by Lund, Edel, and Soltis. Lund rejects Peters' reference to two concepts of education as unjustified. He argues that Peters' historical account does not provide grounds for supposing there are two concepts. While the concept may have undergone the historical development Peters attempts to demonstrate, this does not justify the supposition of a completely distinct sense of "education" meeting Peters' criteria. Lund writes, "The task therefore is to give an account of the concept of education which will presuppose the

unity of the concept and to attempt to make intelligible all uses of the word, even when these may be mistaken, since the possibility of recognizing a mistake depends upon a recognition of the criteria for the valid use of the word."[35] Since Peters' criteria are clearly not necessary or sufficient conditions for using the word "education" meaningfully, Lund argues that their logical status and the reasons for choosing them are in doubt. Lund has also noted that Peters' claim that the concept of education "lays down criteria" invites confusion. He argues that the establishment of criteria is a public act. To attribute to concepts active powers of laying down criteria is to misconstrue the nature of concepts and criteria as instruments of thought. Soltis claims that Peters' criteria involve him in a prescriptive account of education which makes value recommendations of the manner and matter of education. Referring to Thomas Kuhn's well-known discussion of scientific paradigms, Soltis has claimed that Peters' treatment of these value aspects has involved him in issues which are beyond the limits of what can be entertained within the analytic paradigm. Edel has commented on these observations by Soltis, and he has agreed with Soltis that it is not desirable to keep excluding evaluative and empirical issues from the "normal" paradigm of analysis. Edel questions whether it is necessary for Peters to carry out the redefinition of education attempted in

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[35] "On Education: An Introduction," p. 282.

"Education and the Educated Man." Noting that Peters has identified certain options regarding how "education" may be defined, Edel suggests that the proper approach is to "give an explanatory preamble and choose your path on conscious and significant grounds."[36] He argues that the ethical, social, empirical, scientific, and historical considerations are integral to the analysis and ought not to be regarded as separate as the credo "conceptual analysis leaves everything as it is" suggests.

I am in agreement with Lund that an approach to conceptualizing "education" which presupposes the unity of the concept is desirable. While this involves indentifying criteria, it need not be supposed that the concept takes an active role in legislating what the criteria are, or that the criteria are "built in." Peters' efforts to make a case for his differentiated concept of education have made his criteria the target of considerable criticism, as Lund, Soltis, and Edel have pointed out. His "tightened up" sense of education is not the only meaningful way of using the term, and his apparent prescriptiveness has been seen as particularly problematic with respect to the doctrines of conceptual analysis. This has in turn raised questions about the legitimacy of the "normal" paradigm of analytic philosophy. I find interesting the suggestion by Soltis and Edel that evaluative and empirical issues, i.e. substantive issues, ought to be dealt with in analysis. Similar

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[36] "Analytic Philosophy of Education at the Crossroads," p. 249.

dissatisfactions have led C. Beck to reject analytical philosophy as an adequate approach to philosophy of education. Yet it is surely important to preserve the distinction between conceptual issues and substantive issues, even if this distinction does not turn out to be as firm as some analytic philosophers perhaps hope. Indeed Peters has pointed out that the use of "education" to pick out concern with what is worthwhile (and cognitive achievements in particular) was once a matter of contingent judgement but that the link now appears to have become conceptual (at least for some speakers). Perhaps, too, more attention has to be given to how questions of concept and substantive questions are linked, e.g. how conceptual issues and empirical issues can codetermine a course of scientific inquiry. However, the moves by which the inclusions recommended by Soltis and Edel may be handled are far from self-evident, and the defense of such an approach is beyond the scope of this thesis. Yet it seems to me that the case concerning Peters' prescriptivism has been overstated. Rather than recommending particular moral principles, he is recommending a conception of education picked out by criteria which can clearly be seen to be operative in discussions about education. His prescriptiveness lies in having emphasized a concept of education rather than simply describing the full range of meanings associated with the term.

3. Criticisms of Peters' Transcendental Arguments

The criticisms of Peters' transcendental arguments have aimed chiefly to show that they cannot do what Peters hopes they will do. A. W. Beck[37] has attempted to show that Peters' transcendental form of argumentation cannot support curriculum decisions. A. J. Watt[38] and John Kleinig[39] have described the general features of this form of argument, arguing that its limits preclude it from accomplishing what Peters hopes it will do. Peters[40] has responded to Kleinig with a restatement of his purposes in introducing arguments of this form.

A. W. Beck has directed his criticisms towards Peters' transcendental justification of worthwhile activities. He points out that Peters has sought support for this justification in Peter Winch's argument that the moral value of truth-telling is presupposed in any attempt by a social community to use shared language. Beck recalls Peters' argument that concern for truth is the distinguishing feature of worthwhile activities which brings in the transcendental argument that any attempt to seriously answer the question

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[37] "Does 'Ethics and Education' Rest on a Mistake?," Educational Philosophy and Theory 3 (October, 1971):1-12.

[38] "Transcendental Arguments and Moral Principles," Philosophical Quarterly 25 (January, 1975):40-57.

[39] "R. S. Peters' Use of Transcendental Arguments," Philosophy of Education Society of Great Britain, Proceedings VII (July, 1973):149-66.

[40] "A Reply to John Kleinig," Philosophy of Education Society of Great Britain, Proceedings VII (July, 1973):167-76.

"Why do this rather than that?" presupposes a commitment to the intrinsic value of truth. Beck's counter argument is that a person who seriously asks this question might value truth only instrumentally as a means for finding out how best to live. He argues that whether people value truth for its intrinsic worth is "a contingent matter of empirical fact, not a logically necessary consequence of their rationality."[41] Beck distinguishes between two senses of truth-telling. The first has to do with being trustworthy and not concealing facts. A moral commitment to truth-telling is this sense is a requirement of sharing a language. The second sense of truth-telling is the making of true statements, as exemplified by the true statements which science seeks to make about the universe. Taking part in this latter sort of activity is not a matter of moral obligation at all. Beck argues that Peters' extension of the transcendental argument from the truth-telling required for communication (sense one) to the truth-telling involved in making e.g. historical and scientific statements (sense two) is not logically justified. He regards this as a confusion of what is morally binding with what is merely morally acceptable. Curriculum activities such as history and science, while they may be regarded as morally acceptable and even intrinsically valuable, are not in any way morally binding. Rather than having the morally binding character of categorical imperatives, they have more the

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[41]"Does 'Ethics and Education' Rest on a Mistake?," p. 3.

character of hypothetical imperatives in which "You ought to do X" typically functions as "If you do X, you will have a wonderful time." In addition to arguing that Peters cannot by transcendental arguments show that curriculum activities are morally obligatory, Beck remarks that Peters' approach leads to too great an emphasis on truth-telling activities in the curriculum, leaving the case for aesthetic activities without firm support. Beck speculates that since Peters' transcendental argumentation has these weaknesses, another sort of justificatory principle such as instrumentalism may have to be sought for curriculum activities.

While Beck's distinction between two kinds of truth-telling is well-drawn, its applicability to Peters' case is in doubt. For the pursuit of truth implied in inquiry into questions such as "Why do this rather than that?" seems to involve more than communicatory truth-telling. It has more the character of inquiry into what true statements may be made, and what distinctions between cases are correct and relevant. Whether Peters wants to say that curriculum activities are morally obligatory is another question. He seems rather to want to say that beyond being morally acceptable they are intrinsically commendable. In addition, a degree of familiarity with the forms of thought and awareness open to us seems to be a requirement for any deeply informed appreciation of worthwhile activities. But one is not morally obligated to achieve this familiarity; it is more on the order of a necessary condition for such appreciation. We are rather, as educators, morally obligated not to deprive

persons of such familiarity. Finally, Beck's suggestion that another justificatory principle be sought ignores that Peters also allows for non-instrumental justification based on wants and needs.

Watt proposes to consider the use of transcendental arguments to justify moral principles. Such principles are said to specify the kinds of reasons which are relevant for deciding on moral issues. He characterizes the transcendental form of argument thus:

> The strategy of this form of argument is to accept the skeptical conclusion that these principles are not open to any proof, being presuppositions of reasoning rather than conclusions from it, but go on to argue that commitment to them is rationally inescapable, because they must, logically, be assumed if one is to engage in a mode of thought essential to any rational human life. The claim is not exactly that the principles are true, but that their adoption is not a result of mere social convention or free personal decision: that a mistake is involved in repudiating them while continuing to use the form of thought and discourse in question.[42]

He notes that part of the strength of such an argument comes from the difficulty of rejecting the form of discourse involved. In the case of a form of discourse such as astrology it might be very easy to reject the form along with its presuppositions. An extreme position regarding the use of such arguments holds that for a presupposition to be inescapable, it must be shown that it is necessary not for just a form of discourse, but for any discourse at all. The more usual approach in ethical argumentation holds that inconsistency results from denying a principle and yet going on using a

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[42] "Transcendental Arguments and Moral Principles," p. 40.

form of discourse of which it is a presupposition. Watt remarks that "Such an argument could have considerable justificatory force, if founded on a mode of thought and discourse which no reasonable person would repudiate, even though a repudiation of it and its presuppositions could be uttered coherently."[43]

Watt points out that how broadly the form of discourse is defined depends on what principles one hopes to defend. If the principles have substantive moral content, the temptation will be to define the form of discourse more narrowly to improve the chances of showing that the principles are presupposed. The more narrow the specification given, the more difficult it will be to show that everyone must use the form of discourse. Watt notes that Peters has been sensitive to this problem, aiming to put forward "arguments pointing to what any individual must presuppose in so far as he uses a public form of discourse in seriously discussing with others or with himself what he ought to do."[44] The very general presupposition picked out is that one is committed to recognizing that something must be counted as a reason for or against certain actions, or else such deliberation would be empty. Watt emphasizes the vacuousness of this presupposition and its inability to yield substantial content. He criticizes Peters' attempt to base an argument for the

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[43] Ibid., p. 43.

[44] Peters, Ethics and Education, pp. 114-15; quoted in Watt, p. 44.

principle of justice or equality on it: "The principle rules out only acting without any reason at all, which we would call impulsive or mindless, rather than unjust."[45] This principle is neither a moral principle nor any sort of substantive practical principle, Watt asserts.

Watt proposes that one rationally inescapable substantive principle of practical discourse may be claimed: "If a person did not regard the fact that an action would benefit him as a reason in its favour, he would have rejected such a central and paradigmatic instance that he could not be said to have the concept of practical reason."[46] This principle is presupposed in that if one is to accept anything as a reason for acting, one must surely accept this. Yet Watt questions whether a moral principle has thus been defended. He argues that this is rather a case of prudence. He reasons that within practical discourse one may accept only prudential reasons, denying moral ones, without incurring logical criticism. Watt argues that Peters has defined practical discourse broadly enough to make its repudiation improbable,

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[45] Watt, "Transcendental Arguments and Moral Principles," p. 46.

[46] Ibid., p. 47. Watt is trading on the primacy of prudence in everyday reasoning in this example. Yet, especially for religious persons, personal benefit would not necessarily be a central or indispensable reason in favor of an action. Such a person might even regard personal benefit as a reason speaking against an action, and yet not lack a grasp of practical reason. Indeed, spiritual and religious reasons might well be added to the list of practical reasons which I propose in the last section of Chapter Three.

but that in doing so he is not able to establish more than a prudential principle and fails to establish the principle of consideration of everyone's interests. On the other hand, more narrow specification would make repudiation of the form of discourse much easier.

Watt's account of the difficulties involved in constructing transcendental arguments provides valuable clarification indeed. It helps to account for Peters' very broad definition of practical discourse and the very formal character of the principles he attempts to show presupposed by such discourse. Watt's arguments provide damaging criticism of Peters' attempt to justify a formal principle of justice which, however, has not been a major consideration in the present thesis. Watt's account does not, on the other hand, have much bite against Peters' arguments concerning what is presupposed by the pursuit of truth. This aspect of Peters' transcendental argumentation would appear to be on much firmer ground, particularly since he does not claim to show that the values of reason are morally obligatory.

Kleinig has also discussed Peters' attempt to justify moral principles by transcendental arguments. He defines transcendental argument thus: "We can understand by 'transcendental argument' any argument which justifies or purports to justify a principle by showing that it is logically presupposed by some speech-act or epistemic situation."[47] Kleinig questions whether Peters is basing his

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[47]"R. S. Peters' Use of Transcendental Arguments," p. 150.

argument on the presuppositions of moral discourse or practical discourse in general. He notes that the skeptic may without contradiction choose to opt out of moral discourse while still carrying on practical discourse. He acknowledges Peters' arguments are quite effective against the practical skeptic: he would have to give up talking about what ought to be done. However, Kleinig argues that such arguments are typically aimed instead at the theoretical skeptic, who could without contradiction refrain from discussing what ought to be done. Kleinig emphasizes that the function of such arguments "is not to show the psychological impossibility of skepticism but its logical incoherence."[48]

Like Watt, Kleinig objects that Peters' principle of justice is a principle of such generality that it cannot justify distinctively moral principles. Noting Peters' assertion that the principle of justice "is really the principle that there should be principles,"[49] Kleinig remarks that Peters has simply presented the principle of rationality in practical discourse by this argument.

In his reply to Kleinig, Peters agrees with Kleinig that he is concerned to make explicit the presuppositions of practical discourse, the sphere of the moral being difficult to specify. Peters argues that Kleinig's theoretical skeptic is already involved in practical discourse: "in being

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[48]Ibid., p. 154.

[49]Peters, Ethics, p. 123; quoted in Kleinig, pp. 161-62.

concerned to know whether we have good enough reasons for engaging in practical discourse is he not himself already conducting some kind of practical discourse with himself?"[50] Peters distinguishes two types of value which are presupposed in practical reasoning: the norms of rationality (the values of reason such as consistency, clarity, relevance, non-arbitrariness, etc.) and those criteria of evidence which are necessary for discriminating those features of experience which are relevant for action. Peters suggests that the latter may be identified with wants and aversions.[51] Peters admits he is skeptical about being able to provide a transcendental justification for consideration of others. Peters also acknowledges that his treatment of justice does not establish a great deal.

Kleinig's definition of transcendental arguments provides an interesting clarification, for he extends it beyond including only forms of discourse to more specific situations. Yet in Peters' case we are clearly concerned with the presuppositions of practical discourse. As Peters points out, Kleinig's objection that the theoretical skeptic may escape Peters' argument seems inconclusive. Yet Kleinig's argument provides an additional example of the importance of testing the limits of transcendental arguments by inquiring into whether they may be escaped. Like Watt, Kleinig

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[50] "A Reply to John Kleinig," p. 167.

[51] This recalls Watt's criticism that such arguments establish only prudential, and not moral, principles.

argues that Peters' argument is so general that it establishes fairly little. Peters admits as much in the case of justice, but he defends the case for the values of reason, which we have considered at length in this thesis. This is fortunate, since the values of reason are far more crucial for Peters' concept of education. The difficulty Peters has encountered in justifying other-regarding wants would suggest that he is less able to offer a transcendental justification for certain aspects of the manner of education than he is for its matter. The transcendental justification of the manner of education may have to be regarded chiefly from the point of view of the individual learner if only prudential principles can be justified.

While any discussion of transcendental arguments here is far from being an exhaustive treatment of literature on the subject, I believe I have dealt here with the major points bearing on Peters' argument which have arisen in recent criticism of his position.[52]

4. Conclusions

The task which remains is to draw together the more crucial aspects of the considerations above, in order to

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[52] An earlier treatment of Peters' transcendental argument is given by Keith Dixon in his paper "On Teaching Moral Procedures," British Journal of Educational Studies XVI (February, 1968):17-20; see also his article "Moral Philosophy and Moral Education," in Philosophy of Education and the Curriculum, ed. Keith Dixon (Oxford; Pergamon Press, 1972), pp. 135-63. For other articles on transcendental arguments, see Bibliography under "Philosophy."

show what view of the concept of "education" may be accepted here.

Regarding the criteria of education, I contend, along with Watt, that "education"'s association with criteria governing correct application of the concept does not involve any special or unusual status being claimed for the concept. As D. W. Hamlyn observes, "All concepts have criteria."[53] All words have rules of application embodied in linguistic usage and more or less expressible as formal conditions. Indeed, there are criteria of gardening to which activities must conform to count as gardening. So Peters' claim that "education" is special in this respect is misleading.

The criteria of conditions for using "education" correctly do not have the status of logical entailments, as Reddiford has pointed out. I take conceptual analysis to be a matter of making explicit the logical geography of a concept and the relation of central and peripheral cases of the concept, as Wilson has suggested. Criteria of a concept express, more or less formally, what is involved in picking the central cases out. The "necessity" derives from the givenness of the conceptual framework involved. Peters has acknowledged that the necessity of the value and knowledge conditions is in doubt, because there are intelligible cases of using "education" which do not involve them. The knowledge conditions elaborated by Peters may only be said

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[53] The Theory of Knowledge, London: Macmillan, 1970, p. 71.

to be necessary for that group of speakers who share a conceptual framework in which the notion of the educated man as an ideal has taken hold.

Peters discusses a variety of uses of the word "education," and he appears to take all of the familiar uses into consideration to some degree. However, he does not set out the range of recognizable meanings in the systematic fashion employed by Earwaker. Earwaker's approach has the virtue of resolute descriptiveness. His formal analysis of the range of meanings shows why the cluster of meanings within which Peters' concept emerges is the area of particular philosophical interest, yet he demonstrates the possibility of other specific, evaluative meanings than those encapsulated by Peters' criteria. Earwaker's suggestion that there are actually four concepts of "education" is here rejected as spurious. The view taken here is that he has provided a generalized map of the logical geography of "education." Earwaker's analysis notwithstanding, I wish to allow the legitimacy of Peters' more specific approach to conceptualizing "education." Peters' analysis is here regarded as providing an analysis of "education," but it may also be viewed as an attempt to provide the analysis of "education" for the group of speakers who share the conceptual commitments picked out by Peters, particularly in his account of the notion of the "educated man."

Lund's demand that an approach presupposing the unity of the concept of "education" be taken is here upheld. Earwaker's analysis of the domains of meaning within

"education" I take to be a guide to the range of senses of one underlying concept. Which areas of meaning are regarded as central would appear to depend on one's conceptual commitments. This leads to a rejection or modification of Peters' alleged two-concepts notion. In my view, there are not two concepts of education any more than there are four. Rather, there are different areas of meaning within the same concept, as suggested by Earwaker's survey. This view is consistent with the presumption in conceptual analysis that there are central and peripheral cases of using a concept, but it adds the assumption that the perspective built into the conceptual framework which one shares with a community of speakers affects which cases or senses are thought to be central.

I have sought to defend the view that Peters does not lapse into prescriptivism in the sense of making substantive value recommendations under the guise of description. As I have noted, Peters has taken pains to point out the limits of his descriptive task. He has noted that the connection between "education" and what is thought worthwhile is only conceptual, that conceptual analysis cannot yield practical recommendations, and that many speakers use "education" without making any connection with what is thought worthwhile. His prescriptivism might be said to lie in laying emphasis on a view of "education" in which what is thought worthwhile, particularly knowledge and understanding, figure centrally. This appears to me to be a matter of perspective. It is

description if regarded as a specification of the concept held by a group of speakers who share a particular conceptual framework. It is prescription if this view of "education" is held to be the only proper one. As an account of the concept as held by those for whom the ideal of the educated man informs their conceptual framework, it appears legitimately descriptive. The justification of the view connected with the educated man Peters has regarded as a separate task in ethical theory.

How does Peters' account fare with respect to what has been said about educational definitions? Whether Peters is regarded as offering a stipulative or descriptive account depends on the axe which one wishes to grind. He clearly regards himself as doing a descriptive job, and a good case may be made for this. He might be regarded as describing how the word is used in what he regards as the central cases of its use, and then stipulating that that is what he means to understand by the word. Indeed this is how I regard my efforts in this thesis. There is no real contradiction, since two occasions are involved. The first occasion involves describing how the word is used, while the second occasion consists of stipulating the understanding thus elucidated for use with regard to further purposes (in the present case, for the purpose of elucidating the notion of "educational technology").

Whether Peters' account is programmatic again depends on how it is regarded. The emphasis on his more differentiated

concept of "education" might be regarded as a programmatic move, and indeed I believe it is. This programmatic character of Peters' account should not, however, be confused with the prescriptivism involved in making practical recommendations. It is primarily a descriptive-programmatic approach, in which an understanding reportive of the linguistic usage of a group of speakers is recommended, along with what is implied. Peters' program is thus that education ought to be conceived of in terms of transmission of what is worthwhile, particularly knowledge and understanding. This program is, however, an implicit and central feature of the linguistic usage which he is describing.

With respect to C. Beck's admonitions about the importance of developing definitions adequate for educational theory, it would appear that Peters has gone a considerable way towards complying with this demand. His treatment shows how the meaning of "educated" may be elucidated in terms of such major philosophical dimensions as epistemology, ethics, and philosophy of mind. Connections with empirical disciplines are implicit in his account, although I have not sought to clarify these here. Thus Peters' account of "education" would appear, on preliminary examination, to have a good deal of the theoretical adequacy for which Beck has called.

How do Peters' criteria of "education" fare with respect to the major senses of the word "education"? Education is sometimes identified with socialization or enculturation.

Peters has allowed that the more general concept of education is often used in this sense. In this case, a speaker may refer without necessarily approving to the process whereby a society passes on what it regards worthwhile. In Earwaker's terms, the socialization view of education might be regarded as a value-neutral, non-specific use, or as a value-neutral specific use if schooling and educational systems are being referred to. In terms of Peters' criteria, "education" as socialization requires a modification of the value criterion. The value-neutral view of the process from the outside implies no approval of the social process being referred to as education. The knowledge conditions may also be played down or withdrawn, depending on what is being passed on in the process under consideration.

Peters has observed that education may also be thought of as almost any process of learning. Earwaker observes that when people use "education" in a non-specific, value-loaded way, they generally equate it with learning. Both Peters and Earwaker characterize this as a very diffuse use of the term. This use might or might not involve withdrawing the value condition, depending on whether the process of learning was regarded as worthwhile. The knowledge conditions would be largely withdrawn. The cognitive criterion would be that some sort of learning is taking place. This might approximate to the knowledge conditions, depending on what specification is given to learning. Whether certain processes are ruled out on moral grounds in the cases of

the socialization and learning views of education depends on how socialization and learning are conceived. Conceived of in their broadest senses, they would not appear to rule out any processes on moral grounds.

The "development" sense of education is implicit in Peters' notion of education as initiation, for he develops his notion of initiation with respect to the development of mind. As Scheffler and Hamlyn have pointed out, the problem with the notion of education as development is that "development" is much too vague; it does not adequately specify what education is about.[54] The crux of the matter is that it all depends on what is being developed. Worthwhile states of mind, character, bad habits, and pathological tendencies may all be "developed." The applicability of the criteria hinge on what is to be developed. If it is a mere acquisition of rudimentary skills for living that is to be developed, none of Peters' criteria may apply to any significant degree. Alternatively, the value condition might apply here if this is regarded as developing what is worthwhile. If it is the states of mind which constitute the achievements of the educated man which are to be developed, then all three criteria may be said to apply.

This brings us to the "initiation" view of education. The view that education implies initiation into what is

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[54] Israel Scheffler, Reason and Teaching, Indianapolis: Bobbs-Merrill, 1973, p. 167; D. W. Hamlyn, "The Concept of Development," Philosophy of Education Society of Great Britain, Proceedings IX (July, 1975), p. 38.

worthwhile is subscribed to by Peters, Frankena, and Oakeshott. The version of Peters summarized earlier may be taken to be representitive. The problem with "initiation" is that it suggests too much of a satisfaction with the status-quo of a way of life. There is the connotation of being taken into something that is largely a settled sort of affair, like joining a club. It plays down the revolutionary or the possibility of utter conversion from one view of life to another, as in religious conversion. Picturing the process of education as a process of initiation smacks too much of socialization. Despite the allowances which Peters makes for the individual, "initiation" draws attention away from the autonomy of the individual. The stress on the public (and with this, the conceptual) may tend to give insufficient attention to valuable personal and private forms of awareness such as those found in meditation or in the incommunicable features of joy and despair in one's personal experience. It ignores the fact that not all significant meanings available to humans are within the ambit of the public forms of thought and awareness which social groups share.

The notion of "education" as initiation would, however, appear to be a sense of education in which all of Peters' criteria are fulfilled, providing it is initiation <u>into what is thought worthwhile</u> that is involved. My own view is that "initiation" is a reasonable choice, if a sense of "education" must be chosen. Like "socialization," it acknowledges the social dimension of education. It clearly involves learning

and development, yet it gives a more adequate specification to what is involved in education than either the "learning" or "development" senses. It implies a commitment to the process, which is in accord with the intrinsic value connected with "education." While it may have some of the connotations which I have hinted at which might suggest something more limited or constrained than what we might wish to mean by "education," this does not constitute a fatal flaw. For it might be contended that "initiation" can include initiation into traditions in which revolution and conversion of viewpoints are acknowledged to be implicit possibilities.

The view that education consists of a process of transmission of information or knowledge has been often entertained, as Scheffler pointed out. This view would seem to be implicit in Peters' view that education involves the transmission of what is worthwhile, particularly knowledge and understanding. Yet Peters' view of "transmission" approximates more to "initiation" which is a broad understanding indeed of transmission. "Transmission" is sometimes conceived more narrowly as the most efficient way of routing information from one place to another. The analogy of machine processes such as data transfer from one computer memory to another becomes pertinent here. "Socialization" too implies transmission of a cultural heritage. Such transmission would typically be conceived of broadly, though not necessarily approved of. "Learning" and "development" do not imply transmission in any strict sense, although it is possible to learn or develop as the result of some sort of

transmission of skills, information, or knowledge. But "transmission" is not built into either of these latter concepts, as it is in the case of "initiation" and "socialization." Mere transmission of information need not fulfill any of Peters' criteria, for it might involve transmission of information of little or no value (or indeed, false beliefs) by means of coercion or subconscious conditioning.

From this we may conclude that it is possible to give accounts of "education" in the senses of "socialization," "learning," "development," and "initiation" in terms of Peters' criteria and the degree to which they may be fulfilled in each case. "Initiation" is the sense which most adequately conveys that to which the criteria refer. Peters' criteria thus have the virtue of making some sense of what is involved in these various views of "education." A more adequate picture can be achieved by supplementing Peters' account with the general distinctions which Earwaker draws in his survey. For the purposes of this thesis, Peters' three criteria are accepted, given the reservations concerning Peters' overall account of them indicated in this chapter.

A few brief words may be added concerning Peters' transcendental justification. While I have already indicated its limits and qualified acceptability, I wish to emphasize here that its complementary role with respect to other forms of justification has not been adequately appreciated by Peters' critics. It has received attention in this thesis

because it is an indispensable feature of Peters' account of education. Peters' criteria do not constitute a sufficient basis for making judgements regarding the manner and matter of education. Such judgements must have a justificatory basis, and Peters has provided in his transcendental argument a useful account of what may be appealed to, beyond wants and aversions, in seeking non-instrumental justification. But educational judgements are not just a philosophical matter. More is involved than definitional criteria and theories of justification. To gather a more complete picture of what is involved, we must turn to the second major sense of education: the study and theory of education.

CHAPTER THREE

EDUCATIONAL THEORY

1. Introduction

As I pointed out in my introduction, two very broad senses of the term "education" can be distinguished. In the first sense it is used to refer to the practices and accomplishments which constitute education, while in the second sense it refers to the study of education and the theory of education. In the preceding chapters I dealt with "education" in the first sense, giving attention to its analysis as a concept. My aim in those considerations was to provide part of the conceptual basis required for investigating the possible connections between "education" and "technology." I now propose to extend this conceptual basis by considering "education" in the latter sense, the study and theory of education. This chapter on educational theory is crucial for establishing my thesis because I intend to argue that the connections between "education" and "technology" which are most significant for clarifying the concept of "education technology" lie within the field of educational theory. The aim, then, of the present chapter will

be to provide a sketch of educational theory which will help to establish the basis required for showing the connections between "education" and "technology" to be investigated in Chapter Five. My discussion of practical discourse in the present chapter also anticipates my discussion of technical discourse in Chapter Four.

2. The Possibility of a Discipline of Education

The issues centering around the study of education and the nature of educational theory are sometimes raised by asking the question, "Is education a discipline?" Israel Scheffler considers this question in his article[1] which bears the same name. He presents the following particular questions which cluster around this general concern:

> Does the enterprise of education rest upon a discipline of education? Is there some autonomous branch of knowledge underlying educational practice? Does the art of education derive its guiding principles from a distinctive realm of theory?[2]

Scheffler suggests that such questions are most serious when they refer, not to the current state of affairs in the study of education, but to the possibility of developing a discipline of education. He distinguishes between "discipline" in the sense of an activity governed by rules and involving skills which require training and experience on the one hand, and in the sense of theoretical discipline constituting a

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[1] "Is Education a Discipline," in Reason and Teaching (Indianapolis: Bobbs-Merrill Co., Inc., 1973), pp. 45-57.

[2] Ibid., p. 45.

distinctive branch of knowledge on the other hand. He asserts that the presence of rules and skills in an activity ("discipline" in the first sense) is not sufficient to support claims about the presence of a distinctive underlying branch of knowledge ("discipline" in the second sense) connected with the activity. He then examines the possibility that there is or could be a discipline of education in the sense of a distinctive branch of knowledge. Realms of things involved in education, educational phenomena, and educational terms are canvassed as possible bases for a corresponding distinctive discipline of education. In each case Scheffler concludes that there is no reason to suppose they could support a distinctive discipline. While it is not pertinent to review the details of Scheffler's arguments here, we may note that each of these cases is shown to be based on mistaken assumptions concerning what characterizes a discipline. Disciplines cannot be construed in terms of peculiar realms of objects or pure classes of phenomena which they have as their objects. Neither does the existence of a distinctive terminology guarantee the existence of a discipline.

Scheffler suggests that "disciplines are dependent on the availability of established scientific principles, that is theories and laws . . ."[3] It is the presence of a body of laws and theories which marks out a discipline.

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[3]Ibid., p. 54.

While scientific principles are formulated by means of the linguistic apparatus associated with a discipline, the mere presence of distinctive terms does not suffice to show that a discipline has been established. The principles distinctive of a discipline can, however, have connections with terms and statements falling outside of the discipline. Thus while physics cannot explain what an abstract painting is, it could explain why a particular one fell off of its mounting. Scheffler suggests that even if education never becomes a discipline in his proposed sense of "a systematic and comprehensive body of assertions"[4] comprised of laws and theories, it may still have connections with established disciplines. The explanatory principles of these disciplines may be applied in education through being linked with familiar educational terms. He believes that it is a matter of controversy whether any discipline will develop which can establish reliable principles for explaining educational problems. Citing Ernest Nagel, he suggests that for social inquiry to yield such principles, it must be advanced considerably beyond its present stage of development. He holds out hope that relevant inquiry by a variety of investigators including psychologists, anthropologists, sociologists, economists, and educationists may yield, if not a unique educational discipline, at least "a variety of systematized laws and principles, applicable to the practice of education."[5]

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[4]Ibid., p. 53.

[5]Ibid., p. 56.

Several features of Scheffler's brief inquiry deserve mention. He rightly suggests that what is interesting about the question of whether education can be a discipline is the question of whether a distinctive branch of knowledge underlying educational practice and providing guiding principles is possible. In investigating this possibility, he examines the nature of theoretical disciplines, disposes of several unsatisfactory accounts, and provides one he believes is defensible. He clarifies the possibility of established disciplines contributing principles which explain educational situations. These moves are useful ways in which to clarify the nature of educational theory. They call attention to the need to show the possible connections between theoretical knowledge and educational practice. My chief objection to Scheffler's account is his narrow conception of "discipline." He identifies the disciplines with science, holding that they are "dependent on the availability of established scientific principles."[6] Such a move rules out or renders highly problematic a number of forms of knowledge which are distinct from science, including history, ethics, aesthetics, and philosophy. Scheffler's program involves the narrowing of the search for principles for educational practice to an inquiry into what explanatory principles may be relevant to the concerns of education. However, this appears to amount to the restriction of

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[6]Ibid., p. 54.

educational theory to matters of explanation, and scientific explanation at that. Through its rather exclusive emphasis on scientific explanations, Scheffler's account leaves doubt about how ethics and philosophy might contribute to the formulation of justified principles for educational practice. He does not adequately clarify the nature of such principles and their links with practice. Furthermore, Scheffler does not, after all, establish one way or the other whether a discipline of education is possible. In order to decide this sort of issue, a much clearer account of the structure of knowledge and the criteria which mark off distinct forms of it is needed. While Scheffler's account has certain interesting features, we must look further for an adequate account of educational theory.

3. The Nature and Purpose of Educational Theory

My criticisms of Scheffler anticipate the possibility of presenting an account of educational theory which unpacks its theoretical structure in terms of a more adequate account of the organization of knowledge and, in particular, the nature of practical theories. Such an account might address the concerns which underlie asking the question "Is education a discipline?" without necessarily becoming entangled in the issue of what constitutes a discipline. When it is asked whether an area of knowledge is a "discipline," different sorts of interests may be at stake, for example professional interests associated with recognition or monetary gain, or epistemological interest in the structure of knowledge

characteristic of a field. It is this latter interest with which we are concerned here. However, the further pursuit of this interest will not here be made to hinge on the concept of "discipline." The account of educational theory developed by P. H. Hirst[7] constitutes a well worked out example of the sort of approach I have hinted at above. Hirst's account is, I believe, one of the more substantial and interesting recent philosophical treatments of educational theory. I propose to devote the larger part of this chapter to Hirst's account and certain criticisms of it. In my concluding remarks I will seek to show how these considerations have contributed to providing the ground necessary for elucidating the connections between "education" and "technology" which are of central interest in this thesis.

In his paper "Educational Theory,"[8] Hirst observes that in its recent historical development the study of education has shown a concern for inquiring into the basic aims and

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[7] Hirst has presented his account in a succession of papers in which the structure of knowledge is a central theme. Perhaps the most well-known paper is "Liberal Education and the Nature of Knowledge," in Philosophical Analysis and Education, ed. R. D. Archambault (London: Routledge & Kegan Paul, 1965), pp. 113-38. I deal here with later papers (which I cite in passing) in which educational theory and its relation to the structure of knowledge is more centrally an issue.

[8] In The Study of Education, ed. J. W. Tibble (London: Routledge, 1966), pp. 29-58. Hirst presents a similar account in his earlier and shorter paper "Philosophy and Educational Theory," British Journal of Educational Studies XII (November, 1963):78-98.

values of education and for discovering how educational practice can be based on scientific knowledge. While recognition of this fundamental concern is important, Hirst notes that we still lack a clear concept of educational theory which accurately characterizes the nature and function of the enterprise as a whole and shows its distinctiveness. He poses the following questions:

> What is educational theory, as a theoretical pursuit, trying to achieve? How does this theory relate to educational practice? What kind of theoretical structure has it got and how in fact do the various elements that are obviously part of it fit in?[9]

Suggesting that these questions have not received adequate attention, he proposes to examine the concept of educational theory with the purpose of developing a more adequate framework for research and teaching in the area.

Hirst begins his examination with an inquiry into the possibility that educational theory is essentially a philosophical enterprise. The attempts to establish this hypothesis which he considers may be roughly classed into four related approaches. These include 1) the proposal that educational principles can be based directly on philosophical beliefs; 2) the proposal that philosophy is sufficient for determining educational aims, other sorts of considerations being required only for determining educational methods; 3) the attempt to interpret the notion of philosophical beliefs so broadly that all considerations relevant to educational principles may be said to be philosophical in character;

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[9] "Educational Theory," p. 30.

4) the suggestion that educational principles can be formally deduced from philosophical beliefs. In its most basic form, the hypothesis which Hirst is examining here consists in the claim that educational principles can be derived from philosophical beliefs. This view of the relation between philosophy and education holds it to be "one of direct implication, assuming that thoroughly valid principles for determining educational practice can be readily inferred straight from philosophical beliefs."[10] Hirst believes that this view presents a picture of the nature of educational judgements which is seriously misleading. It ignores the complexity of educational questions. For instance, a knowledge of psychological aspects of the development of moral understanding is required for making appropriate judgements about issues in moral education. Social and psychological considerations must enter into curriculum decisions. Hirst argues that to suppose that philosophical beliefs are sufficient for either formulating general principles or making particular practical decisions in education is to misconceive both the nature of these issues and the adequacy of philosophy for such tasks.

One way of avoiding these criticisms which the more general claim is open to is to try to show that philosophy is sufficient for determining educational aims, and that only the methods or means depend on other sorts of considerations.

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[10] Ibid., p. 31.

Hirst contends that this proposal is subject to two objections. He holds that educational aims are more appropriately conceived in terms of "what we practically wish to achieve in the conduct of education"[11] rather than in terms of broad philosophical notions of the aims of life or what is good. He proposes that the determination of such practical educational aims as those connected with curriculum and administration, not the aims of life in general, is the proper function of educational theory.[12] The judgement of such practical aims cannot be accomplished by purely philosophical methods, he argues; psychological and social considerations, among others, must be included. His second objection involves him in the proposal that in educational matters the dichotomy between aims and means or methods is often a false one. For example, he suggests that what sort of mathematical understanding one achieves is crucially dependent on the methods used. Methods are not merely different routes leading to the same destination; the sorts of understandings and notions of the enterprise they lead to varies with their character. Thus aims and methods are

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[11] Ibid., p. 32. Hirst notes later on (p. 52) that Peters' analyses have made it plain that educational theory's task is to determine what is to be aimed at in education and not just the means for achieving these ends.

[12] Of course, in some cases no sharp distinction between curriculum aims and the aims of life can be maintained. This is especially true if Peters' view of education as initiation into what is worthwhile is to be sustained. In particular, curriculum aims in ethical studies might center around the aims of life in general, ideas about what is of ultimate worth, etc.

inextricably connected and both present problems which require philosophical and empirical consideration. Hirst's point here does not appear to be that there is no important distinction between aims and means. Rather, he is criticizing the supposition that they can be split off from each other and subjected to essentially different kinds of considerations when it is educational matters that are in question.

Hirst next examines the possibility that a broad enough interpretation might be given to the notion of philosophical beliefs so that it would embrace all considerations relevant to judgements of educational principle. This approach establishes the philosophical character of educational theory by using "philosophy" as a blanket term which includes psychology, sociology, and everything relevant to education. Such a move results in the impossibility of distinguishing between the role of philosophy in educational theory and that of, for example, psychology. On the other hand, it might be argued that apart from such considerations as those falling under psychology and sociology, philosophy provides educational theory with a domain of general philosophical beliefs about the nature of man, reality, the good life, and so forth. Hirst protests that such beliefs are the product of diverse kinds of knowledge rather than inquiry which is distinctively philosophical. Thus the attempt to interpret philosophical beliefs too broadly leads to the impossibility of distinguishing any uniquely philosophical contributions to educational theory from other sorts of contributions.

Hirst next considers the possibility that educational principles can be formally deduced from philosophical beliefs. Since what is expressed in the premises provides the sole basis for the conclusions which are obtained, the initial premises must include all of the necessary facts and beliefs so that the conclusions can be reached by purely formal manipulation of statements. Hirst doubts that educational principles can be determined by such formal deduction. While formal deduction may be used in some instances, Hirst believes that "in general the complexity of practical issues is so great that it is quite impossible to set out explicitly all the facts and beliefs which must be taken into account."[13] Part of the difficulty lies in the lack of exactness and precision in the form of expression we give to much of the knowledge and belief essential for educational issues. This is especially true of expressions relating to personal and moral issues, and of the use of metaphor, analogy, and paradox to express some understandings. Hirst points out that when conclusions must be drawn by putting together considerations from diverse sorts of knowledge and weighing their relative importance, it is hard to see how they could be reached by an uninterrupted chain of deduction. He proposes that such conclusions are reached by a different form of judgement which is based on the most comprehensive possible view of the issues.

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[13] Ibid., p. 35.

By examining these possibilities, Hirst has sought to show that the attempt to reduce educational theory to a philosophical enterprise cannot be maintained. To the extent that the approaches considered exhaust the significant alternatives, I think he has succeeded. His arguments against the possibility of a purely philosophical conception of educational theory also break important ground for his attempt to describe the structure of knowledge involved in it. He has argued that the formulation of principles adequate for educational practice must draw on not only philosophy, but other areas of knowledge such as history, psychology, sociology, and ethics. He proposes that the formulation of such principles depends on a process of judgement which is much looser and more open than strict logical deduction. Its grounds lie in beliefs, factual knowledge, and general values. The reasons given for what is advocated must refer to these grounds. Such judgement cannot be characterized in terms of formal deduction. Rather, "in the midst of a complex network of understanding which cannot be adequately and formally expressed, we form reasons, draw attention to the major considerations which have influenced us."[14] While philosophical beliefs are important in educational theory, they are not axioms, but rather contribute to the comprehensive sort of understanding necessary for educational judgements.

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[14] Ibid., p. 36.

Hirst next takes up the problem of the sense of "theory" which is most appropriate for characterizing educational theory. Hirst's discussion proceeds along the lines of a critique of D. J. O'Connor's treatment of "theory"[15] in his own attempt to discover the job educational theory is trying to do. Two of the senses of theory which O'Connor distinguishes are important in educational contexts, Hirst suggests. In one of these senses, the term "theory" refers to "a set or system or rules or a collection of precepts which guide or control actions of various kinds."[16] Theory in this sense is contrasted with practice. Given this understanding of theory, educational theory would be comprised of the portions of psychology of perception, learning, concept formation and motivation which are directly related to the work of the teacher. The other sense of "theory" discussed has its home in the natural sciences and refers to "a single hypothesis or logically interconnected set of hypotheses that have been confirmed by observation."[17] O'Connor argues that this latter sense of theory provides standards which enable us to judge the value and use of any candidate which

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[15] D. J. O'Connor, An Introduction to Philosophy of Education (London: Routledge, 1957).

[16] Ibid., p. 75, quoted in Hirst, "Educational Theory," p. 38.

[17] Hirst, "Educational Theory," p. 38. Here Hirst is paraphrasing O'Connor's discussion of "theory" in An Introduction to Philosophy of Education, pp. 75-76. It is odd that O'Connor makes out confirmation to be part of the meaning of "theory," even scientific theory. He appears to be confusing the meaning of "theory" as "explanatory hypothesis" with the manner in which theories qua explanatory hypotheses are to be justified.

claims the right to be termed a theory. In particular, he holds that this sense offers standards by which the value of educational theories may be judged. O'Connor holds that the term "theory" is justified in educational contexts only where the established experimental findings of psychology and sociology are applied to educational practice; any other use of the term is merely a courtesy title. Such application requires further development of the social sciences. Here I would like to observe parenthetically that the notion of educational theory proposed by O'Connor that Hirst is here considering rests on conceptions similar to those assumed by Scheffler. Theorizing about education is taken to be properly a scientific affair which must await further developments in the social sciences before it can be carried on effectively. O'Connor's account is distinctive because it uses a more explicitly worked out concept of theory.

Hirst observes that in view of the understanding of theory recommended by O'Connor, much of educational theory would appear unacceptable. In addition to the empirical considerations allowed by O'Connor, it usually includes value judgements and appeals to metaphysical beliefs. In accepting a scientific paradigm of theory, O'Connor has failed, Hirst contends, in finding out what educational theory's job is. The acceptance of the scientific paradigm precludes recognizing the importance of such non-scientific elements as value judgements and metaphysical beliefs. They are ruled out as not being appropriate to a scientific form

of discourse. Hirst believes that O'Connor has so tightened up the concept of educational theory that it could not possibly provide the basis of judgement for determining the range of practical activities involved in education.

Hirst proposes that the first of the two senses of "theory" distinguished by O'Connor is more appropriate for educational theory. His own proposals center around the concept of practical activities. He argues that scientific theories and theories of practical activities differ radically because they perform jobs which are quite different. Theories of empirical science express our understanding of aspects of the physical world; such tested bodies of statements are the end products of scientific investigation. In the case of practical activities like education, theory is not viewed as a product but rather as a structure for determining and guiding the activity. Hirst characterizes this account as the "traditional distinction between knowledge that is organized for the pursuit of knowledge and the understanding of our experience, and knowledge that is organized for determining some practical activity."[18] He concludes that a practical form of discourse cannot be properly understood if construed in terms of the character and structure of a purely

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[18] Ibid., p. 40. It might be objected that education is not necessarily just a practical activity, especially if it is viewed as being concerned with what is of ultimate worth, or with the development of knowledge and understanding. The strength of such an objection depends on how narrowly "practice" is being conceived. I do not believe that Hirst is presenting so narrow a view of practice as to warrant any strong objection of this sort. By "practical," he is, I believe, drawing attention to the contexts of action in which education goes on.

theoretical form of discourse. Educational theory is not the end product aimed for in educational inquiry; its function is rather to determine what ought to be done and what ought not to be done in the conduct of educational activities.

The critique of O'Connor which Hirst has accomplished permits him to distinguish between two senses of educational theory: 1) the body of scientific knowledge which supports rational judgements in educational matters; 2) the larger enterprise of constructing a body of rational principles for the purpose of guiding and determining educational practice. The first sense, which O'Connor advocates, is held to be included within the second. Hirst acknowledges that neither use is the correct one, but he adopts the larger sense which views educational theory as drawing on other forms of knowledge in addition to science for the purpose of forming practical principles. Hirst's chief criticism of O'Connor is that he tends to reduce educational theory in its broader sense to the narrower scientific sense, whereas educational practice depends on the broader sense. Historical, philosophical, and moral forms of understanding must be drawn on in addition to scientific knowledge.

4. The Structure of Educational Theory

Having demonstrated that an adequate account of educational theory must show its connections with both educational practice and a large range of purely theoretical forms of understanding, Hirst turns to an examination of the structure of educational theory. He proposes to show

how such different forms of knowledge are "organized into a theoretical structure which culminates in rationally justified principles for educational practice."[19] In order to show features of the logical structure of educational theory, he provides his account of the three ways in which knowledge is, or can be, structured or organized: these are "forms," "fields," and "practical theories."[20]

Hirst claims that all human knowledge can be viewed as being differentiated into several domains or forms which are logically distinct. Knowledge is dependent for its possibility on our use of patterns of concepts which make our experience intelligible to us. Understanding in every area of knowledge is achieved through the development or use of these conceptual schemes. However, knowledge is also dependent on criteria for validity or truth which enable us to distinguish between truth and error, fact and fiction, what is valid and what is invalid, what is right and what is

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[19] Ibid., p. 42.

[20] As Hirst and Peters note in The Logic of Education (London: Routledge & Kegan Paul, 1970), there are several notable works which attempt to map the modes of knowledge and experience. These include: L. A. Reid, Ways of Knowledge and Experience (London: Allen & Unwin, 1961); M[ichael] Oakeshott, Experience and Its Modes (Cambridge: Cambridge University Press, 1966); and Philip H. Phenix, Realms of Meaning (N.Y.: McGraw-Hill, 1964). I do not deal with these works here both for reasons of space and because the views presented there do not constitute a direct attempt to work out the structure of knowledge as it relates to educational theory as a practical theory. In saying this I do not mean to deny the contributions which these efforts can make to clarifying curriculum decisions. What is at stake here, however, is the structure of educational theory itself, and this is what Hirst addresses.

wrong, and so on. Thus knowledge depends on both using conceptual schemes and criteria for validity or truth.

Hirst's analysis of the whole domain of knowledge shows that its forms can be distinguished in three ways: 1) distinctive concepts; 2) distinct conceptual structures or networks for relating the distinctive concepts which determine what meaningful propositions are possible; and 3) distinctive tests for determining the truth or validity of these propositions. For example, good, ought, and virtue are distinctive moral concepts; scientific terms like "atom" can be related to other terms only according to certain logical rules, so that e.g. one cannot speak meaningfully about the color of atoms; in mathematics the criteria of validity are those of deduction from axioms. In view of these three logical differentia, Hirst suggests that the distinctive forms of understanding include science, mathematics, history, morals, aesthetics, philosophy, and religion. While the status of some of these forms is disputed, Hirst believes that the differentiation of knowledge into logically distinguishable forms is an account of its historical development which appears beyond dispute. While allowing that the forms may become further differentiated or extended, or applied in new ways, Hirst claims that the growth of knowledge cannot be logically conceived outside of the framework which the forms constitute.

Hirst makes two additional points which are pertinent. Each form which has been logically distinguished by its formal structural features can also have further distinctions drawn

in it in terms of content. Thus science includes physics, chemistry, zoology, biochemistry, and so forth. Hirst suggests that these divisions are based on convenience, convention, and interest rather than distinctive logical features. Secondly, while the forms are logically distinct, they interrelate with each other in important ways. For instance, science makes great use of mathematics, and moral judgements require empirical forms of understanding. Yet each form makes such contributions in terms of its own distinctive features. The contribution is used instrumentally, and its validity does not guarantee the validity of the judgements it contributes to in another form, though of course the falsity of the contribution would invalidate the judgement. Thus scientific experiments depend on accurate observation and are not guaranteed by mathematical tests, though errors in mathematics would lead to the rejection of the results.

Hirst characterizes "fields of knowledge" as organizations of knowledge around centers of interest such as certain sorts of objects, phenomena or abstract entities. In contrast to the logically distinct forms and their sub-divisions, "fields" are characterized as artificial organizations of knowledge. Examples given by Hirst include "the neighborhood," "power," and "the modern European mind." Hirst argues that geography has this character too; various forms of knowledge are organized around an interest in man and his environment. By a "field," then, Hirst means a collection of knowledge drawn

from various forms which lacks any distinctive concepts, inherent logical structure, or unique criteria of validity, its unity deriving solely from the relation of the knowledge to some center of interest. The advancement of a field, and its grasp by an individual, depends on developing understanding of the various forms involved, and is therefore a complex matter.

Both forms and fields are organizations of knowledge important for the development of cognition and understanding it itself, both as a personal and as a public affair. In contrast, "practical theories" are organizations whose entire purpose lies in their practical function of determining what ought to be done in a particular range of practical activities. Having characterized forms and fields, Hirst is now able to further his discussion of the differences in logical structure between theories of practical knowledge and theories of purely theoretical knowledge by analyzing the differences between practical theories, fields, and forms.

As with fields, practical theories gather knowledge from several different forms and centers around a particular interest, but the interest here is in a particular range of practical activities such as engineering, medicine, or education. While fields are simply collections of knowledge drawn from the forms for the purpose of furthering some theoretical interest, practical theories gather knowledge from the forms for the purpose of formulating principles for practice. For example, educational theory is simply a

matter of collecting knowledge about educational practice; its whole purpose is to organize this knowledge for the determination of what should be done in practice. Practical theories like education have a logical unity which goes beyond an interest-centered collection of knowledge as in fields. Their unity lies in the provision of a rational structure for basing the justification of practical principles on knowledge from the forms.

While distinct from fields, practical theories are also unlike forms. They have no distinctive concepts or unique criteria of validity. For instance such educational concepts as school, subject, and teacher have no logical uniqueness. While they are used to characterize the area of education and its interests, they do not refer to any distinctive form of awareness. It follows that no unique tests for validity are involved. When mathematical statements are used in scientific inquiry, the validity of the scientific statements depends on the distinctively scientific criteria of empirical evidence, given the validity of the mathematical statements. In the case of educational theory, if the validity of the psychological, moral, historical, or other elements is assured, the validity of the educational principle being formulated rests on nothing else. The tests of its validity are exhausted by the tests unique to the forms of knowledge involved in formulating the principle.

5. The Justification of Educational Principles

Having characterized educational theory as a practical theory and thus distinct in its logical structure from forms and fields, Hirst produces the following account of how educational principles are justified. Their justification is held to involve producing reasons for them of a scientific, philosophical, moral, historical, or other logical sort. They are to be defended or attacked in terms of reasons drawn from the different forms. Each statement or truth which is appealed to in this reasoning must be judged according to the criteria unique to the form from which it is derived. There are no special educational reasons involved in this process of justification. Educational principles are justified solely by the support they derive from knowledge contributed by the forms. An example which Hirst gives may help to illustrate this:

> . . . a principle for compulsory religious instruction in maintained schools must be defended in terms of the philosophical status of claims to religious knowledge, what is known of the psychological development of religious concepts and beliefs, the relationship between morals and religion logically, psychologically, and sociologically, the historical significance of religious beliefs, the guarding of the principle of complete religious liberty, etc.[21]

This example, I believe, well illustrates the logical complexity of educational justification, its reliance upon distinctive forms of knowledge, and its direction towards the formulation of practical principles. When the reasons derived from the various forms have been validated, the

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[21]Hirst, "Educational Theory," p. 51.

principle has been justified, and no special educational validation remains to be performed.

Hirst next considers the interesting possibility that practical theories might be characterized as falling under moral knowledge. In this view, just as within science the various sciences are distinguished by their topics, practical theories are distinguished by the range of activities for which they formulate principles. Thus engineering, medicine, political theory, and educational theory can be distinguished in terms of the activities with which they are concerned. The problem which Hirst raises here is interesting, and important for my general thesis: these activities are very different in kind from each other, and therefore call for varying types of practical principles. He suggests that in engineering and medicine the central problems can be fairly clearly indicated, and the aims are in large measure agreed. However, the aims and areas of activity covered by educational and political theory are often seriously disputed. Hirst cites Peters' attempts to outline criteria of education and thus mark out the territory of educational theory. It is clear from Peters' analyses, Hirst remarks, that educational theory has as a fundamental task the determination of both the ends or goals to be aimed for and the means or methods to be used in education. In contrast, "engineering consists almost entirely of the

use of scientific knowledge in determining efficient means to agreed ends.[22]

Hirst points out that even though many of the principles which educational theory formulates are distinctively moral, they are not high level statements about what is right or good but rather statements of what ought specifically to be done in education. The pattern of reasoning for such practical principles which draws on many kinds of knowledge may well be different from that required for justifying such basic principles as freedom and respect for persons. Hirst emphasizes that not all of the principles which practical theories formulate are essentially moral. Educational theory deals with purely technical questions about such matters as teaching techniques and administrative organization. Indeed Hirst points out that some practical activities like engineering are almost entirely technical in character. Thus a moral character may be all but lacking in some practical activities. In that practical theories are the product of interest in particular ranges of practical activities and formulate principles stating what ought to be done which are in varying degrees technical and moral, Hirst believes that good reasons exist for regarding practical theories as a distinct kind of organization of knowledge. The suggestion that they are a branch of moral knowledge is thus ruled out.

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[22]Ibid., p. 52.

Hirst rejects the notion that educational judgements require a theoretical synthesis of the elements of knowledge that contribute to them. He holds that a synthesis of knowledge from different forms is quite unnecessary for educational justification. Furthermore there is doubt about the logical possibility of such a synthesis. It is the educational principles themselves which constitute the uniting of elements from various forms of knowledge; these diverse and sometimes conflicting elements do not require any prior harmonization in a theoretical structure. It is not clear how knowledge achieved through logically distinctive schemes could be synthesized at a theoretical level, he observes. It is precisely the fact that diverse elements of knowledge are used in formulating educational principles which characterizes educational theory.

Hirst suggests the relation between educational theory and educational practice lies in "the making of particular judgements in individual cases according to the relevent principles and the facts of the situations."[23] While educational theorists formulate the principles, it is educational practitioners who use the principles in making individual decisions. Hirst notes that the process of forming such judgements is not well understood either in logical or psychological terms. While he has been concerned with clarifying the nature of the theory and not with how

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[23] Ibid., p. 56.

particular judgements are made, he recognizes that educational theory stems from practical problems and it must continually be brought to bear on them. Its proper use depends on close links with practical particulars and on the development of "the appropriate art of judgement"[24] by practitioners.

6. Criticisms of Hirst

Two exchanges between Hirst and his critics are notable. D. J. O'Connor[25] has challenged Hirst's interpretation of the nature and scope of educational theory. Elizabeth Hindess[26] has questioned the epistemological status of Hirst's "forms." Hirst [27] in turn has responded to both of these challenges.

O'Connor's criticisms of Hirst center around two chief issues, the possibility of including value judgements in educational theory, and the task which educational theory is required to perform. O'Connor suggests that while Hirst probably agrees with him that educational theory should be

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[24] Ibid., p. 57.

[25] "The Nature and Scope of Educational Theory (1)," in New Essays in the Philosophy of Education, ed. Glenn Langford and D. J. O'Connor (London: Routledge, 1973), pp. 47-65.

[26] "Forms of Knowledge," Philosophy of Education Society of Great Britain, Proceedings VI (July, 1972):164-75.

[27] "The Nature and Scope of Educational Theory (2), Reply to D. J. O'Connor," in New Essays in the Philosophy of Education, ed. Glenn Langford and D. J. O'Connor (London: Routledge & Kegan Paul, 1973), pp. 66-75; "Forms of Knowledge--A Reply to Elizabeth Hindess," Philosophy of Education Society of Great Britain, Proceedings VII (July, 1973):260-71.

explanatory and refutable, they disagree over what other conditions are necessary for its adequacy. O'Connor believes that a sufficient additional condition would be that educational theory guides educational practice in the sense of indicating what can be done in the field. In order to fulfill this function, an educational theory containing only empirical components should be adequate in his view: "There is no reason that a satisfactory scientific background to education should not enable us to bring about those educational outcomes which are accepted as desirable in a given community."[28] Hirst's insistence that educational theory must include value components O'Connor finds unnecessary and logically unacceptable. O'Connor notes that Hirst claims educational theory involves making value judgements about educational aims, and that in doing so it relies on the logic of moral reasoning. O'Connor insists however that an agreed logic of moral reasoning is unavailable. Furthermore, he doubts that any logical relations between factual statements and value statements can be shown. He suggests that value statements can perform their job of prescription and guidance just as well outside the theory as within it. He argues that until logical relations between fact and value statements can be shown, the importation of value statements into educational theory is unjustified. While accepting that education may be guided by "the currently accepted concept of human welfare,"[29]

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[28] "The Nature and Scope of Educational Theory (1)," p. 55.

[29] Ibid., p. 48.

he believes this function must be carried on outside of the theory.

On a related score, O'Connor challenges Hirst's notion of the use of educational theory. He considers the possibility of an analogy between education and other socially important activities like medicine and engineering. These activities, rather than being sciences, are held to be based on a background of scientific knowledge. He then makes the rather dubious claim that education requires no theoretical background such as that provided by the relevant sciences in order to be effective, while effective medicine and engineering could not exist without a theoretical background. While there has been a history of 2,500 years of effective education in Europe,

> There simply was no effective medicine until the sciences of physics, chemistry, and biology had become well established . . . And the same can be said, mutatis mutandis, for the development of engineering. My claim therefore is that education does not really stand in need of a theoretical background, if we mean by that phrase, a background of developed scientific theory. Medicine and engineering on the other hand could not exist without it.[30]

He believes that "the traditional lore of the craft"[31] is largely sufficient for supporting educational practice.

Another way in which this analogy appears untenable to O'Connor lies in the underlying sciences: medicine and engineering are supported by the natural sciences whereas education must look to the social sciences for its

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[30]Ibid., p. 60.

[31]Ibid., p. 61.

theoretical support. The social sciences do not offer the same sort of support because 1) their truths are obvious and unsurprising; 2) they are at present in an undeveloped and controversial state; 3) the findings which are established are too remote from practical experience. O'Connor believes that their possible contributions lie in the areas of problems of teaching and problems of administration. However, he observes that it is political and social value judgements rather than scientific findings that largely determine how administrative questions are answered. Psychology and sociology have not made impressive contributions to improving curriculum, learning incentives, or presentation, he claims. Thus O'Connor argues that the analogy between education and medicine and engineering breaks down, and he doubts that scientific educational theory would lead to impressive advances in educational practice, even if it did develop.

Let us examine how Hirst has answered these criticisms. He notes that there are areas of agreement between himself and O'Connor. They agree that educational theory must explain, be refutable, and be concerned with guiding practice and the promotion of human welfare. Hirst's disagreements center around the place of value judgements in the theory and the necessity of the theory for practice. Hirst argues that education involves deliberately planned activities, and that it can only be described adequately in relation to such purposes. However, understanding of human purposes is not reducible to an understanding of what can be observed. Mental

concepts have a different logic than scientific concepts, he asserts. Thus explanation in terms of beliefs, values, and reasons as well as causes is logically necessary, yet science cannot be expected to yield this sort of explanation.

Hirst rejects O'Connor's claim that value judgements must be kept out of educational theory. He argues that O'Connor's account provides only for the possibility of answering technical questions: "his account of the guidance the theory offers is that of the technical means the sciences can provide for realizing ends coming from outside the theory--from society at large and its 'currently accepted concept of human welfare.'"[32] Hirst on the other hand insists that educational theory is "concerned with determining the ends as well as the means of education, the answers to all questions about what ought to be done, moral as well as technical."[33] Hirst argues that since judgements about educational practice cannot escape direct or indirect value commitments, statements about value must be included in any statement of reasons for action which is to be adequate. A theory of practice which is to be adequate must be involved in debate about value judgements.

Hirst accuses O'Connor of having a too narrow view of logical relations. He believes it may be possible to map the logic of the fact-value relationship, though the relations

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[32]"The Nature and Scope of Educational Theory (2), Reply to D. J. O'Connor," p. 68.

[33]Ibid.

are unlikely to be similar to those which hold between scientific truths. He points out that the possibility of conducting moral discourse is not precluded by the fact that we are unable to adequately analyze it in logical terms. He cites the old argument that there were valid syllogisms before their logical features were ever demonstrated. Science, too, developed before the logic of its explanation could be satisfactorily shown. He believes that philosophical work on mental and moral concepts may further understanding of fact-value relations. Thus Hirst rejects the force of O'Connor's claim that we lack an adequate account of moral discourse.

Hirst agrees with O'Connor that aims require value commitments for their specification, but he rejects the notion that such prescriptions can come from outside the theory. For one thing, the means and ends in education are often closely linked: "The means often involve activities that must be assessed not merely as efficient means but also in moral terms as ends in their own right."[34] Means must often be viewed as ends, or constitutive of certain ends, thus requiring to be regarded valuatively. In addition, Hirst notes that notions of general welfare which a society may have are much too general for the derivation of detailed principles for educational practice, no matter how much scientific information is available. He concludes that neither means nor ends can be properly appraised if educational theory is restricted to the relevant sciences.

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[34]Ibid., p. 71.

In view of these sorts of considerations, Hirst rejects O'Connor's stipulative definition of educational theory. The restriction which it involves precludes the possibility of it fulfilling its function in relation to educational practice. Hirst does not accept that his broader view is inherently irrational. Rather than seeking the unity of the theory in the pre-established unity of science, Hirst points to the unity of which the use of elements from diverse forms of knowledge in providing reasons for action is constitutive.

Hirst rejects O'Connor's account of the analogy between education, medicine, and engineering: "there was much effective curing and impressive road and bridge building based on trial and error, long before the relevant sciences developed."[35] That certain forms of learning were passed on successfully in the past does not mean that teaching is not more successful now. Hirst suggests that elementary educational problems are being compared with complex and difficult medical and engineering problems in O'Connor's account. He argues that in all of these areas, complex and difficult problems require sophisticated theoretical knowledge for their solution. He does not accept that the folklore of education is adequate for such problems, any more than medical or engineering folklore would be for such problems. In view of the complexity of educational problems, he believes

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[35]Ibid., pp. 72-73.

O'Connor is being ungenerous about the contributions of psychology and sociology, and he expresses great optimism about future developments.

Let us turn to the debate between Hirst and Elizabeth Hindess on the forms of knowledge. Hindess calls into question the epistemological status of the forms. Hindess professes to be puzzled about discrepancies in Hirst's various accounts of 1) the names of the forms of knowledge, and 2) the conditions which pick out the forms. She proposes that given these discrepancies, one could choose to-1) ignore them, investigate a form, and draw conclusions for teaching practice; 2) investigate the status of various forms, producing reasons for or against counting them as forms; 3) suspend judgement on the suspicion that the nature of the forms and the relations between them have not adequately been shown. She argues that it is not possible to pursue alternative 2 for long before raising issues, such as the status of the conditions which pick out the forms, which lead to 3. Choosing alternative 3, Hindess professes to be puzzled about what sort of business Hirst is in. She claims that while professing to be answering such questions as "How do we at present categorize or classify knowledge?" and "What is it to have an educated mind?," he appears to be answering the questions "By virtue of what categories is knowledge, and all experience, possible?" and "What is it to have a mind (at all)?"[36]

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[36]"Forms of Knowledge," p. 171.

She takes Hirst to be shifting his discussion from the contingent question of what forms of knowledge we have to an inquiry into the possible limits of knowledge, and thus what is necessarily the case. The remarks of Hirst's which alert her to this shift are his claims that the forms are fundamental categorial divisions, irreducible categories, and that experience would be unintelligible without such a cognitive framework. She argues that Hirst has landed himself in the business of explaining the possibility of all experience. Viewed in these terms, she wonders whether all of the forms have such a fundamental status. She suspects some may be more basic than others, and presupposed by them. For example, they all require logic, and discrimination of objects in the external world is arguably a condition of intelligible thought. She suggests that it might be possible therefore to distinguish a hierarchy within the forms. Thus Hindess raises large questions about the ultimacy of the forms and the character of Hirst's enterprise.

Hirst's reply to Hindess begins with a particularly clear account of the sort of inquiry his theory of the forms constitutes. He takes the domain of knowledge to be "centrally the domain of true propositions or statements." The question of logically distinct forms of knowledge is thus the question of logically distinct forms of true propositions. While there are many ways of classifying true propositions, e.g. indicative or hypothetical, particular or general, a fundamental classification must be in terms of what makes true

propositions or statements what they are, and thus different from other forms of expression such as questions and promises. He asserts that "What makes a true proposition just that, is the employment of concepts according to quite specific logical rules so as to form what we mean by a proposition, and there being a set of truth criteria which it satisfies." The differentia which are to his mind fundamental are "the concepts, their logical structure and the truth criteria involved." Thus Hirst bases his logical classification of forms on an analysis of the concept "true proposition," and the logical differentia he uses are derived from this concept.[37]

Hirst then patiently deals with the objection Hindess has raised. Regarding discrepancies in the names for the forms in his various accounts, he explains, "The labels that I have used for distinct forms of knowledge are to be understood as labels for different classes of true propositions."[38] Changes in the names reflect changes in his own views of what classes of true propositions there are. He now doubts that the social sciences and history constitute distinctive classes; rather they are logically complex. He recommends inclusion of interpersonal knowledge, and maintains his support for moral knowledge. Regarding discrepancies in criteria, he has rejected methodology as a

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[37]"Forms of Knowledge--A Reply to Elizabeth Hindess," p. 261.

[38]Ibid., p. 263.

condition for forms because it does not add to the strictly logical distinctions he wishes to make. He suggests that the condition of criteria of validity can be given broad interpretation to include e.g. symbolic expressions such as works of art which have "properties logically equivalent to those of propositions."[39] The truth criteria he views as fundamentally a demand for objective judgement, and that, he believes, may take many forms.

Hirst takes pains to clarify the limits of the sort of enterprise in which he is involved. Regarding the status of the classification his three criteria achieve, he remarks,

> The three features I have suggested for a classification of true propositions, necessarily provide a classification for all propositions, and thereby also of the concepts applied in those propositions. From this it follows that if one holds, as I hold, that experiences are intelligible only by virtue of the concepts under which we have them, a classification of forms of knowledge can be used as a classification of forms of experience. What is more, the distinctions between the forms that I have been concerned with, are what I understand by categorial distinctions, being questions of the determining types of concepts, logical structure and truth criteria which are irreducible to each other.[40]

He agrees that he has become involved in stating the present categories by virtue of which we have knowledge. This, in his understanding, also states the present categories of our experience. Yet he regards his statements as descriptions of present conditions rather than as statements which are absolute and mark out the limits of knowledge and experience for all time. He professes never to have sought to answer

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[39] Ibid., p. 264.

[40] Ibid., p. 266.

questions "about the categories which all knowledge and experience must necessarily take, or logically could take," or about "what it is to have a mind (at all)."[41] Hirst apparently concludes that Hindess is confused about the legitimate scope of his inquiry.

I concur here with Hirst that a statement of the categories by which we at present have knowledge is not the same as a statement of the categories logically required for the possibility of any knowledge. The former kind of statement, it appears to me, describes how knowledge is possible in much more limited and provisional terms. It does not aim to be a comprehensive answer to the question of how knowledge is possible, but rather to show that our present conceptual schema are necessary for knowledge as we have it now. Indeed Hirst admits the possibility that our concepts of experience, intelligibility, consciousness, and knowledge may change. His account does not attempt to encompass the possibility of such change.

He agrees with Hindess that it is possible to discover logical hierarchies which cut across the forms, as well as elements which are so basic that they are necessary for all knowledge and experience. Yet he doubts that it is necessary to identify the fundamental categoreal, most logically primitive concepts in each domain, for his purposes. He admits that distinctions in these are presupposed by his

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[41] Ibid., p. 267.

endeavor, yet the demarcation which he aims for, in terms of features applicable to knowledge claims, depends as much on differences first recognized in less primitive concepts and judgements based on these. Thus there appears to be a question again of difference of interest between Hirst and Hindess, Hirst being interested in demarcations which can be based on features of our knowledge claims, while Hindess is curious about identifying primitive concepts which such claims presuppose.

Hirst characterizes himself as "involved in a philosophical investigation which is in the end concerned with the logically necessary features of knowledge and experience as we have them"[42] He disclaims any attempt to show what forms there must be. While acknowledging that Hindess has raised a number of interesting metaphysical questions about knowledge, he believes she has misconstrued the nature of his efforts and their legitimate limitations.

Looking back on this review of criticisms of Hirst, it seems to me that the objections to his position reviewed here are largely without force when viewed in terms of what he is trying to accomplish. Hirst's preference for interpreting educational theory broadly so as to show its formulation of principles for action is justifiable and leads to different considerations than O'Connor's narrow interpretation. It may be said for O'Connor that at least he recognizes the

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[42] Ibid., p. 269.

importance of value statements in making decisions for educational practice. Scheffler does not even mention these, confining educational principles to explanations of "how and why children learn, schools develop, curricula change, ideals conflict,"[43] and so on. Hirst's insistence that debates about value issues should be carried on within education theory is, I think, entirely defensible.

James Gribble has largely accepted Hirst's views in his own account of educational theory. He does, however, contend that educational theory may in some respects also be like a field of knowledge:

> Much of the theory is (quite legitimately) devoted to the development of understanding of educational matters for its own sake. The knowledge must, of course, have some bearing on educational matters--education is the "selected topic," just as "the modern European mind" may be the focus of another field of knowledge. In our view, much educational theory exhibits the characteristics of a field of knowledge, much of it is speculative rather than practical.[44]

Gribble observes that Hirst's own inquiry seems to have more the character of speculative interest than the formulation of principles for practice he demands. He suggests that educational theory may be conceived of as having the characteristics of both a field and a practical theory. This would not however mean expanding the range of inquiry involved. Gribble claims that the interest in educational

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[43] Scheffler, "Is Education a Discipline?," p. 55.

[44] James Gribble, Introduction to Philosophy of Education (Boston: Allyn and Bacon, 1969), p. 186.

theory must necessarily center on educational matters, whereas it is purely contingent whether such inquiry leads to the construction of principles for practice. I am willing to accept Gribble's reservations, for it does seem accurate to say that much educational inquiry, including that of Hirst, O'Connor, and others, is largely speculative. In allowing that it sometimes remains at a speculative level, we do not invalidate Hirst's description of the way the forms enter into the theory, or how they are used when they do in fact issue in principles for practice. We merely allow that when it remains speculative, it has more the character of a field.

Hindess's objections to Hirst are interesting but harmless, as they seem largely aimed at a sort of undertaking in which Hirst does not profess to be involved. What makes them pertinent is that they lead Hirst to offer a valuable clarification of his position where he states more explicitly the nature of his efforts to classify knowledge and how such classification may be based squarely on the logical features of knowledge claims.

7. Conclusions

In the context of the present thesis, such a lengthy account of Hirst's description of educational theory and the criticism it has prompted can be justified only if the points brought forward can be used in important ways. I now have to show where I agree with Hirst, indicate why I think the views I accept are justifiable, and show what point they may have for analyzing educational technology.

As I stated at the beginning of this chapter, I hold it to be essential to delineate certain features of educational theory because I propose to show the links between education and technology in terms of their connections with educational theory. Another reason for examining educational theory is that it is, like educational technology, an expression formed by the conjunction of "educational" and another term. These cases are related in more than form, for both "theory" and "technology" imply general connections with educational practice and both refer to activities connected in some way with knowledge. So "educational theory" is, on the face of it, a much more important related case than, for example, "educational buildings" or "educational furniture."

What is interesting about Hirst's account is that he describes educational theory in terms of its practical function and guided by this conception he works out its features in epistemological terms. This is a philosophically interesting sort of characterization as opposed to, say, a description of educational theory in terms of what sorts of gut-level feelings people have about it or in terms of from what socio-economic background the individuals who indulge in it come. The questions Hirst asks about educational theory are similar to questions we might want to ask about educational technology. In getting clear about educational theory, Hirst considers its relation to educational practice, the structure of knowledge involved, its status as an educational activity, and the sort of justification it can offer for the principles which it advocates. These, I would argue,

are considerations worth bringing to bear on the concept of educational technology, so it is worthwhile to see how Hirst has tackled them.

The picture which Hirst presents of educational theory is that it is the theory of education as a practical activity, and as such concerned with offering principles for action. In Peters' useful phrase, practical reasoning involves reasoning about the world in which, beyond the presupposition of empirical evidence, "additional criteria of evidence are required to discriminate which features of experience are relevant for action."[45] Accepting Peters' characterization of practical discourse as being the form of discourse in which one seeks to answer questions such as "What ought I to do?" and "What reasons are there for doing, or not doing, this or that?," it is fair to say that Hirst believes educational theory should consist of the formulation of practical principles for the conduct of education. Some may prefer to narrow educational theory to questions of explanation, prediction, and so forth, or to consider it a merely speculative sort of inquiry, but then the question arises as to what will guide educational discourse. I agree with Hirst that it is not sufficient to suppose that the general notions of human welfare which prevail in a community can guide such reasoning. So it seems fair to suppose that educational theory ought to be involved in this form of reasoning and contribute principles of action.

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[45] R. S. Peters, "A Reply to John Kleinig," p. 168.

It is salutary that Hirst describes practical theory as including both moral and technical principles. This distinction occurs in his account of practical theory and recurs in his critique of O'Connor, where he claims that O'Connor's version of educational theory could assist only in the forming of technical principles. The distinction that Hirst appears to have in mind is that while technical principles point to efficient means, moral principles point to what is worthwhile. This distinction is suggestive, but to my mind a more well worked out distinction is required in order to articulate the place of the technical in educational theory, and it is hoped that more adequate criteria of the technical will be worked out in Chapter Four.

There is also the suggestion in what Hirst says that practical discourse is comprised largely or solely of moral and technical statements and judgements. Yet questions which are centrally neither moral nor technical may be involved in such discourse. Consider the following examples and possible meanings:

(1) "I wonder if I ought to read the newspaper today?"; meaning:

"Isn't reading the paper and being informed something every good citizen should do?" (moral)

"I wonder whether perhaps it is wrong to read newspapers, as they stress the sensational and tend to arouse certain low-grade feelings?" (moral)

"I wonder whether reading the newspaper will contribute to my being a better professional news analyst?" (technical)

"I might find a sale advertizing that lawnmower I was going to buy." (prudential)

"I wonder whether reading the paper would be an enjoyable experience?" (hedonistic)

(2) "I wonder whether I ought to hang that painting on the wall?"; meaning:

"Ought children to view the bodies of naked women, even in pictures?" (moral)

"The wall may be too weak, and the painting may fall." (technical)

"My mother-in-law may be offended by it." (prudential)

"I wonder if it will give me a good deal of pleasure to have it hanging there?" (hedonistic)

"I wonder if it's really an artistically good painting?" (aesthetic)

"Will hanging it there serve any useful purpose?" (utilitarian)

These examples are meant to suggest that a practical question can take meaning along many different lines, and that all practical questions are not necessarily either centrally moral or technical. The names I have given these examples are significant only insofar as they help to suggest this breadth, and I do not intend to defend them as an adequate formal classification of practical discourse. It may be that most educationally important principles will be either moral or technical. It is possible to think of such practical questions as "Will the proposed new high school be ugly?" or "Is it prudent to leave the door of the staff room open when students are in the halls?" or "Shouldn't learning be fun?" Yet I think it is a defensible assumption that educational theory will be primarily concerned with moral and technical questions.

We must also consider the case Gribble makes for educational theory having the characteristics of a field as well. I agree to this suggestion, and I hold that it does not prejudice Hirst's treatment, because in those cases where the theory does eventuate in principles for action it must arguably have the features he suggests. Nor does it seem to me that Hirst's views preclude what Gribble has suggested, though he must be prepared to admit that the theory doesn't always lead to the formulation of practical principles.

Further specification of educational theory as a practical theory turns on how the structure of knowledge in it is characterized. I accept Hirst's account of the structure of knowledge, subject to the provisions and clarifications he has offered in his reply to Hindess. That knowledge can be classed in many ways seems undeniable. A simple, practical-minded person might distinguish only between knowledge which is useful to himself and that which is not. A sociologist might classify knowledge in terms of its possession by various elites, by working class people, and so on. Hirst's classification is here defended and accepted because it rests on the logical features of knowledge claims and thus offers the possibility of making appropriate epistemological distinctions. What structure we identify in educational theory depends on how it is conceived. Conceived as a field, it will involve drawing elements of knowledge from the forms and centering them around education. The

interest will be speculative and theoretical. Conceived as a practical theory, the structure will be much the same, except that it will have additional features associated with formulating educational principles. These additional features will center around what is involved in giving reasons for action. These features have been discussed in the section on justification, and will be touched on again when this topic is reviewed.

Hirst's account of the structure of educational theory in which a variety of forms contribute to the formulation of principles for practice accords well with the concept of education defended in Chapters One and Two. Hirst appears to largely assume the concept of education which Peters has defended. He conceives of education as including worthwhile activities and involving the acquisition of knowledge. While he doesn't explicitly defend this conception as Peters does, he has to assume Peters' criteria in order for his own arguments to get off the ground. It cannot be a matter of indifference to him whether education involves acquiring knowledge, or whether reasons for doing or not doing certain things in education need to be considered. If educational practices must conform to both cognitive and ethical criteria, then the principles on which educational judgements are based must be formulated so as to ensure that the practices can meet the criteria. This may involve formulating principles which make it explicit how the criteria may be met. Clearly the educational principles which the theory has the task of formulating must be adequate for guiding judgement as to whether the processes

being considered come up to the criteria. To give a rather crude example, the principle "Make sure that the students learn everything in the books prescribed" doesn't offer the teacher any guidance as to what manner of teaching might be either particularly worthwhile or morally reprehensible. Thus educational theory must take the criteria of education explicitly into account. These cannot be merely assumed, but must be stated as basic guiding postulates of the theory. To fail to do so casts doubt on the appropriateness of titling it <u>educational</u> theory.

We have to consider next what relation exists between Hirst's account of justification and that of Peters. Hirst appears to be largely preoccupied with showing the structure of knowledge which enters into justifying educational principles, while Peters is concerned with what constitutes adequate and defensible grounds for justifying what is to be done in education. Hirst is not explicit about what steps are involved in justification, and he doubts that such a process can be spelled out in a way which would resemble anything like deductive logic. He believes that the basis and source of the reasons used in educational justification must lie in the forms and that the validity of whatever principles are formulated can be determined only by appeal to the criteria of the form from which the reasons were drawn. Thus if I give empirical and moral reasons in support of an educational principle which I am advocating, I must show that my reasons are justified in empirical and moral terms. The process of judgement whereby I may unite empirical and moral

reasons into a principle for action, he leaves unspecified. Peters is much more concerned with what forms of argument we can use to support our reasons for action. He shows how reasons for action may include both utilitarian reasons and reasons which derive from the presuppositions of practical discourse itself, such as consistency and respect for persons. If Hirst is pushed to account for not only where reasons for action come from, but how they get their force, he must examine forms of argument possible in practical discourse and thus enter into the sort of considerations which Peters has dealt with. If Peters is pushed to show what conceptual schemes may be involved in giving reasons for action or justifying educational principles, he must point to something like the structural features of knowledge which Hirst has sought to clarify. Thus their positions would appear to complement each other. The following picture of the justification of educational principles emerges, and is adopted here:

(1) Justifying educational principles involves using appropriate forms of argument. Both utilitarian and presuppositional forms of argument may be used, neither one being sufficient. Presuppositional arguments provide the strongest form of justification, but as they are necessarily very general, utilitarian forms of argument about human needs and wants must be used to supplement them and fill them out.

(2) The reasons used in justifying educational principles are derived from the forms of knowledge. These is no special class of educational reasons conforming to a logically unique form of understanding.

(3) The reasons which support educational principles must be justified in terms of the criteria of the forms. No further justification can be sought.

(4) The types of reasons adduced and the manner of weighing them depends on the form of argument used. Utilitarian

arguments would call attention to reasons relevant to human needs and wants. Transcendental arguments would stress reasons relating to the presuppositions of practical reason.

(5) Since no one form of justification is sufficient, each of them must be given some weight in formulating educational principles. Their justification is thus complex both in terms of forms of argument and the diversity of knowledge to which appeal is made.

I have sought to show where I agree with Hirst and why I think the statements with which I am agreeing are justifiable. A further justification might be to point to the presuppositional character of this account, which Hirst only hints at. This would involve pointing out what anyone who wants to theorize about what ought to be done in education is committed to. Admittedly, it is not hard to escape the force of such an argument, because not everyone wants to arrive at theories about what should be done in eduation, as Gribble has pointed out. But insofar as one accepts such a commitment, one is committed to using reasons derived from the forms of knowledge for justifying courses of action. Insofar as one is theorizing, one must be committed to arriving at principles for educational practice justifiable in terms of the criteria unique to the forms from which the reasons were adduced. Thus it is assumed that theorizing commits one to arriving at principles, and not just making judgements about particular cases.

The position on educational theory adopted here can be summarized as follows:

(1) Educational theory involves both speculative inquiry about educational matters and the formulation and justification of principles for educational practice.

(2) In formulating principles for practice, the criteria of education must be taken into account.

(3) While educational theory is not an autonomous form of knowledge, it has the characteristics of both a field and a practical theory. It is composite in character and sometimes is restricted to speculative inquiry, but it also involves the formulation of principles for practice characteristic of a practical theory.

(4) Educational principles are justified by appealing to reasons drawn from the forms of knowledge and having validity in terms of their criteria. No special educational validation is required, and no theoretical synthesis of the forms is called for.

The major developments in this chapter have included a delineation of the purpose and structure of educational theory which should help clarify what connections between education and technology are significant in educational technology, and which provides an example of the analysis of a related case. A view of the justification of educational principles was developed and defended. It is expected that this will contribute to clarification of justification in educational technology. Finally, the development of logical criteria of "the technical" was prefigured, and it was claimed that at least some educational principles and judgements are technical in character. In order to work out these criteria and show their importance in characterizing technology, we must turn to further conceptual developments in Chapter Four.

CHAPTER FOUR

TECHNOLOGY

1. Introduction

In this chapter we turn to the problem of how "technology" is to be conceptualized. In our discussion so far, we have examined the nature of educational definitions as a propadeutic to inquiring into how "education," "technology," and "educational technology" are to be conceptualized. Our discussion of "education" dwelt on the analysis advanced by R. S. Peters, along with a critique of this analysis. In examining "educational theory," I sought to furnish an account which will permit us to properly situate "educational technology." Clarification of how moral and technical principles feature in educational discourse was held to be crucial for this purpose.

In this chapter I propose to clarify the concept of "technology." My approach will include a review of contemporary conceptions of "technology," and inquiry into what distinctive features of the concept may be picked out and which may be held central, and a formulation of criteria of the concept "technology." This approach will be seen to be

roughly similar to that followed for "education," but as "technology" is a different sort of concept from "education," there are some notable differences in my approach here. In my inquiry into the status of "technology" in relation to knowledge, Aristotle's writings will receive special attention. This treatment of Aristotle's position is not intended as an historical note: it is included because Aristotle's analysis of technical and practical knowledge is so relevant to the points to be developed in this chapter. My efforts will also involve me in an examination of the logic of technical discourse and its place within practical discourse. This will include an examination of the concept "technique" and the status of technical judgements. I will give some attention to how technical judgements may be justified. The conceptual developments of this chapter will be brought to bear in my enunciation of criteria of "technology" and illustrations of their application to particular cases.

Before turning to the undertaking outlined above, I wish to remark on the enormous domain which the topic "technology" includes. Technology has received great attention in this century, primarily in virtue of its social and economic consequences. What I propose to say about technology will appear modest indeed in view of the very great number and variety of writings which treat of this subject. The justification for putting aside the substantive features of technology's effects (which are usually dealt with in such treatises) in favor of my rather narrow epistemological

treatment of the concept lies both in what is required for my specific task of clarifying "educational technology" and in the nature of the concept "technology" itself. Indeed, I will claim that the central meanings of "technology" center around its status with respect to knowledge.

2. Definitions of Technology

At the outset, one might wonder whether questions of concept arise with respect to the word "technology." Technology has become such a predominant part of our way of life that it might be thought that a fairly clear notion of what it means should be in hand. An examination of The Encyclopedia of Philosophy would suggest that "technology" is not a matter of much philosophical interest, for there are no articles with the headings "Technology" or "Technique," nor are "technology" or "technique" cited in the index.[1] On the other hand, the variety of definitions of "technology" which have recently been offered shows that there is not precise agreement about what "technology" means. In criticizing some prevailing notions of technology, Peter Drucker has emphasized the importance of an adequate concept of technology (which he

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[1]This omission reflects the situation in contemporary Anglo-American philosophy. The treatment of "technology" as a major philosophical problem has been carried on largely outside of this tradition. In particular, the German philosophers Heidegger and Habermas have made technology a major theme in their work, but in the context of philosophical issues which are outside of the range of this present study: the critique of western metaphysics in Heidegger's case and the critique of ideologies in Habermas's case.

argues we currently lack) for the study of technology.[2] In this section I propose to examine a representative selection of contemporary conceptions of technology as exemplified by recent attempts at definition. This will help to illustrate along what lines questions of concept relating to "technology" lie.

Let us begin by examining five definitions of technology which have been presented in the recent literature of learned treatises on technology:[3]

(1) "technology [is] the mental or physical activity by which man alone, or together with his fellowmen, deliberately tries to change or manipulate his environment."[4]

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[2]"Work and Tools," in Technology and Culture, ed. Melvin Kranzberg and William H. Davenport (N.Y.: Schocken, 1972), pp. 190-99.

[3]The definitions examined here are drawn from works in which some attention is given to the problem of defining or stating a working concept of "technology." This has resulted in omitting reference to some notable writers and works on technology. For example, I have been unable to find a clear-cut definition of technology in Lewis Mumford's major works on technics and technology (see Bibliography). Charles Singer et al., in their monumental A History of Technology, 5 vols. (Oxford: Clarendon Press, 1954-58) define technology rather weakly as "how things are commonly done or made . . . [and] what things are done or made." As Drucker has noted, "Singer's great History of Technology abandons the attempt to give a comprehensive treatment of its subject with 1850; at that time, the editors tell us, technology became so complex as to defy description, let alone understanding." (Drucker, p. 197.) I do not discuss Singer's definition here. The definitions which appear in the text of this chapter were chosen on the basis of my search of recent literature on technology for definitions which exhibit features worthy of discussion.

[4]R. J. Forbes, The Conquest of Nature (N.Y.: New American Library, 1968), p. ix.

(2) "technology is man's efforts to cope with his physical environment--both that provided by nature and that created by man's own technological deeds, such as cities--and his attempts to subdue or control that environment by means of his imagination and ingenuity in the use of available resources."[5]

(3) "We . . . define technology as tools in a general sense, including machines, but also including such intellectual tools as computer languages and contemporary analytical and mathematical techniques. That is, we define technology as the organization of knowledge for the achievement of practical purposes."[6]

(4) "technology [is] the deliberate, rationalized, and standardized application of knowledge for the purpose of attaining some predetermined end."[7]

(5) "we think of technology as a self-conscious organized means of affecting the physical or social environment, capable of being objectified and transmitted to others, and effective largely independently of the subjective dispositions or personal talents of those involved."[8]

While each of these definitions has its own distinctive emphasis, taken together they disclose a nexus of themes which figure more or less importantly in each particular definition. The central themes which may be identified include deliberate action on the environment, the nature of the means used, and the character of the end chosen.

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[5]Melvin Kranzberg and C. W. Pursell, Jr. eds., Technology in Western Civilization, vol. 1 (N.Y.: Oxford University Press, 1967), pp. 4-5.

[6]Emmanuel G. Mesthene, Technological Change, Its Impact on Man and Society (N.Y.: New American Library, 1970), p. 25.

[7]Charles A. Tesconi, Jr. and Van Cleve Morris, The Anti-Man Culture, Bureautechnocracy and the Schools (Urbana: University of Illinois Press, 1972), p. 6, italics omitted.

[8]Victor C. Ferkiss, Technological Man, The Myth and the Reality (N.Y.: New American Library, 1969), pp. 37-38.

Definitions 1, 2, and 5 make specific reference to man's environment, 2 and 5 elaborating further distinctions: action on both the physical (natural or man-made) and social environment may be involved. The forms of action involved include "change," "manipulate," "cope," "subdue," and "control." This action is described as "deliberate" or "self-conscious" in 1, 4, and 5. Indeed, the intentionality of the action is attested to by the very verbs which are used to specify the forms of action. The emphasis on knowledge and its application in 3 and 4 also testifies to the intentional manner of affecting the environment which characterizes technology. An additional attribute of technological action is evident in the next two quotations:

> (6) technology comprises all that bewilderingly varied body of knowledge and devices by which man progressively masters his natural environment.[9]
>
> (7) "[technology] encompasses all those forms of knowledge and technique which account for man's growing mastery over his physical environment and for his increasing ability to achieve human goals."[10]

In both of these definitions, "mastery" over the environment is a central feature of technological action. We are thus faced with a range of technological action on the environment, from the less forceful notions of "coping" and "changing" through the intermediate notions of "controlling" and

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[9]T. K. Derry and Trevor I. Williams, A Short History of Technology (London: Oxford University Press, 1960), p. 4.

[10]Nathan Rosenberg, "Technology and the Environment: An Economic Exploration," Technology and Culture 12 (October, 1971):543.

"manipulating" to the much more forceful ideas of "mastering" and "subduing."

The second major theme centers around the nature of the means which are used in technology. A rather large nexus of terms is connected with this aspect of technology: "means," "use," "tools," "devices," "resources," "techniques," "knowledge," "organized," "systematic," and "objectified" are among the important terms which feature in the definitions quoted so far. "Means" and "use" suggest an instrumental approach in which means are more or less distinguished from ends. Definition 3 places a particularly strong emphasis on "tools," both physical and intellectual. "Devices" (6)[11] and "resources" (2) also suggest instrumentality and the underlying metaphor of working materials with instruments. Regarding tools, Raymond Aron has observed that (definition 8) technology narrowly conceived is "identified only with the tools and products of industrialization," while conceived more broadly it is not confined to objects, "but relates to the whole process of mechanization--in other words to the progressive transformation of human behavior according to one rule alone, that of efficacy of thought and computation."[12]

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[11]I will hereafter adopt the convention of placing the number of the definition referred to after the term, except when introducing a new definition. New definitions introduced in the body of the text will be prefaced by a note in brackets, e.g.: (definition 8). Block quotation definitions will be introduced as before.

[12]Raymond Aron, Progress and Disillusion (N.Y.: Praeger, 1968), p. xi.

While tools are part of the means associated with technology, "tool" or "device" and the use of "resources" to make "products" do not yield a sufficient characterization of "means." Others who have warned against focusing too narrowly on tools in conceptualizing "technology" include Drucker,[13] Mesthene,[14] Ferkiss,[15] and Lewis Mumford.[16] Aron lays stress on "efficacy," a clearly instrumental principle. Charles R. Walker states that (definition 9) "technology includes both physical objects and the techniques associated with them,"[17] including materials, machinery, and skills and procedures. In definition 1, "means" are regarded in terms of the physical and mental activity involved. "Technique" (3, 7, 9) is a central notion which may supplement "tools" in characterizing the means of technology. In fact, I will argue that "technique" is the crucially distinctive notion embodied in technology. Aron suggests that in the broader sense of technology, "any rationalization of an activity with a view to manipulation or planning can be termed a technique."[18]

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[13] "Work and Tools," pp. 192, 198.

[14] Technological Change, p. 24.

[15] Technological Man, p. 36.

[16] "Technics and the Nature of Man," in Technology and Culture, ed. Melvin Kranzberg and William H. Davenport (N.Y.: Schocken, 1972) p. 203.

[17] Modern Technology and Civilization; An Introduction to Human Problems in the Machine Age (N.Y.: McGraw-Hill, 1962), p. 2.

[18] Progress and Disillusion, p. xi.

"Technique" draws attention to activity as means; mental or physical activity becomes formalized and rationalized in "technique" and thus becomes available as an instrument. Jacques Ellul treats "technique" as an extremely broad notion, defining it as "the totality of methods rationally arrived at and having absolute efficiency (for a given stage of development) in every field of human activity."[19] Like Aron, Ellul emphasizes the "rationality" of "technique." "Method" and "efficiency" suggest the instrumental thrust of "technique." In "technique," activity, regarded instrumentally as "method" or "means," becomes rationalized or formalized; "efficacy" (8) and "efficiency" are guiding principles which determine its usefulness.

Related to "technique" as an aspect of the means of technology is "knowledge." "Knowledge" receives direct mention in 3, 4, 6, and 7, but it is strongly implied in 5 and in the definitions of "technique" put forward by Aron and Ellul, where being "objectified" (5) and rational are key features. The link between "technique" and "knowledge" lies in the notion that techniques, as rational formalizations of action, are statable as technical principles and thus constitutive of a type of knowledge. In a later section I will give more attention to the idea that technical principles constitute a category of instrumental knowledge. Here we may be satisfied to note that the collection of techniques

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[19] The Technological Society (N.Y.: Vintage Books, 1964), p. xxv.

into bodies of knowledge is a reasonable way of accounting for the supposition that the means of technology are more than just a grab-bag of techniques and associated tools. "Knowledge" is often said to be "applied" to technological undertakings, as in these definitions:

(10) "Technology is the application of organized knowledge to help solve the problems of our society."[20]

(11) "Technology means the systematic application of scientific or other organized knowledge to practical tasks."[21]

In its application, knowledge is viewed instrumentally, as part of the "means" of technology. The notion that this application is "systematic" has an implicit connection with the rationality of technological means. Technology is not simply a random or casual application of knowledge: the formalized character of the means is insisted on by "systematic."

In both of the above definitions, the knowledge which is applied has an additional characteristic: it is "organized." Mesthene has also pointed to the "organization" (3) of that knowledge which is instrumental in technology, and Ferkiss has also noted the "organized" (5) character of the means. Organization is indeed a central feature of bodies of knowledge, related to the idea of conceptual structures discussed by Hirst. The notion is simply that bodies of knowledge are

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[20]Weisner, J. B., "Technology and Innovation," in Technological Innovation and Society, ed. Dean Morse and Aaron W. Warner (N.Y.: Columbia University Press; 1966), p. 11.

[21]John Kenneth Galbraith, The New Industrial State (Boston: Houghton-Mifflin Company, 1967), p. 12.

distinguished from loose accumulations of items of knowledge (true statements, principles, laws, etc.) by the fact that they are to some degree organized or articulated by conceptual structures whereby the items are ordered, classified, and interrelated. What makes technology, as means, more than just a grab-bag of techniques is that the technical principles which they embody are more or less organized into bodies of knowledge available for instrumental purposes.

In the "means" aspect of technology, the notions of "tools," "techniques," and "knowledge" intergrade into each other. Physical "tools" embody technical principles and relate to the technical contexts in which they are used. But "tools" may also be intellectual tools. Here the notion of "tool" becomes connected with "technique" and technical principles in the formalization and rationalization of methods. But as techniques and statements of them as technical principles become organized into bodies of principles, the notion of technical knowledge becomes central. This knowledge is centrally knowledge which is applicable and useful in terms of its "efficiency" and "efficacy": it is instrumental knowledge. Further, it is "organized" and deployed "systematically." The crucial feature of the "means" of technology would thus appear to be their instrumentality. There is no hint of means being valued for their own sakes as worthwhile and desirable; they are rather valued as the most efficient, effective, and rational route to achieving whatever purposes or ends are desired. The "organization" and

"systematic application" of knowledge as means may be regarded as a feature of this overall instrumentality: technical principles are more effective, efficient, and rational in their relation to each other and to the ends sought when drawn from organized bodies of knowledge and applied in a systematic manner.

We now turn to the third general theme which arises in these definitions: the ends or purposes which technology serves. In the definitions which have been cited, the expressions which relate to this third theme include "practical purposes" (3), "predetermined end" (4), "human goals" (7), "problems of our society" (10), "practical tasks" (11), "attaining" (4), "achievement" (3), and "achieve" (7). "Attain" and "achieve" suggest that the purposes, goals, or ends are the outcomes towards which technology is aimed. "Tasks" and "problems" suggest the connection of what is aimed for with situations in which some end or goal is sought, such as the relief of suffering or the enhancement of living conditions. "Practical" suggests the association of the ends sought with contexts of action and effort. It suggests that the ends of technology are seen in relation to acting and doing. "Predetermined" suggests that the ends of technology are decided upon antecedently to their consideration within the context of technology. This is an interesting point because we will have to inquire what the relation of technology is to the determination of practical purposes. None of the definitions presented here suggest that the

selection of ends, goals, and purposes or commitment to them is primarily a technological matter. The presumption is rather that formulation of what is to be achieved is already in hand, and that technology then provides the instrumentality through which the ends are to be attained. The central character of the ends of technology would thus appear to be that they are purposes of a practical nature, and that determination of them and commitment to them is a matter antecedent to technology. In this sense, ends to be achieved are presuppositions of technology. But this matter cannot be further clarified without attention to the ways in which justification relates to technology.

The definitions of technology which we have considered thus suggest the three major themes of deliberate action on the environment, means, and ends. The individual definitions give unequal weight to the three themes. Some dwell primarily on the action aspect (1, 2) while others give it little or no attention (10, 11). Some emphasize primarily the means (1, 2, 5) while others give attention to the end as well (3, 4, 10, 11). We might presume that an adequate definition of technology would give appropriate attention to all three themes. Yet these definitions establish very little by themselves. It would be rather dogmatic at this point to go on to extract criteria of "technology" out of the three themes we have considered, for we have not demonstrated that they give rise to conditions for using the term "technology" correctly.

The themes which I have elicited from the definitions may, however, point to what is involved in clarifying what conditions govern central uses of the term "technology." "Deliberate action on the environment" calls attention to the practical character of that with which "technology" is concerned. We may however wonder if "deliberate" and "on the environment" are not both redundant specifications of what is involved. "Action" is distinguished from "processes" and from "cause-and-effect" situations by its intentionality. Admittedly, a course of action may include processes, as well as events describable in terms of cause and effect. Writing a paper typically involves logical processes of thought as well as "causing" marks to appear on pieces of paper. What makes writing a form of action and not just a collection of processes and events is the intentional features by which it is marked out, such as the intentions of putting one's thoughts in order and recording them on paper, perhaps with a view to reading them later on or showing them to someone else. The differentia of human action is indeed its deliberateness, in the sense of being intentional. That we deliberate means choice is involved; deliberation as reflecting on choices implies that we intend to do something. To "act" implies a lot more than to "happen," for in the latter case we do not suppose that anything was intended. It would be odd to say, "He acted in such-and-such a way, but he didn't appear to be intending anything." This is illustrated by the peculiar case of games of chance, which

involve both intention and chance events. The card player acts in dealing cards, but what is intended? That certain cards or combinations of cards turn up? Unless the dealer is cheating, the intentional features of dealing are not to be explained in terms of causing certain cards to turn up, but rather in terms of the purposive context of the card game, in which chance events such as the falling of certain cards or combinations of them are interpreted and provided with meaning in relation to the skills exercised by competing players, the value attributed to different cards and combinations of them, the stakes of the game, or other ways of assigning meaning (e.g. telling the future). When the dice are rolled, it is with a view to gaining moves against an opponent, deciding a dispute, telling the future, or some other purpose. Though the way the dice fall is a chance event, it is the rational, purposive structure of the context which demands that we view the rolling as an intentional act; in this respect it is very different from what happens if the cards are dropped accidentally. Chance combinations then occur, but no significance is likely to be assigned to this event other than that appropriate to the occurrence of an accident (e.g. the "clumsiness" of the player might be noted, marking his failure to act as he intended). When we wish to signify lack of intention we usually withdraw the word "act" or verbs which imply action and substitute a more neutral expression such as "behave," as, "He behaved as if he had lost his wits." Of course,

there is also a whole class of verbs which refer to things we do not intend but which just happen to us, such as "fall," "stumble," and "slip," as well as a class of verbs which refer to things we do involuntarily, such as "cringe" and "tremble." In a somewhat stronger sense, "deliberate" may be taken to refer not only to intention, but to "planning" and acting according to a scheme which has been thought out beforehand. In this sense "deliberate" anticipates the sense in which rationality and knowledge relate to the means of technology. But "planning" and "rationality" may also be thought of as ways of making more explicit what is involved in "intention." We may thus take the expression "deliberate action" to be emphasizing the rational, intentional features of action.

Again, we might wonder if it is not the case that all action is, in a sense, on the environment. For how can one act without affecting the "environment"? The "environment" may be taken to include our physical and social surroundings, but we are also increasingly disposed to regard our personal self in its bodily and mental aspects as part of our "environment." "Environment" suggests little more than one's surroundings, whatever can be described in terms of a spatial relation to oneself. It is not unusual to speak of the social and even private mental aspects of one's experience in terms of their "dimensions," their "climate," their "geography," "proximity," "structure," "depth," and so on. It would be puzzling, then, if any

"action" were possible that did not affect or change the "environment" to some degree. From this we may conclude that "action" and the practical features of experience which it suggests are what is central in the first theme, while "deliberateness" and "environment" are merely elaborations of what is already implicit in this notion.

The themes of means and ends suggests the dichotomy of "task" and "achievement" which Peters attributes to "education." Technology, however, appears to be a fundamentally different kind of term than "education" because it has no verb form like "educate." Although "technology" is concerned with acting and doing, it is not expressible as a form of action or a thing which is done. It is not a word like "purchase" which specifies a way of getting something which is desired, or "make" which specifies a way of bringing about what is sought. "Technology" is rather a word like "art" which specifies a range of things which are done which culminate in a type of end which is sought, along with the knowledge and skill involved in accomplishing this. A further clue may be taken from the etymological fact that "technology" is a compound term formed from the combination of the Greek words "techne" (art) and "logos" (discourse). In this respect, "technology" is a word like "biology" or "criminology," where "-ology" suggests discourse on a subject. We usually think of the accumulated discourse on a subject suggested by terms like "biology" and "criminology" as a body of knowledge. In

these terms, "technology" would be a body of knowledge comprised of discourse about art. Indeed, the Oxford English Dictionary defines "technology" thus:

> (12) "a discourse or treatise on an art or arts: the scientific study of the practical or industrial arts; . . . Practical arts collectively."

"Technology" may turn out to be not so much action as a kind of deliberation about action. Indeed, we may find that the relation of means and ends in "technology" is a way of giving further specification to what kind of a deliberation about action "technology" is.

3. Technology as Knowledge: Aristotle's Conception

If we take "knowledge" as our clue to the problematic status of "technology," then the distinctions which Aristotle offers are of particular interest. Aristotle supposes that "all thought is either practical or productive or theoretical,"[22] that is, concerned with things done, things made, and things which have their being independently of making and doing. Each kind of thinking has its truth: "What affirmation and negation are in thinking, pursuit and avoidance are in desire."[23] Truth and falsity pertain to the contemplative intellect; while "truth in agreement with right desire"[24] pertains to practical intellect. Truth in agreement with right desire is a matter of choice. Choice,

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[22] Metaphysics 6. 1. 1025b.

[23] Nicomachean Ethics 6. 2. 1139a.

[24] Ibid.

in turn, is a matter of "desire and reasoning with a view to an end."[25] Just as practical intellect aims at an end, so productive intellect makes for an end, but that which is made is not an end in itself, while that which is done may be such an end: "that which is made is not an end in the unqualified sense (but only an end in a particular relation, and the end of a particular operation)--only that which is done is that; for a good action is an end, and desire aims at this."[26]

Aristotle asserts that the states in which the truths of practical, productive, and theoretical thought are possessed are "art, scientific knowledge, practical wisdom, philosophic wisdom, intuitive reason."[27] The first three states only, and particularly the first and third, are treated of here as particularly relevant to accounting for "technology." I hope to show that there are close connections between Aristotle's notion of art (technē) and the concept of "technology." One of the important ways in which Aristotle defines art is by contrasting it on one hand with the theoretical knowledge attained by science and on the other hand with the practical wisdom gained from experience. The latter contrast is particularly revealing because both art and practical wisdom, I shall argue, are concerned with contexts of action. Scientific knowledge is held to be "a state of capacity to demonstrate";[28] its objects are said

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[25]Ibid. [26]Ibid., 1139b. [27]Ibid., 6. 3. 1139b.

[28]Ibid.

to be necessary and eternal. Aristotle characterizes art (techne) and practical wisdom respectively as the reasoned state of capacity to make and the reasoned state of capacity to act. More particularly, "art is identical with a state of capacity to make, involving a true course of reasoning."[29] Art, as making, aims at the production of things which do not have in themselves the source of their own production:[30] "All art is concerned with coming into being, i.e. with contriving and considering how something may come into being which is capable of either being or not being, and whose origin is in the maker and not in the thing made."[31]

Practical wisdom Aristotle characterizes as "a true and reasoned state of capacity to act with regard to the things that are good or bad for man."[32] Practical wisdom involves deliberation about what is good and expedient, not in some particular respect, such as what conduces to health or strength, but rather "about what sorts of things conduce to the good life in general."[33] Practical wisdom is not concerned with what is invariable and of necessity, but rather with what it is possible to do. It involves "judgements about what is to be done."[34]

An interesting and rather pecular feature of Aristotle's account is the distinction between making and acting on which

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[29]Ibid., 6. 4. 1140a.

[30]Physics 2. 1. 192b.

[31]NE 6. 4. 1140a.

[32]NE 6. 5. 1140b.

[33]Ibid., 1140a.

[34]Ibid., 1140b.

he insists: "the reasoned state of capacity to act is different from the reasoned state of capacity to make . . . they are not included one in the other; for neither is acting making nor is making acting."[35] Since both art and practical wisdom clearly involve deliberation about things which it is in our power to do and bring about by our own efforts,[36] it is puzzling that the difference between these two ways of reasoning might be thought to be so complete. Aristotle's justification for this distinction has to do with the idea, presented above, that the productive intellect has to do with products which are not ends in themselves, while practical intellect has to do with good actions, which are the only things which may be ends in an unqualified sense. Thus, in distinguishing between making and acting, he says, "while making has an end other than itself, action cannot; for good action itself is its end."[37] In these passages, Aristotle clearly seems to rule out the possibility of instrumental actions, that is, actions which aim at some end yet do not consitute ends in themselves.

In his discussion of choice, Aristotle identifies choice with what is decided as a result of deliberation.[38] He observes that we only deliberate about things which it is in our power to do or bring about by our own efforts or those of others. We do not deliberate about the eternal or

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[35]Ibid., 6. 4. 1140a.

[36]Ibid., 3. 3.

[37]Ibid., 6. 5. 1140b.

[38]Ibid., 3. 2-3.

necessary, but about matters such as medical treatment and making money. The arts involve more deliberation than the sciences, because we are more in doubt about matters of art. These observations are plain enough. Aristotle's most remarkable claim here is that we only deliberate about means and not about ends:

> For a doctor does not deliberate whether he shall heal, nor an orator whether he shall persuade, nor a statesman whether he shall produce law and order, nor does any one else deliberate about his end. They assume the end and consider how and by what means it is to be attained; and if it seems to be produced by several means they consider by which it is most easily and best produced, while if it is achieved by one only they consider how it will be achieved by this and by what this will be achieved, till they come to the first cause, which in the order of discovery is last.[39]

Here Aristotle construes deliberation as a thoroughly instrumental mode of reasoning. Again, he says that "The subject of investigation is sometimes the instruments, sometimes the use of them; and similarly in the other cases--sometimes the means, sometimes the mode of using it or the means of bringing it about."[40] In connection with the notion of how things are brought about, Aristotle brings in the notion of instrumental action: "now deliberation is about the things to be done by the agent himself, and actions are for the sake of things other than themselves."[41]

The notion of instrumental actions is of course a highly plausible one, yet it is peculiar that three chapters later Aristotle insists that action cannot have an end other

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[39]Ibid., 3. 3. 1112b. [40]Ibid.

[41]Ibid.

itself. The way out of this confusion may be to suppose that Aristotle wants to say that action in general has to do with what is done for its own sake, although some particular actions may be instrumental to other actions which approximate more to ends. Production, on this supposition, is always and only instrumental to eventual actions which are ends in themselves. Aristotle's attempt to distinguish instrumental from non-instrumental modes of reasoning appears to lead him to draw an overly sharp distinction between making and doing, for all making involves particular actions, and particular actions may be regarded as instances of making.

Aristotle's delineation of deliberation as an instrumental mode of reasoning is on the face of it puzzling. It appears to subvert our own notion of moral deliberation, for we clearly deliberate often enough about what ends ought to be sought, and we regard such deliberation about ends as standing in contrast to instrumental deliberation. It might appear that Aristotle is making a sociological observation when he claims that no one deliberates about his end. However, Aristotle's philosophical concern here appears to be the avoidance of an infinite regress in practical reasoning: "If we are to be always deliberating, we shall have to go on to infinity."[42] His claim would seem to be that whenever we deliberate, we assume an end and our

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[42]Ibid., 3. 3. 1113a.

deliberation amounts to reasoning about which means to the end is to be chosen. What is implied is that when we appear to be deliberating about ends, we are deliberating about them as means to the prior end which is already assumed for the purposes of the deliberation. Since any end which is assumed can in turn be deliberated about as a means to a further end, this view of practical reason looks towards some ultimate or highest end which provides a stopping place for justification. Indeed, Aristotle says:

> If, then, there is some end of the things we do, which we desire for its own sake (everything also being desired for the sake of this), and if we do not choose everything for the sake of something else (for at that rate the process would go on to infinity, so that our desire would be empty and vain), clearly this must be the good and the chief good.[43]

In Aristotle's view, this chief good is that which is studied by politics, the master art.

We have, however, become suspicious about the possibility of attaining a useful degree of certainty concerning what is the highest good for man, especially when it is identified with the good of the state. Any account of the good for man is always open to further questioning. It is never nonsense to inquire about a supposed good thing, even a claimant for the title of highest good, "Yes, but is <u>that</u> good?" If we are not so willing as Aristotle to look towards some ultimate end or chief good, we may be disinclined to agree that ends cannot be deliberated about. We do deliberate about ends, but we deliberate about them with

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[43]Ibid., 1. 2. 1094a.

respect to moral or other non-instrumental principles, and not just with respect to further ends.

The modern notion of "technology" as deliberate action on the environment in order to achieve predetermined ends accords with Aristotle's notion of productive reason, but it substitutes the notion of instrumental action for "making." Technology is held to involve action, yet it is action in its instrumentality with which it is concerned. The ends are assumed and predetermined for such action, a view which agrees with Aristotle's notion of deliberation. Technology is concerned with producing effects on the environment, and thus may be viewed as a matter of productive thought. Viewed in this way, technology would be concerned with both acting and making, action which is regarded as making. There are thus notable connections between Aristotle's conception of productive reason and the usage of "technology" exemplified in the recent definitions which I have discussed.[44]

How does this modern notion of "technology" accord with the ancient Greek idea of techne (art) and the related notion, technologia? R. G. Collingwood has pointed out that the aesthetic sense of the word "art" is a very recent usage.

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[44]Here I am only claiming that there are certain connections which can be described and which offer some clarification. I am not proposing that the "modern notion" is to be recommended in virtue of these connections, but simply noting in what ways it preserves features picked out in Aristotle's analysis of productive reason.

What is meant in ancient Greek by "technē" and in ancient Latin by "ars" is something quite different:

> It means a craft or specialized form of skill, like carpentry or smithying or surgery. The Greeks and Romans had no conception of what we call art as something different from craft; what we call art they regarded merely as a group of crafts, such as the craft of poetry . . . which they conceived, sometimes no doubt with misgivings, as in principle just like carpentry and the rest, and differing from any one of these only in the sort of way in which any one of them differs from any other.[45]

Collingwood observes that "technic or the philosophy of craft" began to be disentangled from the aesthetic only in the seventeenth century; in the late eighteenth century the distinction between "fine arts" and "useful arts" became current.[46]

While Collingwood is concerned to characterize the emergence of the more differentiated concept of "art" which is connected with that for which we have aesthetic regard, the older sense of "art" as skill or craft clearly survives. When we speak of medicine or education as an "art," we invoke this older sense. In such cases, we are not ususally drawing attention to the aesthetic characteristics of the undertakings, but to their skilled or craft-like character.

When Aristotle speaks of art (i.e. technē) as the state of reasoned capacity to make, he is clearly giving a formulation of the concept of art as skill or craft. The examples which he gives include medicine and architecture.

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[45]R. G. Collingwood, The Principles of Art (London: Oxford University Press, 1958), p. 5.

[46]Ibid., p. 6.

Each art is said to have its end: that of medicine is health, that of shipbuilding is a vessel.[47] Further, art as a making involves more than just experience:

> Now art arises when from many notions gained by experience one universal judgement about a class of objects is produced. For to have a judgement that when Callias was ill of this disease this did him good, and similarly in the case of Socrates and in many individual cases, is a matter of experience; but to judge that it has done good to all persons of a certain constitution, marked off in one class, when they were ill of this disease, e.g. to phlegmatic or bilious people when burning with fever--this is a matter of art.[48]

What is distinctive about Aristotle's account is that he does not just leave the matter hanging by saying that art is skill or craft in making: he characterizes art as a form of knowledge in terms of its status as the reasoned capacity to make. Art or technē, on Aristotle's account, would appear to accord well with our notion of "technology," and to help make clear technology's status with respect to knowledge. Technē is knowledge about making, involving deliberation about means which are productive of ends already chosen. What is produced by bringing to bear the knowledge of technē is not necessarily a material product. For example, the art of medicine aims at producing health.

Yet "technē" is not equivalent to "technology," and we may take yet a further etymological clue. "Technology" combines "technē" and "logos." The meaning of "logos" is

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[47] NE 1. 1. 1094a.

[48] Meta 1. 1. 981a.

usually translated as "reason" or "discourse."[49] Thus "technology" may be seen to combine "art" in the sense of craft or productive knowledge and "logos," reason or discourse. This view is embodied in R. J. Forbes' observation that "Technologia orginially meant 'giving rules to the arts.'"[50] It is also clear in the O.E.D. definition of "technology" as a discourse on an art or arts. On this view, it is correct to think of "technology" as discourse about productive knowledge or a reasoned ordering of productive knowledge. The understanding to which we have now come is that "technology" constitutes not only a kind of knowledge, but an ordering of this knowledge in discourse. This reconstruction of the meaning of "technology" may be compared with the view often maintained in contemporary definitions that "technology" is the organization of knowledge for achieving any sort of practical purpose: it is the discursive ordering of productive knowledge, productive knowledge being knowledge of how to achieve predetermined ends.

One final insight which we may draw from Aristotle's account has to do with how the various kinds of knowledge may be classed with regard to how they are esteemed. In the Metaphysics, he observes that the branches of knowledge which are directed to "recreation" (he cites the mathematical arts as an example) are regarded as superior to those

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[49]Martin Heidegger, Being and Time (N.Y.: Harper and Row, 1962), p. 55.

[50]The Conquest of Nature, Technology and Its Consequences (N.Y.: New American Library, 1968), p. 126.

branches of knowledge which aim at utility, being directed to the necessities of life. Experience, productive knowledge, and theoretical knowledge stand in a hierarchical relation to each other: "the man of experience is thought to be wiser than the possessors of any sense-perception whatever, the artist wiser than the men of experience, the master-worker than the mechanic, and the theoretical kinds of knowledge to be more of the nature of Wisdom than the productive."[51] Aristotle presents the view that wisdom is knowledge of principles and causes and thus involves knowledge of universals. He remarks that "experience is knowledge of individuals, art of universals and actions and productions are all concerned with the individual."[52] The manual worker, having experience, is able to act, but the master worker has the theory and knows the causes of things: his knowledge is superior because he recognizes both the universal and the individual. Technē, then, is superior to experience in matters of production in that it includes knowledge of the universal regarding production. To the extent, however, that technē aims at utility, it is inferior to knowledge which is purely theoretical. Indeed, Aristotle's characterization of technē is that it is necessarily instrumental: it has an end which is other than itself. A similar status may be claimed for "technology" in our contemporary understanding of it: "technology," as

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[51] Meta 1. I. 981b. [52] Ibid., 981a.

instrumental knowledge, may be regarded as superior to productive capability which is not theoretically informed, but subordinate to non-instrumental knowledge of what is true or worthwhile.

What has been gained by these considerations is a picture of the extent to which the foundations of the epistemological status of technology have already been worked out in Aristotle's thought. Further, it has been shown that our present understanding of "technology" has clearly discernable conceptual roots in the ancient Greek thought to which the etymology of the term may be traced. Aristotle's treatment of technē in relation to practical, productive, and theoretical knowledge furnishes an account of the connections holding among art, action, and deliberation which provides the basis for understanding "technology" as discourse about productive knowledge. Aristotle's distinction between "making" and "doing" cannot be sustained for all cases of "doing," but it points to the important difference between practical reason and productive reason. While both productive reason and practical reason reflect on courses of action, the character of deliberation is different in each. Hirst and Peters espouse a conception of practical discourse which includes both moral and technical discourse, but the practical wisdom which Aristotle addresses accords more with our notion of moral and prudential reasoning. We shall have to be cautious about embracing a conception of practical reason which sucks up both moral reason and technical reason,

because there are important distinctions between the two which need to be maintained. While Aristotle holds that deliberation is always about means, it has become more usual to conceive of technical reason as deliberation about means, and to conceive of moral reason and other non-instrumental forms of practical reason as deliberation about what ends are worthwhile in themselves. Our contemporary distinction between technical or instrumental reason and non-instrumental forms of reasoning about action appears to preserve the gist of Aristotle's distinction between productive and practical reason. We have here reconstructed "technology" as discourse about productive knowledge in the sense of the reasoned (or discursive) ordering of productive knowledge. Dwelling on Aristotle's distinctions has helped us to attain some clarity about how "technology" stands with respect to knowledge. We now need to give fuller attention to the nature of technical discourse and its relation to practical discourse.

4. Technical Discourse

This section aims at further epistemological characterization of "technology" through inquiry into the nature of technical discourse. This is based on the supposition that "technology" is concerned with matters of "technique" and with the whole sphere of "the technical." I postulate that we now use the terms "technique" and "technical" to pick out the general way of looking at things with which "technology" is concerned. "Technology," it is

anticipated, refers to the ordering or organization of technical knowledge. On this supposition, "technology" would be the organization of techniques or technical principles, along with the study of these principles, into a body of knowledge. To justify such a conception, the question of what constitutes a "technique" must be addressed. An additional supposition, which was announced in Chapter Three, is that technical discourse and moral discourse are both included in the broad category of practical discourse. Practical discourse, it will be recalled, is that area of discourse which has to do with what ought to be done, with such questions as "What ought I to do?" and "Why do this rather than that?" The question now arises as to whether this conception abandons the distinction between practical and productive reason worked out by Aristotle. I here use "practical reason" and "practical discourse" to refer to all reasoning and discourse about action, with the proviso that the crucial differences between instrumental and non-instrumental forms of reasoning and discourse about action are to be sustained and noted. Thus "practical reason" in this acceptation refers to more than one mode of deliberation. In this section, I will attempt to show how technical discourse can be distinguished from other forms of practical discourse, particularly moral discourse, and suggest how this distinction can contribute to clarifying the concept of "technology." The question of how technical judgements are to be justified will be touched on briefly.

It will be recalled that in Chapter Three I criticized Hirst's view that practical discourse is comprised of moral and technical statements (including principles and judgements) as being too narrow. That the practical is a wider sphere receives some support from R. S. Peters' reference to "the practical types of knowledge involved in moral, prudential, and technical forms of thought and action."[53] In Chapter Three, I attempted to show that practical discourse may include statements reflecting prudential, utilitarian (or expedient), aesthetic, and (for lack of a better term) hedonistic considerations, none of which yield distinctively moral or technical sorts of statements. Such cases are common enough, and present no special difficulties in practical discourse. Difficulties, however, are encountered when an attempt is made to show what is distinctive about any of these types of statements. My central purpose here is to clarify what features distinquish technical statements, and in what wise they are different from moral statements. I must at the outset express doubt that technical and moral statements can be adequately characterized in purely formal terms. G. J. Warnock, in his examination of moral arguments, has concluded that there is nothing formally distinctive about moral arguments: their special features lie in what such arguments are about.[54] I shall nevertheless consider

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[53] Ethics and Education, p. 50.

[54] Contemporary Moral Philosophy (London: Macmillan, 1967), p. 76.

the form of technical statements and judgements, but my expectation is that this will merely contribute to clarification rather than offering a conclusive characterization of technical discourse.

In inquiring into the nature of technical discourse, we may start with questioning what it is for something to be called "technical." This is reminiscent of Peters' strategy in asking "What is an educational process?" as a way of getting clear about "education." We are not just concerned with "processes" though, for certain events, activities, institutions, physical objects, areas of study, enterprises, and so on, are commonly called "technical" (the same, of course, is true of "educational"). While it is logical to assume that things are said to have a "technical" character when they are concerned with techniques in some important way, the great variety of things of which "technical" may be predicated suggests that it encompasses a much larger realm than "technique" itself. The domain of "the technical" might be said to be the domain of things, whether physical objects, processes, activities, events, etc., which have a certain character marked out by their relation to (e.g., their use of, in, for, or interest in) techniques.

Let us examine some familiar contexts in which "technical" is used. We often speak of "technical problems" which arise in connection with "technical operations." We may wonder if something is "technically feasible." When such feasibility is at issue, we may say of the matter that

it is a "technical question." In such contexts, questions of method, procedure, means, or instrumentation are invoked. If I hear that a television program has been interrupted for "technical reasons," I may assume that some problem with respect to the means or instrumentation by which television programs are broadcast is involved, rather than, say, the intervention of government censorship, which might be an interruption for moral or political reasons. If an engineer tells a real estate developer that the structure which he had hoped to erect is not "technically feasible," the developer may assume that the methods and materials which would be required are not available, rather than imputing to the engineer an expression of moral or aesthetic scruples about the building of such a structure. What these cases have in common is their central concern with the instrumental features of a situation.

Another common usage of "technical" is exemplified when an author announces that a word is being used in a "technical sense." Similarly, a person may say that he is doing something for "technical purposes." If a writer says that he is using a word such as "unconscious" in a "technical" sense, he announces his intention to restrict its meaning to some narrow or unusual specification which stands in contrast to the more familiar ordinary usage. He might, for example, stipulate that by "unconscious," he will mean an entity marked out by certain psychoanalytic postulates which he will indicate. Similarly, when someone announces that they are doing something for "technical purposes," they call attention

to the restricted light in which their project is to be seen. If someone says that he uses a particular sort of motor oil in his automobile's engine for "technical" purposes, we may be assured that he does not do so because he believes he has a moral obligation to do so, or that he expects to derive any great pleasure from doing so. In these examples, "technical" serves to announce the restriction of intent or interest to certain dimensions only. These dimensions comprise the instrumental features of the situation. If a precise specification is demanded for what is involved in the "technical use of a word" or "doing something for technical purposes," one must point to the "technical problems or difficulties" which are anticipated in connection with the situation being considered.

The two usages of "technical" which we have identified--concern with the instrumental features of a situation and announcement of restriction of interest to such features--clearly go hand in hand and are matters of emphasis. Both the notion that "technical" refers to matters which are not of a "general" nature and that instrumental features are what is of concern will be evident in the central contexts in which the word is used. This is evident in situations such as medical examinations, in which what transpires is typically accounted for in technical terms. One of the general features of a medical examination is that it is an encounter between two persons, but it is different from a "social" encounter in that attention is largely drawn to the technical character of what is going on. The doctor offers

technical explanations, i.e. explanations in medical terms, of what he is doing. He offers instrumental justifications for what he does: if he performs an unpleasant operation, it is "for the good of the patient." The doctor professes to have a technical interest only in the parts of the patient's body which are under examination; he attends to what is medically typical of features of a given bodily part, rather than what features contribute to the patient's personal identity. In contemplating treatment, the doctor may ask himself, "What ought I to do?" His concern in prescribing "this drug rather than that drug" will be technical though. The interest in such practical deliberation is technical rather than moral or hedonistic: the doctor is concerned with what will be productive of therapeutic results. His aim is to produce a cure. External features of the situation draw attention to the technical character of the operation too: the presence of uniforms, instruments, medical staff, and the way the room is organized all attest to the technical nature of the situation. Because the patient may be made uncomfortable by being treated as a technical object, the doctor must take counter measures to show that he respects the patient's dignity and integrity as a person. The ways in which the doctor may express his care for the person are limited, however, by the technical purposes with which he is primarily concerned. Thus he may seek to reassure the person, but he is not likely to say, "Let's forget this silly examination and go for drink together." In such a situation, "technical"

serves to designate the restricted and non-general character of what is going on, and to call attention to emphasis on the instrumental features of the situation.[55]

Reflecting on the above example, we may inquire what is the difference between the moral and technical outlooks on a situation. Peters has observed that practical pursuits involve "standards derivative from the practical purposes which they embody."[56] In a medical examination, the technical concerns involve a restriction of interest to very narrowly conceived standards, means, and ends. The end is a clinical diagnosis of a specifiable sort, the means are chosen for their effectiveness and efficiency, the standards are those medical standards which pertain to such an examination. Moral interest, given the same situation, would be concerned with additional features of it. It would involve a more embracing concern for the persons involved as being more than just doctor and patient. It would tend to conceive of the situation as connected with and constitutive of a way of life. It would include interest in the possibilities for benefit or harm opened up by each aspect of the situation, including the end which is envisaged, the means and methods

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[55]Aristotle often used the example of medicine to draw out the characteristics of "technē." The example of the medical examination was suggested to me by Joan Emerson's article, "Behavior in Public Places: Sustaining Definitions of Reality in Gynecological Examinations," in Recent Sociology No. 2, ed. Hans Peter Dreitzel (N.Y.: Macmillan, 1970), pp. 73-97.

[56]"Education and the Educated Man," p. 17.

which feature as aspects of the interaction, and the sufficiency of the standards applied for characterizing a fully human engagement. The technical view, to maximize its own internal standards, must dispense with as much of this larger outlook as possible. The larger outlook embraces what is too unique, non-repeatable, or non-formalizable, too little amenable to efficient methods, too little concerned with an instrumental view of the situation.

A distinctive feature of our medical example is that the end is assumed and not a matter of deliberation. The "technical" outlook appears to assume a quite specifiable and limited sort of end, capable of being restricted to a particular occasion or particular sorts of occasions, and separable from means. Getting traffic of a specifiable kind and intensity across a certain river or bringing about a particular sort of learning of certain subject matter in a particular population of learners are examples of ends which accord with a technical approach. The moral outlook does not appear to assume such particular ends-in-view. Rather, it might involve asking what import certain attitudes towards travel or learning have for a form of life which is thought worthwhile. The view taken here is then that the determination of ends lies outside of the technical province. This is true even in the case of decision-making techniques such as those associated with operations research. Such techniques may aid decision making by helping to make relevant information available, but they are never sufficient for ruling on a decision. The real ends for which such techniques are

instrumental are built into the "decision criteria" which are adopted in using the techniques. Of course there are "technical purposes," but technical purposes are always subordinate to purposes which are not merely technical. "Technical" points to the instrumental capability of facilitating that which lies outside of itself. Thus the practical purposes or ends towards which practical pursuits are directed help to identify whether primarily a moral or technical outlook is involved.

Peters' characterization of the non-instrumental attitude is helpful here. When a non-instrumental attitude is adopted, (a) things are done for their own sake, (b) features of the means matter, and (c) there is care for standards which are constitutive of performing the activity well.[57] With respect to b, it might be added that this involves regarding the means as if they were, to a certain extent, ends. Having a moral outlook, it may fairly be said, involves adopting the non-instrumental attitude, though this does not furnish us with a logically sufficient picture of morality (which it is not my purpose to provide here anyway). The technical outlook, on the other hand, necessitates what we may call the instrumental attitude. The instrumental attitude, I suggest, may be characterized as follows: (a) things are done for some extrinsic purpose, (b) the features of the means which matter are chiefly their efficiency and effectiveness, and (c) there is concern for

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[57]"The Justification of Education," p. 245.

matters of cost, profit, and time required. In the moral outlook, there is concern with the internal features of what is going on viewed as worthwhile in themselves, while the technical outlook seeks the most efficient and effective means to an end which is assumed and already chosen.

Having indicated in a broad way what "the technical" may be taken to include, I would like to consider what is meant by "technique." Matters of "technique" are often thought to be recondite; this in part is why we first considered the mundane usage of "technical" to pick out matters where instrumentality and "technique" are at stake. The O.E.D. defines "technique" thus:

> Manner of artistic execution or performance in relation to formal or practical details (as distinct from general effect, expression, sentiment, etc.); the mechanical or formal part of an art, esp. of any of the fine arts; also, skill or ability in this department of one's art; mechanical skill in artistic work.

Keeping in mind that we understand by "art" the general notion of productive knowledge or knowing how to act so as to make or produce, I propose to inquire whether we may understand by "technique" the notion of a principle of action. Examples which may be given include "swimming technique," "scientific technique," "therapeutic technique," and "reading technique." I suggest that each case involves, hypothetically at least, an objectifiable rule of action either statable propositionally or demonstratable so that any person of normal capacities could with appropriate training acquire the rule of action and be capable of

exercising it. For example, my "reading technique" might be to scan each line of print from left to right with a few eye movements as possible, preferably three or less. This is a statable and teachable principle of action.

On this understanding, to use a "technique" is to act (on a situation) according to a rule. My "reading technique" may be contrasted with some other cases. It would be senseless to speak of one's "digestive technique" because no rule-following activity is possible in this case. Unless I am trained in yoga or using bio-feedback techniques, I lack the active and intentional control over my digestive processes which would make it meaningful for me to speak of my technique of digesting. Likewise, it would be puzzling to speak of someone's "technique" of falling out of bed because such incidents are supposed to be accidental and unintentional, lacking opportunities for rule-governed activity. It would be odd, though perhaps plausible, to speak of one's "technique" for wandering through a crowd. "Wandering through a crowd" suggests a rather random, hit-or-miss way of proceeding, with minimal opportunities for following a rule of action. However, the "technique," it might be explained, consists of alternatively passing to the left and to the right of each person that is in the way of one's walk through the crowd. To speak of a "technique" of breathing suggests a borderline case. We usually breathe more or less automatically, barely conscious of the intake and outflow of air or the expansion and contraction of our chest. An athlete, singer, or practitioner of yoga, however,

might adopt a conscious and rule-governed mode of acting regarding his breathing; he might follow particular rules of action regarding depth and frequency of breaths, degree of lung-expansion, rhythm and cadence of breath, and so on. We may quite properly speak of a "technique" of reasoning, for action includes thought and expression. Our "technique" of reasoning might be a logical rule such as those laid down in formal logic or the ones we are using here which are drawn from conceptual analysis. "Method" is a case related to "technique." A "method" picks out a regular, orderly, or logical procedure for doing something. It thus refers to rule-governed activity, like "technique." "Method," however, does not necessarily pick out a particular formal rule; it may refer to a way or manner of doing something which embodies a whole group of techniques, the latter not necessarily being clearly specified or thought of as "techniques." "Method" thus seems to be a more general and complex notion than "technique."

A "technique," as a principle of action, can be exemplified only in cases where both intentional action and a rule of action are present. It is conceivable that someone might intend that something come to pass, e.g. having as many pleasurable experiences as possible, without any rule of action being involved, or with a different rule being involved each time. Such a person would intend to have pleasurable experiences, but he would not necessarily have any particular "technique" for bringing this about. Indeed it is hard to imagine what would count as an example of such a "technique."

Yet not any rule of action is a technique. For instance, "Be kind to others" and "Never tell lies" are rules of action, in that they prescribe how one ought to act. Such prescriptions typically function as moral rules in which the notion of some intrinsic good is a built-in feature. They are at the very least prudential admonitions which prescribe how to act to secure what is in one's interest. Moral and prudential rules of action exemplify what is thought part of a worthwhile form of life. "Techniques," on the other hand, are purely formal and neutral with respect to the worthwhileness of what is accomplished by the action. They view what is done solely in an instrumental light. For instance, "Start your swing at waist level and follow through" has no moral implications but only the instrumental function of producing an effective handling of the racquet in tennis. It is a technique, not a moral rule.

"Cross on the green light" is a rule of action which presents an odd case. It might plausibly be viewed as a "technique" for crossing the street, but it functions chiefly as a socially agreed upon convention about how to act in a certain situation. It is not simply a "technique" which may be split off from its social context and replaced with another individually chosen "technique" thought to be superior. While it is a rule which pertains to instrumental and prudential considerations, it is more imbedded in its social context than "techniques" typically are. "Techniques"

are rules of action which are thought to be replaceable or exchangeable as a matter of option. Social conventions do not carry this take-it-or-leave-it character. The puzzling thing about calling "cross on the green light" a "technique" is that a range of options for coming to a choice about how to cross the street is not available unless we decide to deny the social convention about how streets are to be crossed. It is not a matter of "technique" so much as submitting to the convention or rejecting it. Such a rule of action is imbedded in our way of life to an extent that it is peculiar to regard it as a "technique" except with a view to revising social convention.

A "technique," then, is a formal rule or principle of action which states the instrumentality through which something may be accomplished in a context where a range of possibilities regarding the accomplishment of that end exist. For something to count as a "technique," it must be capable of being intentionally adopted. A "technique" is not a moral or prudential rule of action because it does not prescribe what is thought to be constitutive of what is good or worthwhile. Neither is it a social convention, for "techniques" pertain to situations which are not ruled by convention but rather admit of choice of instrumentalities.

While a "technique" may be said to be a principle of action, it is necessary to considerably qualify this formulation to capture what is distinctive about the term "technique." A way of further elucidating the term is to

ask whether "technique" is defined by its intrinsic characteristics (e.g., its form) or its relational characteristics (e.g., its use).[58] In form, a technique is a principle of action, but so are all practical principles. They all prescribe how to act by stating a rule. What distinguishes the different types of practical principles appears to be their relational characteristics. Regarding their use, technical principles, or "techniques," are distinguished by standing in a purely efficient or instrumental relation to whatever ends are envisaged. A further characteristic of their use is that they pertain to situations where there are options for intentional, rule-governed courses of action. Thus the techniques of playing a musical instrument do not call into question the playing of music, but prescribe rules of action for achieving certain results on a given instrument. The rules to be followed in playing are not a matter of mere convention. A range of possibilities obtains regarding how to conduct various aspects of playing the instrument, and each technique purports to prescribe an effective and efficient way of acting with respect to a given aspect. This example of how "techniques" are used complements our formal statement of how they may be distinguished from moral and prudential rules of action.

Having considered what may be understood by "technique," we may turn to the question of technical

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[58]This distinction is suggested by Hospers, Introduction to Philosophical Analysis, p. 32.

judgements and their justification. I would first like to inquire whether technical judgements are descriptive or prescriptive. Consider the following statements:

(1) X (a means) will in fact produce Y (an end).

(2) If Y is desired, use X to obtain it.

Statement 1 is a factual statement. No value judgement regarding either the means or the end is implied; it purports to describe a causal situation in which X is an efficient cause and Y is the effect. It is typical of the statements of applied science, in which empirical laws and principles relevant to human activities and enterprises are formulated. Consider this hypothetical example: "A specific proportion X of nickel, iron, and carbon will produce an alloy of tensile strength Y." Like the statements of pure science, such statements purport to be descriptive and factual. Statement 2 approximates more to a technical judgement. It implies what is stated in 1, but it also expresses a value judgement about the means: it recommends that means. It might be objected that 1 could be filled out so that it has more the character of a recommendation. For instance, specifications might be given under 1 regarding the time requirements, cost, or reliability of the process. With these additions 1 would, however, still be descriptive: "X will in fact produce Y in T time, at C cost, with a reliability of R." On the other hand, if these additional specifications were adduced as a justification for choosing X, 1 would then approximate to the prescriptive character of 2, a recommendation regarding means:

"If Y is desired, choose X because it will produce Y in T time, at C cost, with a reliability of R." I contend that technical judgements, as practical judgements, approximate more to judgements like 2, over against judgements of the form 1 which are empirical statements such as those found in applied science.

Technical judgements are thus judgements about how one ought to act, given a particular end. They are judgements of the character, if you want X, do Y. Y is justified in terms of efficiency, effectiveness, and whatever other technical standards are appropriate. In a technical judgement, Y (the means) is consitutive of a technique (or group of techniques). The justification of the end X is presupposed in the technical judgement. Anyone who asks by what means he ought to attain X is already committed to X. This underscores the instrumental character of technical deliberation previously discussed.

Consider these types of technical statements:

(a) Y is capable of producing a range of outcomes A.

(b) X (an element of set A) is possible, given Y.

(c) If X is desired, do (use, apply, etc.) Y.

(d) The best way to produce X is Y.

In each of these cases, X is a given desirable state of affairs, outcome, or end, whose justification lies outside the technical deliberation at hand. Y is a "technique" in the sense of an instrumental principle of action, as previously discussed. Statements a and b are statements

of technical possibility.[59] They are empirical statements which describe the features of Y in terms of its character as an efficient cause. Statement a merely designates the range of outcomes which Y can produce. Statement b asserts that X is technically possible, given Y. These are statements of technical possibility rather than just empirical possibility in that the possibility depends on the instrumentality of a technique, and not just on the laws of nature, in the sense that "It is possible for a rock to fall" is a plausible empirical statement, given simply that gravity is a natural state of affairs. A house is not a technical possibility, merely given the laws of nature. It is only a technical possibility if techniques for house-building are in possession.

Statements c and d are technical judgements for which statements a and b are preconditions. But c and d have a

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[59] Hosper's distinguishes between logical, empirical, and technical possibility in An Introduction to Philosophical Analysis, pp. 170-71. A hypothetical state of affairs is logically possible if it is not self-contradictory as stated, empirically possible if it does not contravene the laws of nature, and technically possible if our knowledge of the laws of nature is such that we can produce the state of affairs. Hospers' specification of technical possibility is rather weak in that he adheres to an "applied science" conception of productive knowledge. But in order to know how to produce results effectively (e.g. how to make good chariots), it is not necessary to grasp the laws of nature as scientists do. Indeed, it would be hard to specify a set of laws, qua laws of nature, which would be sufficient to guide the construction of chariots. What is needed is rules of craftsmanship, or engineering principles. See notes 65, 67 and 68 to this chapter.

different function from a and b. They do not state technical possibility but rather recommend a technique. They prescribe what ought to be done and thus have the character of practical judgements. Statements c and d function as hypothetical imperatives for which a and b are presuppositions. Such hypothetical imperatives are typical of technical judgements as exemplified in ordinary technical discourse. Suppose I am interested in pottery and I want to know how to make a clay jug. I am told, "To make a good clay jug, do Y_1, Y_2, Y_3, Y_4, and so on." In such a prescription, techniques Y_1-Y_4 are presumed to be effective. Statement c is a judgement of this type. Often, however, we want to know the "best" way of doing something, where "best" refers to some utility value, such as efficiency or effectiveness, as measured by cost, time required, reliability, productivity, etc. Statement d is an example of a technical judgement which makes this concern with utility value more explicit. This judgement calls attention to the need to justify a technique by showing that it is the "best" technique in terms of some specifiable utility criteria. Given fuller specification, it might read:

> The best way to produce X is Y, which will produce X in T time, at C cost, with P productivity and R reliability.

Statements c and d demonstrate that technical judgements, in contrast to the statements of technical possibility which they presuppose, recommend courses of action and thus have the character of practical judgements.

Let us next consider how technical judgements are to be justified. As hypothetical imperatives, they do not carry the obligatory force of categorical imperatives. Technical judgements have more the character of imperatives such as "If you want to play the guitar better, you will find this technique helpful" than imperatives such as "You ought to do all that is reasonable to save a drowning person."[60] Unlike moral judgements, technical judgements do not prescribe that we regard the end-in-view as obligatory or worthwhile; they merely recommend that if that end is desired, a particular technique is an effective way of attaining it. They are practical proposals about how to get things done rather than practical proposals about what things ought to be done for their own sake. Technical judgements are thus to be justified in terms of the means which are proposed.

Technical judgements must be shown to be justifiable on the basis of the techniques or technical principles which they embody.[61] Just as science is concerned with the formulation of principles which are true and valid, so technology is concerned with the formulation of valid principles. A scientific principle is said to be valid or justified if it can be shown to rest on basic statements which are formulated

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[60] A.W. Beck draws attention to the distinction between hypothetical and categorical imperatives and gives this example of the latter in his article, "Does 'Ethics and Education' Rest on a Mistake?"

[61] I am assuming that "technique" and "technical principle" are here equivalent terms.

so as to be testable yet manage to escape falsification. Such a scientific principle is said to be theoretically valid. Technical principles attain practical validity to the extent that the utility to which they lay claim is demonstratable in practical tests. They are principles stating what may be done or made by particular instrumentalities. In the sense that technical principles may be valid or true, they may count as knowledge. They are true insofar as they have the kind and degree of utility to which they lay claim. For example, "X is possible, given Y" is true if Y can in fact be the efficient cause for the outcome X. When a technical principle is justified in the sense of being valid or true, we may say that it counts as technical knowledge.

In the case of technical judgements, we are not only concerned whether the technical principle which they embody is true and valid, but also whether they state courses of action which we ought to follow. Here utility value enters into the justification. The judgement "If X is desired, do Y" is justified only if Y is a relatively effective way of producing X, with respect to the range of relevant techniques which are known and available. Whether X is effective is an empirical question. X may in fact be one of a number of techniques which are more or less effective for producing the end envisaged. As a hypothetical imperative, it is a recommendation of Y as an appropriate way, though not necessarily the best way, of producing X. In technical

terms, it would be a reasonable way of producing X. Technical reasons are reasons of utility. If a technique has an acceptable degree of utility, that is a reason for using it. The judgement "Y is the best way to produce X" is justified if Y has the highest utility value of all known techniques which could possibly produce X. Technical judgements have an empirical basis, in that they are justified only if the techniques they embody produce the results claimed. Peters instances this view in the following remark:

> Whether or not making boys do things in which they have no initial interest, without trying to harness them to their existing interests, is an effective technique is an empirical question.[62]

It is not merely an empirical question, though. Technical judgements, over against statements of technical possibility, always imply that some utility value is involved, that certain technical standards such as effectiveness, efficiency, reliability, uniformity, repeatibility, productivity, speed, accuracy, manageability, quantifiability, and so on, are met to some specifiable degree. The value of the technique is in fact what is being recommended in a technical judgement, and this is inseparable from standards.

Technical judgements involve standards, but the technical standards which they involve are different from moral standards, and may be in conflict with them. Let us consider an odd case of the form, "The best way to produce X is Y":

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[62] Ethics and Education, p. 38.

The best way to produce loyal citizens is by brainwashing them.

In this judgement, having loyal citizens is the end sought, while brainwashing is the technique (actually a group of techniques) to be used. "Best" purports to refer to utility. What can be made of such a statement? It meets all of the criteria of a technical judgement, but it also calls attention to the limits of such judgements. The instrumental standards centering around utility which are invoked in their justification may be in conflict with moral standards, especially when the technique is directed towards persons rather than materials or processes. This is the paradox of social technologies.[63] Social techniques necessarily view persons in relation to instrumental considerations. It often happens that in such considerations persons come to be viewed as instrumentalities themselves, e.g. as loyal citizens, efficient workers, or eager consumers serving larger purposes such as preservation of the ruling elite or increased profits. However, because persons have a claim to moral treatment, this is objectionable. We do not regard a person who has a "technique for getting along with people" as having the same virtue as a person who "cares for people."

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[63]Karl R. Popper introduces the term "social technology" in his discussion of social engineering in The Open Society and Its Enemies, 5th ed., vol. 1: The Spell of Plato (London: Routledge & Kegan Paul, 1966), pp. 22-24; see also note 9, pp. 210-11. "Organization development" is one field which has recently been characterized as a "social technology"--see for example Ronald G. Havelock, "A Critique: Has OD Become a Social Technology?" Educational Technology XII (October, 1972):61-62.

This is because the person who has a "technique" views the matter instrumentally; he does not necessarily care at all; he may have an extrinsic motive in mind and employ his "technhique" only to gain some external sort of end. Peters displays a sensitivity to this problem when he remarks that instrumental or technical judgements derive their normative force from "activities or states of affairs which are intrinsically good."[64] This is not quite the case, though. Technical judgements invoke standards of utility and thus have a normative force of their own. They recommend means quite independently of how good the ends are thought to be. In moral contexts, though, technical standards may conflict with the moral ones which must be maintained if the claim of persons to moral treatment is to be met. The point is that moral standards have a prima facie claim to priority over technical standards since technical standards pertain to instrumentalities which are thought to be effective in producing what is held good or worthwhile in itself, this latter being a matter of moral or other non-instrumental practical (e.g. aesthetic) judgement, and not technical judgement. The doctor's technical judgement that life can be prolonged in the case of a terminally ill patient may come into conflict with the moral question of whether the suffering and indignity to the person involved ought to be prolonged. There may be moral doubt about whether such a state of existence is congruent with an ethical concept of "life."

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[64] Ethics and Education, p. 154.

The following picture of technical discourse has emerged from our considerations in this section. Technical discourse is a form of practical discourse. In it technical possibilities are appraised in terms of their empirically verifiable practical results. Techniques are formulated and presented as technical principles. Technical principles may be true or false. Their validity is determined by whether they can be shown to have the utility to which they lay claim. If they are true, they may be counted as knowledge and constitute technical knowledge. Technical principles form the basis of technical judgements. Technical judgements are practical judgements which recommend courses of action embodied in technical principles or techniques. Such judgements are justified by referring to the utility value, for the purposes envisaged, of the techniques which are recommended. Technical judgements may come into conflict with moral standards when the judgements are made about situations in which persons are involved, i.e. in moral contexts.

5. Conclusion

Let us review the developments in this chapter to see what contribution they can make in clarifying the concept of "technology." In our review of definitions of technology, three major themes emerged. They are (1) deliberate action on environment, (2) instrumental regard for the means chosen, and (3) assumption of a predetermined end. It was suggested that any adequate definition of "technology" must adequately account for these three themes. Deliberate action on the

environment, it was suggested, calls attention to the practical character of "technology." While "technology" is concerned with means and ends, it was noted that "technology" is not an activity or process. The etymological features of "technology," it was proposed, suggest that it has the character of discourse about a subject or knowledge of a subject, like biology or criminology.

The passages from Aristotle's works which I have discussed exemplify the roots of our own notion of "technology" in the ancient Greek notion of technē: Deliberation on making leads to the productive knowledge--a reasoned state of capacity to make--constitutive of technē. The connections between art, action, and deliberation dealt with by Aristotle look forward to our own notion of technical knowledge. Aristotle's radical distinction between action and making was held to be too tight however; both acting and making are practical activities. Deliberation regarding acting and deliberation regarding making, it was contended, both come under our contemporary notion of practical discourse as discourse about action. This suggests the relevance of examining the logic of technical discourse.

The account of technical discourse, and the nature of the principles and judgements which it involves, helps to fill out the notion of technical knowledge, it is hoped. An understanding of technical knowledge is thought to be essential because I propose to regard "technology" as discourse about technical principles and their organization

into a body of knowledge.[65] It might be objected that I have overestimated the importance of dealing with the logic of technical discourse. That depends on what sort of treatment of "technology" is desired. If the aim is, as it is here, to show its status as knowledge and mark out what kind of appraisals can be made in virtue of possessing such knowledge, then treatment of the logic of technical discourse is essential. It might fairly be said that the principles and judgements of technology are technical principles and judgements. In some cases, technological principles and judgements may assimilate a number of simpler or more basic technical principles and judgements into their structure. In such cases, they have the character of second order principles and judgements: that is, they are technical principles and judgements which are founded on more particular technical principles and judgements.

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[65]Several philosophers of science have dwelt on "technology" as knowledge, but in conceiving "technology" as related to scientific knowledge they have tended to put "technology" on a continuum with scientific knowledge, and to work out its place in the hierarchy of scientific knowledge. Mario Bunge has attempted to make a case for conceiving of "technology" as applied science in "Technology as Applied Science," Technology and Culture VII (Summer, 1966): 329-47; see also "Toward a Philosophy of Technology," in Philosophy and Technology, ed. Carl Mitcham and Robert Mackey (N.Y.: Free Press, 1972), pp. 62-77. The notion that "technology" is applied science has been rejected by James K. Feibleman, Joseph Agassi, and Donald Brinkman. Feibleman advances a conception of "technology" as skills in "Technology as Skills," Technology and Culture VII (Summer, 1966):318-28; see also "Pure Science, Applied Science, and Technology: An Attempt at Definitions," in Philosophy and Technology (cited above), pp. 33-41. Agassi argues that "technology" involves invention, implementation, and maintainance, as well as the contributions of applied science: see "The Confusion between Science and Technology

In section two of this chapter, it was anticipated that it might be possible to enunciate criteria of "technology" along the lines of the three themes identified. Now that the features of technical discourse have been sketched in and the nature of "technology" as knowledge clarified, such an attempt may be made:

(1) "Technology" implies discourse about technical principles and the organization of such principles into a body of knowledge;

(2) "technology" involves the selection and recommendation of means and methods solely on the basis of their instrumental features;

(3) "technology" implies that the ends to be achieved are given, and does not include deliberation about their choice.

These criteria embody points which have already received extensive discussion, but it will prove interesting to try them on some hypothetical instances of using the term "technology":

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in the Standard Philosophies of Science," in Technology and Culture VII (Summer, 1966):348-366. Both Feibleman and Agassi argue for a conception of "technology" which places it closer to concrete experience than applied science. Brinkman agrees with Max Scheler's rejection of "technology" as applied science. Like Scheler, he espouses an anthropological conception of "technology" which is connected with construction and the will to domination and control. See "Technology as a Philosophic Problem," Philosophy Today 15 (Summer, 1971):122-28. Edwin T. Layton, Jr. makes a case for "technology" as know-how in "Technology As Knowledge," Technology and Culture XV (January, 1974):31-41. He argues that "technology" includes a spectrum ranging from ideas through design to techniques and things. Thus "technology" ranges from scientific thought at one end of the continuum to tools and things produced at the other end. Similarly, in "Modes of Knowing and Technological Action," Philosophy Today 18 (Summer, 1974): 162-68, Stanley R. Carpenter argues that "technology"

(a) We have the technology to establish manned colonies on the moon.

(b) A selection of the latest high fidelity technology is now on display for your inspection.

(c) Technology has plundered the environment.

(d) Technology now serves chiefly its own ends.

Example a conforms to my account of the central cases of "technology." It makes the claim that a body of organized technical knowledge adequate for the construction of manned habitations on the moon is available. Example b is a borderline case of using the term "technology" in which "technology" is being equated with machines or "hardware." It would be more correct to say that the equipment which is on display exemplifies the latest high fidelity (sound reproduction) Technology. Such a use of the term "technology," though confusing, need not be too puzzling if we recognize that it collapses "technology," qua knowledge, into the things or objects which exemplify the knowledge. Example c is the familiar use of "technology" in which it is equated with

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includes a continuum of knowledge from knowing how-to-do (artisanal skills) to scientific theory.

These philosophers have dwelt on the problem of how technological knowledge is related to scientific knowledge--a fair enough kind of inquiry--but they have too often supposed the relation to be a matter of degree. I regard the more crucial question to be how "technology" is related to other kinds of practical discourse and knowledge. For technical discourse as productive knowledge is pre-eminently practical, constituted out of prescriptions for action, a fact which tends to be inadequately accounted for when "technology" is located in the hierarchy of scientific knowledge. I have therefore dwelt on sorting out the differences between technical discourse and moral discourse, a distinction which will be found essential in conceptualizing "educational technology."

a malevolent force with a life of its own. It equates "technology" with the actual results of using technology. It ignores that "technology," as knowledge, is in fact employed by persons and cannot have a life of its own apart from their actions. The equation of "technology" with an alien force helps to mask the human responsibility for how such knowledge is used and what results obtain. When it is realized that such a move is being made, it becomes evident that it is more correct to say that man's use of technology has despoiled the environment. Example d is another case of "technology" as an alien force, but with an interesting twist. It has been claimed here that it is part of the logic of technology that it is employed in the service of ends which lie outside of itself. However, d claims that the ends "technology" now serves are its own. What can in fact happen is that technological knowledge can be used to bring about ends which are selected on the basis of technical standards themselves. However, instrumental justifications must eventually look towards the achievement of ends which are regarded as worthwhile for their own sake, if the logic of instrumentality is to be sustained. In cases where the choice of an intrinsically worthwhile end has been overlooked, the process of justification is incomplete. If all of the ends-in-view are justified in terms of their utility only, it does appear as if technology is being used to serve merely technical ends. "Technology" does not, however, become an active force which seeks its own ends. It is more appropriate

to say in such a case that technology has been employed by persons to achieve ends which are justified only in terms of technical standards, the process of justification being implicitly incomplete in such cases.

Each of the cases considered can thus be clarified in terms of the criteria of "technology" developed here. Example a, which exemplifies a central case of using the term "technology," meets the criteria. The other cases, which have been deliberately chosen for their oddness, can also be clarified in terms of the criteria and reformulated so as to meet the criteria and exhibit a less puzzling use of the term.

There are two concluding questions which I wish to consider. First, it is sometimes claimed that technology is "systematic" or that it involves (or indeed is) a "systems approach." Second, technology is often said to be "scientific." With regard to the first question, it has to be asked what is meant by "systematic" or "systems approach." It may be noted that neither of these expressions has been employed in my characterization of "technology." The "systems approach" is usually identified with a particular and recently developed group of analytical techniques such as those used in operations research which involve viewing an operation under consideration in terms of its features as a system. Qua "system," it is said to be composed of parts or assemblies of parts (subsystems) in interaction with each other, and to exhibit in these interactions and interrelations features which cannot be appreciated if each part is regarded in

isolation.[66] In the very minimal sense that we often look at wholes as well as parts, a "systems approach" is a customary feature of our thinking. But we do not have to adopt the view that what we consider is to be regarded in terms of its systems features (wholeness, interaction, sub-systems, etc.) in order to use techniques, formulate technical principles, make technical judgements, and so on. In short, there is nothing special about "technology" which seems to mark it out as a "systems approach," and the claim that it is such seems more a matter of fashion than necessity. Technology is "systematic" in the mundane sense that any body of knowledge is systematic. That is, what distinguishes a body of knowledge from a collection of disconnected items of knowledge is that it is ordered or organized into a more-or-less structured, coherent body. Knowledge is "systematic" by virtue of being organized. Again, this is not a special feature which marks out technology as something unique. It merely serves to distinguish "technology" from a chaotic heap of items of technical knowledge.

"Technology" is often connected with scientific knowledge.[67] This presumption is evident in Galbraith's definition of "technology" as the application of scientific or

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[66] For additional discussion of the "systems approach," see Chapter Five, pp. 240-41. The relation of the systems approach to "educational technology" is discussed in Chapter Five, pp. 237-38.

[67] See note 65 of this chapter. In my section on technical discourse, I attempt to show how the practical statements and judgements of technical discourse differ from descriptive, empirical statements. Scientific statements approximate to the latter.

other organized knowledge to practical tasks (definition 11). Scientific and technological thought have been so interconnected in recent history that it is natural enough to confuse the two. They differ in their logical structure though. Science centers around the attempt to secure theoretical understanding of the nature of the world. It issues in empirical statements at various levels of abstraction. Technology, in contrast, centers around the attempt to secure practical knowledge about how to make or do things. Empirical knowledge, however, is an essential ingredient in technical knowledge. Technical possibility cannot be discerned apart from a grasp of empirical facts. Science can contribute laws, theories, principles, and observations which help to provide an empirical basis for technology. That these scientific contributions to technology are contingent and not necessary is exhibited by the fact that technology has developed largely apart from scientific understanding over the course of most of its history. Some empirical knowledge is required, but this need not be scientific knowledge. Theoretical understanding of the relevant facts is not necessitated for a technique to be effective. In fact, a group of people who share the use of a technique may have no idea of what makes it so effective. Until recently, most of our technologies developed without this theoretical sort of understanding.[68]

[68]This is the point made earlier by Hirst in refutation of O'Connor's claim that theory is required for technical practices such as medicine and engineering. See

It therefore seems appropriate to me to regard "technology" as necessarily neither a "systems approach" nor a "scientific approach." It may be so in some instances, but this is a contingent matter. To identify "technology" with these approaches is to confuse recent historical developments, which provide "technology" with accompanying characteristics, with technology's enduring features as a form of discourse. Having clarified some of the major conceptual features of "technology," we may turn to a consideration of the relations between "education" and "technology," and to the conceptual delineation of "educational technology."

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also Edwin Layton, "Mirror-Image Twins: The Communities of Science and Technology in 19th-century America," Technology and Culture XII (October, 1971):562-580.

CHAPTER FIVE

EDUCATIONAL TECHNOLOGY

1. Introduction

In this chapter I propose to undertake two related tasks, the fulfillment of which will constitute the completion of the present study. First, I propose to show what understanding of "educational technology" can emerge from the conceptual developments arrived at in the previous chapters. Second, I propose to inquire to what extent the notions of "educational technology" put forward in recent literature accord with this understanding. The literature considered will be a selection of writings, largely drawn from the recent literature of educational technology, in which some attempt is made to define "educational technology."

Let us review the major points made so far which have a bearing on the concept of "educational technology." The term "education" has two major uses. First, it refers to the activities and processes constitutive of the enterprise of educating, whether this is conceived of in terms of initiation, development, enculturation, or some other sense. Second, it refers to the acquisition and organization of

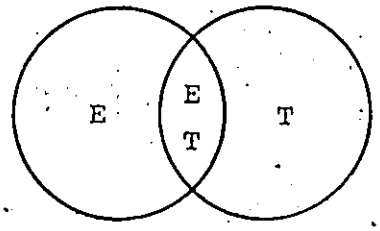
knowledge about this enterprise, sometimes regarded as a discipline, and often called "educational theory." Educational theory includes both theoretical study centering around education as an area of interest, as well as the formulation of principles for educational practice. In the latter respect, educational theory is a practical theory. In this capacity, educational theory involves bringing various forms of knowledge to bear on the formulation of practical educational principles. Now we have seen that "technology" may be regarded as the study of technical principles and their organization into a body of knowledge. Since in educational theory technical principles are formulated for educational practice, the study and organization of such principles into a body of knowledge would appear to constitute "educational technology." On this view, "educational technology" would be an area of knowledge within educational theory. We will have to inquire whether this is so. A major difficulty would appear to be the bearing on this view of the non-instrumental attitude characteristic of the central cases of education. We have to consider whether technical principles can be considered apart from moral principles in education, and whether anything like a straightforward organization of technical principles of education into a body of knowledge is possible.

2. Use of the Expression "Educational Technology"

What is it to call something "educational technology"? Since "educational technology" is a complex expression

analyzable into the component terms "educational" and "technology," there is in using the expression the presumption that there are relations which may hold between "educational" and "technology" and that there is a class of things picked out by what these relations express. Thus when the expression "educational technology" is being used, there is a presumption that there is a thing or class of things which are, in some sense, both "educational" and cases of "technology." It is a further question whether any thing or class of things which are both "educational" and technology" are appropriately called "educational technology." "Educational," of course, refers to whatever may be in some sense conceived as "education." For example, an "educational process" would be a process which meets the criteria of education.[1] Thus what we have to consider is the possibility of a class of things which are instances of both "education" and "technology." This may be represented as follows, where E = "education," t = "technology," and ET = their intersection:

Figure A:



However, we also have to consider whether either of these other representations might be more appropriate:

Figure B:

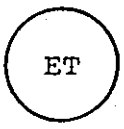
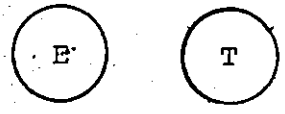


Figure C:



[1]For further discussion of "educational," see sections three and four of this chapter.

That is, we have to consider whether all cases of "education" are also cases of "technology" and vice versa, or whether on the other hand "education" and "technology" are mutually exclusive terms. I propose to consider the relations which may hold between "education" and "technology" by re-examining their criteria.

3. Relations Between the Criteria of "Education" and the Criteria of "Technology"

The possibility under examination is whether there is some class of things which may meet both the criteria of "education" and "technology." Let us review the criteria of these concepts:

"Education"
(1) implies the transmission of what is worthwhile to those who become committed to it;
(2) involves knowledge and understanding and some kind of cognitive perspective, which are not inert;
(3) rules out some procedures of transmission, on the grounds that they lack wittingness and voluntariness on the part of the learner.

"Technology"
(1) implies discourse about technical principles and the organization of such principles into a body of knowledge;
(2) involves the selection and recommendation of means and methods solely on the basis of their instrumental features;
(3) implies that the ends to be achieved are given, and does not include deliberation about their choice.

Let us consider the extent to which the criteria of the two terms are in accord with each other. The first criterion of "education" refers to the non-instrumental character of what is to be transmitted in education and would

appear to be a conflict with the purely instrumental relation of means and ends invoked in the second and third criteria of "technology." While someone might reply that it is only the means which are to be regarded instrumentally in technology, this instrumental separation of ends and means is exactly what is ruled out by the non-instrumental attitude. In it, features of the means other than their utility are regarded as important. It is not usually appropriate, in education, to regard the learning process in purely instrumental terms because, as Peters observes, "in most cases the logical relationship of means to ends is such that the values of the product are embryonically present in the learning process."[2] The first criterion of "technology" would appear to pose no difficulty for the first criterion of "education." Indeed, what is transmitted and thought to be worthwhile might in some cases be the organized technical knowledge constitutive of "technology."

The first criterion of "technology" is however in conflict with the second criterion of "education," in that "education" may not consist solely of the study and transmission of technical knowledge without violating the demand for cognitive breadth. This objection pertains to the problem of whether vocational training for industry or other technological professions may be properly called "education." The instrumental view invoked by the second and third criteria

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[2]"The Justification of Education," p. 241.

of "technology" are also in possible conflict with the second criterion of "education." If it were suggested that knowledge, understanding, and cognitive perspective ought only to be cultivated for their utility with respect to some end like getting on in one's job, this would clearly be in conflict with the non-instrumental character of "education" which necessitates that the knowledge, understanding, and cognitive perspective which a person has are not inert in the senses that he cares for them for their own sake and that they transform his way of looking at things.[3]

The possibility of conflict between the third criterion of "education" and the first criterion of "technology" lies in the fact that the former would rule out certain techniques of transmission on moral grounds. In particular, those technical principles which prevent wittingness and voluntariness on the part of the learner are disallowed. For example, Peters has pointed out that "conditioning and brainwashing would scarcely count as techniques of education."[4] There are numerous technical principles for bringing about learning which would rule out wittingness and voluntariness on the part of the learner, or otherwise withdraw respect for the learner as a person. Peters' list could be extended to include hypnosis, sleep

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[3]Peters contrasts "doing and knowing things for their own sake" with "the increasingly instrumental view of knowledge associated with the development of technology" ("The Justification of Education," pp. 241 and 240 respectively).

[4]Ethics and Education, p. 41.

learning, subliminal suggestion, various forms of coercion, and so on. Objections to techniques in which the learning process is conceived in purely instrumental terms are implicit in the first and second criteria of "education." What is being objected to here are those techniques which prevent or inhibit the voluntary participation of the learner and his conscious awareness of what is happening to him. Here the second and third criteria of "technology" may also be in conflict with the third criterion of "education." For it may be precisely as a result of regarding the learner and his tasks and achievements in instrumental terms that his wittingness and voluntariness are disregarded.

So far, then, it has become clear that "education" and "technology" do not completely coincide on a number of points. The possibility (represented in Figure B) that the class of all things to which "education" may refer is the same as the class of all things to which "technology" may refer is thus ruled out. Yet we have not ruled out the possibility (represented in Figure C) that "education" and "technology" may be concepts which exclude each other. This would be ruled out if there is a class of referents which are properly cases of both "education" and "technology." I wish to argue that there are two prominent sorts of cases which may belong to this class: technical education and technical principles for educational practice.

By "technical education," I mean the sort of education in which the study and acquisition of technical knowledge and understanding is what predominates. Learning to be a civil

engineer would be an example. To count as "eduation" and not just "training," such study would have to include the acquisition of a cognitive perspective extending beyond technical matters. Yet such a "technical education" is certainly possible, and constitutes one sub-class of cases which may be instances of both "education" and "technology."

The notion that there are both moral and technical principles for educational practice has already been introduced in our discussion of educational theory. The point to be made here is that if technical principles for educational practice may be so organized as to constitute a technology, we would have another sub-class in which something which is both "education" and "technology" is instanced.

Of the two sub-classes introduced, the latter is of chief interest because it could logically be regarded as "educational technology." "Technical education" involves both "education" and "technology," but not in the manner implied by "educational technology." This is because "educational technology" is an expression like "educational theory" or "educational building" in which "educational" serves to qualify some substantive such as "theory," "building," "research," and so on. "Educational technology" is a kind of technology; "technical education" is a kind of education. Our interest here is in what kind of technology "educational technology" may be. The possibility to be explored is that it is discourse about technical principles of education and their organization into a body of knowledge.

4. Educational Theory and Educational Technology

The supposition that the practical principles relevant for educational practice include both moral and technical principles provides initial support for the hypothesis that "educational technology" refers to the organization into a body of knowledge of the technical principles formulated in educational theory. Hirst and Peters have argued that both moral and technical principles are included in practical discourse about education. T. F. Daveny has argued similarly, claiming that moral principles have to do with ends while technical principles have to do with means.[5] He has also claimed that "non-technical questions in education are logically moral ones."[6] He contends that all practical arguments in education are either moral or technical arguments.[7] This strikes me as an excessive polarization of what is involved in practical educational discourse, for two reasons. The first reason concerns the fact that, if I am correct, practical discourse as discourse about action has considerably wider scope than what is embraced by moral and technical questions. Prudential, hedonistic, and aesthetic reasons may also be given as reasons for action.

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[5]"Education--a Moral Concept," in New Essays in the Philosophy of Education, ed. Glenn Langford and D. J. O'Connor (London: Routledge and Kegan Paul, 1973), pp. 79-95.

[6]Ibid., p. 95.

[7]Ibid., p. 90.

The second reason is more serious and constitutes an objection to the notion that "educational technology" is the organization of technical principles of education into a body of knowledge. Stated bluntly, it is doubtful that the non-instrumental attitude in education can be sustained if technical questions are largely separated from moral questions in practical educational discourse. Daveny's supposition that practical educational arguments are either technical or moral sounds wrongheaded, because it is doubtful that there are any educational arguments which do not have some moral features. Voicing a similar objection, Peters has argued "that education involves initiation into what a community considers to be worth while, and that it is impossible to represent it in terms of taking means to a worth-while end or bringing about a worth-while product by methods which are morally neutral."[8] Similarly, Hirst and Peters have argued that the methods of education embody objectives "involving in themselves the exercise of skills of immediate educational value," rather than functioning as mere means to ends.[9]

What I am proposing then is that the technical principles relevant to educational practice cannot be split off from the moral principles which both govern educational practice and constitute it insofar as it has to do with what is worthwhile. If I am correct in maintaining this view,

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[8]Ethics and Education, p. 131.

[9]The Logic of Education (London: Routledge & Kegan Paul, 1970), p. 83.

"educational technology" cannot be constituted by simply organizing all of the technical principles of education into a distinctive body of knowledge. Such a body of technical principles, split off from moral principles, would no longer deserve the title "educational." It might be called "learning technology" or "instructional technology," but "educational technology" would involve the claim that additional conditions are being met.

A counter objection might be raised to the effect that "educational" implies much less than "educative," as Peters has noted.[10] It might be claimed that "educational" implies only a loose connection with education, for we often speak of "educational buildings," "educational funding," and so on, where nothing which meets the criteria of "education" to any significant degree is intended. In this view "educational technology" would constitute the organization of technical principles relevant to education, without any implication that the criteria of education are met to a significant degree by educational technology itself. The related case of architecture might be advanced as an enterprise in which aesthetic principles and technical principles are involved in practice and yet are relatively separable. The architect may call upon a body of engineering knowledge in working out the technical details of his design.

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[10] See Chapter One, p. 37 of this thesis.

Significantly, however, the engineering knowledge of which he avails himself is not called "architectural technology," for there is nothing distinctively architectural about it. Architectural knowledge is constituted out of both aesthetic and technical principles. The technical principles used in architecture cannot be split off from the aesthetic principles which co-constitute it, if anything distinctively architectural is to remain. Another difficulty lies in the fact that while "educational building" may not come up to the criteria of "education" to any great degree, the criteria are not contravened in such a case. "Educational technology" must be regarded as a case which demands stronger scrutiny with respect to the criteria of "education" because here it is a species of knowledge about how education is to be conducted that is in question. While using the expression "educative technology" would involve the stronger claim that a sort of technology which educates in some active sense is being referred to, speaking of "educational technology" still requires that the criteria of "education" are fulfilled in that to which it refers.

With respect to related forms of expression, I have already noted that "instructional technology" and "learning technology" involve much weaker claims than "educational technology," while "educative technology" involves stronger claims than "educational technology." "Technology of education" is much closer to being an expression equivalent to "educational technology." This expression draws attention to the same central domain of meaning as does

"educational technology," but in a less ambiguous way. "Technology of education" calls attention to precisely that technology which is part of education in the sense of being technical knowledge about education, whereas in "educational technology," the relation of technology to education is not clear. "Technology of education" would therefore appear to be the logically preferable expression. However, I have chosen to restrict my inquiry to the expression "educational technology," because it has already achieved considerable currency in educational discussions. The upshot of this excursion into related expressions is that I take "educational technology" to refer to that technology which is part of education in the sense of being a technology of education.

If there is some actual referent which corresponds to the expression "educational technology," it would have to be "technology" in a qualified (and odd) sense. Its logical place would appear to be within the domain of educational theory as a practical theory. It would be the organization of the technical principles formulated by educational theory, but with a special proviso. As I have argued, moral and technical principles are not strictly separable in the central cases of practical discourse about education. The technical principles cannot be split off entirely from moral considerations, but are rather embedded in the texture of the practical theory of education. Thus "educational technology" cannot be a field autonomous from the more inclusive field of educational theory in which the technical principles of education are considered

along with moral and prudential ones. This suggests that "educational technology" must have a rather loose and indeterminate structure. It cannot be educational technology if it is split off from moral considerations. Yet if it includes moral considerations, it ceases to be a purely technical organization of knowledge and approximates more to educational theory in general. To be "technology," however, it must involve some degree of organization of technical principles. Since educational theory includes moral and technical principles, we are faced with the difficulty of recovering a sense of "educational technology" which does not merely coincide with educational theory in general, although remaining included within the latter.

One can have a technology of any practice which admits the use of techniques or technical principles. Thus one can have a technology of reading, of learning, of schooling, of teaching, and so on. However, none of these practices are necessarily "educational" in the sense of meeting the criteria of "education." "Technology," on the other hand, must always address particular sorts of tasks or practices, such as reading, instructing, or organizing books on library shelves. Since no particular tasks, practices, or processes are necessarily "educational," it is always a matter of further judgement to allow that a particular case, judged to be "technology," exemplifies "educational technology." "Education" is not the sort of enterprise for which technical principles can be formulated which are sufficient (qua technical

principles) to guarantee that if they are followed, what is produced will be "educational." "Instructional" technology is not necessarily "educational" technology, just as "information" technology (the technology of information transmission, distribution, and storage, e.g. library "science" and telecommunications) is not necessarily "instructional" but only when additional criteria are met. It may be suspected that much of what has sometimes been called "educational" technology is justly to be called only "instructional" technology, "behavioral" technology (e.g. conditioning), "planning" technology, "measurement" technology, "management" technology, and so on. It is always an additional question whether "educational" technology is exemplified in cases where these technologies are involved. The precept which follows is that in "educational technology," attention must be directed to the conditions under which the criteria of "education" are fulfilled. The question of what can properly be called "educational technology" must now be addressed.

My suggestion is that "educational technology" is most clearly exemplified in those cases in which a complex of technical principles drawn from some particular technology is brought to bear on an educational problem. Examples include the bringing to bear of operant conditioning, telecommunications technology, or systems analysis and design techniques on particular sorts of educational problems such as those of interacting with educational materials, the distribution of

educational messages, or the management of educational settings. What is noteworthy is that none of these technologies are distinctly educational. Their formation as technologies incorporating complexes of technical principles is constituted quite outside of education. When they are brought to bear on educational problems, it is through a process of judgement in which moral and technical considerations, along with other practical and theoretical considerations, are brought to bear on particular sorts of educational problems. This view, which involves rejecting the notion of an autonomous field of educational technology, will be seen to be in accord with the view of educational theory espoused in Chapter Three. Just as there are no distinctively "educational" principles, there are no distinctive technical principles of education which may be organized into an educational technology. "Educational technology" refers rather to cases in which what exemplifies "technology" is also judged to fulfill certain additional, non-technical criteria.

The difficulty noted by Hirst in specifying what is involved in educational judgements carries over to the task of characterizing the judgements of educational technology. Since there are no intrinsically "educational" practices, processes, or principles, it is always a matter of additional judgement whether a praticular practice, process, or principle meets criteria of "education" in a particular context. "Technology," it has been argued, involves finding effective and efficient means to agreed upon ends. The justification of

the ends is a non-technical question. In the case of "educational technology," the ends to be served must meet the criteria of "education." However, the non-instrumental attitude is central in education. Because of the way means and ends are bound up with each other in this way of looking at things, it is not simply a matter of asking what are the most efficient and effective means for producing the educational ends of which we morally approve. The means are subject to more than a morally neutral, instrumental regard. Thus, in an educational judgement in which a particular technology or technological approach is being considered (e.g. telecommunications as a way of distributing educational messages), it has to be asked whether the technological approach under scrutiny is part of a form of education (and ultimately, of a way of life) we would choose, all things considered. It is not sufficient to ask whether it is an efficient means to such a form of education or way of life. Rather it must be demonstrated whether it is constitutive of it. In other words, the form of judgement involved in what may be called "educational technology" must in each case include a consideration of whether the particular technology or approach being examined ought to be cultivated for its own sake. To be acceptable, it must be not only productive of what is worthwhile, but also constitutive to some extent of something worthwhile in itself. This requirement might be regarded as the paradox of "educational technology" because what is being demanded is that something

being presented as a purely instrumental means--technology--be regarded in the light of its character as an end. It seems to me that, in the central cases of education at least, this paradox is inescapable.

5. The Criteria of Educational Technology

To call something "educational technology" is to refer to part of what may be involved in the practical discourse about education conducted within educational theory. What is picked out by "educational technology" can be summarized in the following criteria:

(1) "Educational technology" implies the subordination of technology to the criteria of education;

(2) in "educational technology," no distinctive and autonomous body of knowledge comprising the organization of technical principles of education is involved;

(3) in the judgements which constitute "educational technology," the technological knowledge involved is drawn from various areas of technology in general, while the moral considerations to which this knowledge is subordinated are those embodied in the criteria of education.

A few examples may help to make it clear how these criteria work. The examples which I will consider all involve distinctive applications of technology; they are cases in which it is not in doubt that technology is involved.

Suppose someone suggests an adult education scheme based on mass communications technology. In particular, suppose that the suggestion is that educational programs of study are to be made available to adults by means of radio and television broadcasting. What has to be examined is whether such a scheme can accord with the criteria of

"education." It seems evident that radio and television can convey information and messages which could lead to knowledge and understanding. Cognitive breadth could be aimed at through a broad spectrum of program offerings. The manner in which the learner is treated when such means are used is however in doubt. The fact that messages must be designed for a mass audience means that the educational messages must be designed for the common features of the learners rather than for their characteristics as individuals. While it might be objected that this complaint about mass media also applies to books, which are traditionally held in high esteem as aids in education, any presumption that merely distributing books should produce significant educational results would have to be seriously doubted. It is questionable whether the guidance and individual attention which are part of most education can be provided by mass media. Since mass communication is typically one way communication, opportunities for dialogue, essential to many aspects of education, are lacking. Such considerations were evidently taken into account in the judgements involved in developing Great Britain's Open University. In this case, the inherent limitations of mass communications technology were compensated for by supplementing radio and television broadcasts with correspondence between individual students and tutors, access to academic guidance at local study centers, and annual two-week sessions during which students met in regular classes and studied under instructors. Whereas the exclusive use of mass communications technology to convey instructional messages

would not appear to have a substantial claim for being regarded as a case of "educational technology," the Open University approach appears to be so constituted that it may satisfy the criteria of "educational technology" set forth.

Another sort of example is provided by the suggestion that the technology of operations research should be used to improve what is going on in a particular educational setting. Suppose an educational administrator decides to investigate how instructional materials are being utilized in a medical science program. With a view to minimizing costs and maximizing effectiveness, he brings a variety of planning and decisionmaking techniques such as linear programming and queuing theory to bear on the formulation and solution of his "problem." He decides that the objectives which he has identified can be reached more effectively and at greatly reduced cost by introducing a high degree of uniformity into the way in which students are "processed" through the medical science program. He decides that student-teacher interaction can be greatly minimized if most of the essential information is conveyed by a variety of audiovisual materials which the student will study in an efficient instructional resource centre. This will permit him to fire up to two thirds of the teaching faculty. The obvious difficulty with this proposal is that the administrator has been led by his technological approach to conceive of medical education in narrowly instrumental terms. The non-instrumental features of

the manner and matter of education have been overlooked in this form of "initiation." The students are to be treated as information processing units defined in terms of inputs, outputs, and processing routines. This example violates the criteria of "educational technology" because the technology to be introduced has not been subordinated to the requirements for non-instrumentality and respect for persons built into "education."

As another instance, suppose an instructional materials developer wants to produce some training films for a particular industry. He proposes to use his knowledge of not only motion picture production but also psychology of learning in the preparation of these films. Is his undertaking an instance of "educational technology"? Here surely the objection is that the forms of knowledge and understanding he hopes to transmit are much too narrow to be conceived of as "education." Vocational instruction in aspects of industrial production is much more appropriately conceived of as "training," as Peters has pointed out. In this case the criteria of breadth of understanding and cognitive perspective are not likely to be met.

Finally, let us suppose that someone has developed an ingenious technology of sleep learning which he proposes to introduce into the schools. By this means school subjects may be learned, he claims, while the students are asleep. Would such an approach meet the criteria of "educational technology"? Granting that an effective technology of

sleep-learning might be possible, this approach would surely violate the requirement for wittingness on the part of the learner. Even if worthwhile matter were being transmitted, the student would have no conscious awareness of what he was learning. Further, the student might be made to involuntarily learn a set of pernicious lies by such a means. The third criterion of "education," I gather, would strongly rule out such an approach on the grounds that the wittingness and voluntariness of the learner would not be respected in such a case. Such an approach would therefore not meet the criteria of "educational technology."

A final point about all of these examples must be made. In none of these cases is a wholesale approval or condemnation of the technology involved intended. All that is suggested is that in the instances of the particular applications hypothesized, the criteria of "educational technology" are or are not met in the ways pointed out. Only the technology of sleep-learning would seem to lack any genuinely educational application because no instance in which it accords with the wittingness and voluntariness of the learner is conceivable. With respect to the other technologies, it is plausible that there might be instances where their use exemplifies "educational technology," but none of them are necessarily "educational" technologies. In general, then, no technology is an "educational technology" per se; it only becomes "educational technology" in cases where certain conditions are met. There are, however, some

technologies such as sleep-learning and certain forms of conditioning which by their very nature do not admit of constituting cases of "educational technology."

6. Recent Definitions of Educational Technology

When it comes to definitions of "educational technology," the literature of philosophy of education contains no notable contributions of which I am aware. Harry S. Broudy's ambitious bibliography, Philosophy of Education,[11] is practically devoid of entries relating directly to "educational technology." Indeed, the classificatory system used in this bibliography makes it practically impossible to search systematically for entries on the topic. Israel Scheffler has referred to "educational technology" as "the development of devices, programs and new curricula for the more efficient packaging and distribution of knowledge,"[12] but he has not given an analysis of the concept. Broudy has disregarded the task of providing a definition or analysis in his paper "Some Potentials and Hazards of Educational Technology."[13]

Over against this neglect in philosophical literature, the problem of defining "educational technology" has been vigorously taken up in the literature of educational tech-

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[11] Harry S. Broudy et al., Philosophy of Education; an Organization of Topics and Selected Sources (Urbana: University of Illinois Press, 1967).

[12] Reason and Teaching (Indianapolis: Bobbs-Merrill Co., Inc., 1973), p. 59.

[13] In Philosophy of Educational Research, ed. Harry S. Broudy, Robert H. Ennis, and Leonard I. Krimerman (N.Y.: John Wiley & Sons, 1973), pp. 862-85.

nology. Only a representitive selection of the definitions ventured will be considered here.[14] In a rather loose façon de parler, "educational technology" has often been equated with the "learning industry" or the "knowledge industry."[15] David G. Hawkridge has been more cautious about the possibility of pinning down "educational technology" to a pat formula. He observes that "Educational technology certainly cannot be thought of as an organized branch of knowledge. There is at present no unified theory, but rather an eclectic grouping of disciplines . . . ."[16] Despite this lack of a unified theory and established body of knowledge, there is a remarkable degree of agreement on certain issues in many of the definitions of "educational technology" which have been brought forward.

Robert Gagné has suggested that educational technology "can be understood as meaning the development of a set of systematic techniques, and accompanying practical knowledge, for designing, testing and operating schools as educational systems."[17] The restriction to schooling in this definition is

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[14]See Bibliography for additional references to articles and monographs relating to educational technology and its definition.

[15]Dave Berkman, "The Myth of Educational Technology," Educational Forum 36 (May, 1972):451.

[16]"Applications of Educational Technology at the Open University," A V Communication Review 20 (Spring, 1972):5.

[17]"Educational Technology as Technique," Educational Technology VIII (November 15, 1968):6.

not typical of definitions of "educational technology," although there is often an emphasis on institutionalized processes. What is typical is the emphasis on "system." Clifton Chadwick apparently takes Gagné's definition to be a model one in that no reference to machinery or its use is made, emphasis being placed rather on the "systems approach."[18]

"Instructional technology" was the term preferred by the Commission on Instructional Technology to collect the various uses of technology in education.[19] James W. Armsey and Norman C. Dahl have adopted this terminology in their Ford Foundation report, An Inquiry into the Uses of Instructional Technology.[20] They note the difficulties in trying to sort out the differences between "instructional technology" and "educational technology." While they claim that the two expressions are often mistakenly used interchangably, they give no clear rationale for their own choice. In June 1972, the Association for Educational Communications and Technology appeared to be preparing its own definition of "instructional technology."[21] What emerged a few months

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[18]"Educational Technology: Progress, Prospects and Comparisons," British Journal of Educational Technology 4 (May, 1973):81.

[19]Sidney G. Tickton, comp., To Improve Learning: an Evaluation of Instructional Technology (N.Y.: R. R. Bowker Co., 1970-71), vol. 1, p. 7.

[20]N.Y.: The Ford Foundation, 1973. See especially Chapter One, "Definitions and Terminology."

[21]Gail F. Hipsher, "On Defining the Field: an Open Hearing," Audiovisual Instruction 17 (June-July, 1972): 34-35.

later, however, was an ambitious attempt to define "educational technology."[22]

The AECT definition of "educational technology" is the most thoroughgoing attempt to define "educational technology" which has emerged in the literature to date. In it, the influence of many earlier attempts at definition is evident, and it may be taken as an attempt to draw together the central features of earlier attempts at definition. The overall purport of the definition is evident in the first paragraph of the statement:

> Educational technology is a field involved in the facilitation of human learning through the systematic identification, development, organization, and utilization of a full range of learning resources, and through the management of these processes. It includes, but is not limited to, the development of instructional systems, the identification of existing resources, the delivery of resources to learners, and the management of these processes and the people who perform them.[23]

The educational technology approach is said to be linked to the more general concept of technology. The understanding of "technology" adopted is that of Galbraith: "the systematic application of scientific and other organized knowledge to practical tasks."[24] The special interest of "educational

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[22]Association for Educational Communications and Technology, "The Field of Educational technology: a Statement of Definition," Audiovisual Instruction 17 (October, 1972): 36-43.

[23]Ibid., p. 36.

[24]The New Industrial State, p. 6; quoted in AECT, "The Field of Educational Technology," p. 36. Galbraith's definition is cited and briefly discussed earlier in this thesis; see Chapter Four.

technology" is said to be to "facilitate learning" by "expanding the range of resources used for learning," "emphasizing the individual learner and his unique needs," and "using a systematic approach."[25] This suggests that "educational technology," as a particular technology, is distinguished by those tasks and interests with which it is concerned.

It is recognized, however, that "educational technology" is not unique in embracing these interests, and that what makes "educational technology" distinctive is problematic:

> The field of educational technology makes no exclusive claim to any of these efforts; other educators believe in, and use, some of these concepts in their work. The field of educational thechnology, however, is unique in bringing all these efforts together in a systematic fashion.[26]

The quality of being "systematic" is thus held to be chief among the differentiae of "educational technology." In attempting to provide a rationale for the uniqueness of the field of educational technology, the authors of this definition have proposed that three interests characterize the field. These are "the use of a broad range of resources for learning, the emphasis on individualized and personalized learning, and the use of the systems approach."[27] The use of a broad range of resources refers to the interest in using every sort of human or material resource which can facilitate learning

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[25] AECT, "The Field of Educational Technology," p. 36.

[26] Ibid.

[27] Ibid.; p. 37.

as opposed to the exclusive or predominant reliance on teachers, chalkboards, and books. The emphasis on individualized and personalized learning is inspired by "the realization that learning is the goal of the instructional process and the criterion by which it must be judged."[28] It is said to be a shift of attention from what the teacher does to the amount of learning which is taking place. The systems approach, it is claimed, is "basic to educational technology." It is described as a process in which "scientific and experimental methods are applied in an orderly and comprehensive way to the planning of instructional tasks, or to entire programs."[29] The systems approach involves describing the system under consideration in terms of objectives (or goals), results obtained, and feedback loops which allow the system to improve itself.[30] These attributes centering around "resources," "learning," and "system" are said to provide the rationale for a unique field of "educational technology."

In a short article called "Defining the Field of Educational Technology,"[31] Donald P. Ely has attempted to sort out the major themes which recur in the plethora of definitions which have been ventured. He identifies three themes: "systematic approach," concern with "means," and achievement of a specified purpose--"learning." These three themes are

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[28] Ibid.

[29] Ibid., p. 38.

[30] Ibid.

[31] Audiovisual Instruction 18 (March, 1973):52-53.

evident in the AECT definition, where "individualization," "personalization," and "resources" may be taken to exemplify a concern with "means," while "learning" as the goal and being "systematic" as the approach are clearly announced.

Two sorts of remarks are in order here. First, a preoccupation with learning and its facilitation does not necessitate that anything like "education" is going on. While definitions of "educational technology" commonly announce an interest in "learning," I have never seen anything close to criteria of "education" hinted at in such a definition. Indeed, an instrumental regard for learning is the norm in such definitions. There is in this objection a prima facie case for rejecting all of those pronouncements which purport to be definitions of "educational technology" but which do not reach beyond invocations centering around "learning" toward some acceptable characterization of "education." Second, while a concern with means for facilitating learning, whether it be by expanding resources, increasing individualization, or whatever, is perhaps salutary, it bespeaks only what is to be expected in a technology of learning or instruction, and nothing more. A technology of learning would, by definition, be concerned with selecting means which are instrumental to learning. Nothing "educational" is necessitated in such an enterprise, and in fact the instrumental attitude involved would be detrimental in the central cases of "education," in which learning is regarded non-instrumentally. Thus while the themes of "learning" and

"means" are claimed to be differentiae of "educational technology," they do not have logically distinctive reference to what is picked out by the criteria of "educational technology" announced earlier.

What about the "systems approach" which has been claimed to be the chief differentia of "educational technology"? Chadwick has regarded the "systems emphasis" as central, citing Gagné. In the AECT definition, the character of being "systematic" was held to be educational technology's chief distinguishing feature. According to John D. Colby, "Educational technology is the application of system principles to teaching and learning problems."[32] Lawrence P. Grayson has proposed that "Educational technology . . . is a systems approach to instruction . . ."[33] The emphasis on "systems" is evidently linked to the belief that being "systematic" is a central and crucial feature of "technology." Ely has remarked that the "idea of systems" is the "modus operandi of technology . . ."[34] Yet, as I pointed out in Chapter Four, "systematization" or the quality of being "systematic" is not a logically necessary feature of the concept of "technology," except in the sense that any body of knowledge is "organized" and "systematic." Being

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[32]"Educational Technology," Engineering Education 63 (February, 1973):367, italics added.

[33]"Costs, Benefits, Effectiveness: Challenge to Educational Technology," Science 175 (March 17, 1972):1216, italics added.

[34]"Toward a Philosophy of Instructional Technology," British Journal of Educational Technology 1 (May, 1970):92.

"systematic" does not, I contend, constitute a unique and distinctive feature of "technology." We often use "technology" without implying that we are refering to a "systems approach." The fact that technological practices often do involve a systems approach is a contingent matter having more to do with recent historical developments (particularly the period beginning with and following World War Two)[35] than with the distinctive logical features of the concept "technology." Thus my claim is that the "systems approach" does not offer a logical differentia for "educational technology," and further, that no combination of "learning," "means," and "systems approach" can yield the differentiae which are required.

A claim which is also occasionally made is that "educational technology" is a "scientific approach." The magazine Educational Technology announced, in a promotional brochure, that the term "educational technology" "refers to the application of science-based knowledge to educational and instructional planning and to the solution of basic teaching-learning problems. Technology in this sense is applied science."[36] According to Hawkridge, A. A. Lumsdaine has

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[35] "The special meaning of the term systems and such related terms as systems concept and systems approach emerged during and after World War II as a result of research and development in problem solving, efficiency analysis, and, most significantly, the development of complex man-machine systems." (Bela H. Banathy, Instructional Systems [Palo Alto, California: Fearon Publishers, 1968], p. 2.)

[36] What is Educational Technology? (Englewood Cliffs, New Jersey: Educational Technology Magazine, n.d.), p. 1.

suggested that "educational technologists are appliers of science in the sense that medical practitioners are appliers of the underlying biological sciences."[37] Such views rest on the presumption that "technology" can be identified with "applied science." This view was rejected in Chapter Four as subject to much the same sort of objection that is raised against the "systems" view of "technology." While scientific knowledge may in fact often be used in technology, this is a contingent and historical development, and not a logically necessary characteristc of "technology." Again, no differentia for "educational technology" is secured by such a move.

The conclusion which may be drawn from these considerations is that the definitions of "educational technology" which have been offered so far have singularly failed to accomplish what they have apparently set out to do. No successful characterization of "educational technology" as a unique and distinctive field has been achieved. Indeed this is not surprising. For if I am correct, no distinctive and autonomous field is logically picked out by the expression "educational technology." The definitions which have been offered have merely latched onto fashionable features of what is currently done under the name "educational technology." In the case of "learning" and "system," it might well be said that these definitions have singled out "accompanying"

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[37] "Applications of Educational Technology," p. 6.

characteristics rather than "defining" characteristics, to use Hospers' distinction.[38] While such characteristics may often accompany cases of "educational technology," they do not perform any distinctive service in helping to define it. To the extent that defending the uniqueness of the professional field of educational technology has been a motivation in offering such definitions, they may be said to be programmatic in character. While it is not necessarily a bad thing to offer a programmatic definition, the definitions which I have been able to examine all involve logical misapprehensions which it has been my concern to point out in this section. What is unique about "educational technology," I should like to suggest, approximates to what is picked out by the criteria which I ventured in the previous section.

7. Conclusion

In this thesis I have examined the concepts of "education" and "technology," provided an account of "educational theory," and offered an anlysis of the concept "educational technology." I have also criticized representitive definitions of "educational technology" offered in recent

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[38] "To state a defining characteristic is to state a part of the meaning (definition) of a term; but to state an accompanying characteristic is to state some fact, not about the term itself (for the accompanying characteristic is no part of its meaning), but about the thing named by the term." (Hospers, An Introduction to Philosophical Analysis, pp. 28-29.) To state that "All swans are white" is to make a factual statement about an accompanying characteristic of swans which is open to factual disproof--e.g. the existence of black swans in Australia. "White" may be an accompanying characteristic of most swans, but it is not a defining characteristic of "swan." (Hospers' example.)

literature. In terms of the standpoints considered, three claims about the concept of "educational technology" can be sorted out, the first holding to a "strong" sense, and the second and third holding to "weak" senses. The first (strong) claim is that "educational technology" picks out a distinctive, autonomous technology which fulfills both the criteria of "education" and the criteria of "technology." The second (weak) claim is that "educational technology" picks out no distinctive, autonomous technology, but refers to cases in which various independently constituted technologies (which fully meet the criteria of "technology") are judged also to meet the criteria of "education." The third (weak) claim is that "educational technology" refers to a distinctive, autonomous technology (or in an even weaker sense, technologies) which meets the criteria of "technology" but fails to meet one or more of the criteria of "education," adhering to a weakened sense of the latter. I have argued that the first (strong) sense is logically contradictory and must be rejected. The third (weak) sense, evidenced in the definitions of "educational technology" reviewed in the previous section, I hold to be misleading: a modified terminology (e.g. "instructional technology") would more accurately reflect what is being pointed to. I propose that the second (weak) sense is the most logically justified way of unpacking the concept of "educational technology." My conclusion might be said to involve negative sanctions regarding use of the term "educational technology." It is not a dogmatic rejection of the term, but rather a provisional

acceptance with certain very strong qualifications. That is, I hold that the central uses of the term are logically those in which both the criteria of "education" and the criteria of "technology" are operative, in the manner picked out by my criteria of "educational technology."

It might be demanded what kind of a definition I have offered here. The difficulty in answering this sort of question was discussed at some length in my examination of Peters' account of "education." Peters took the view that analysis leaves everything as it is. Yet it became clear that while Peters' account constitutes a descriptive definition of "education," this is true only with respect to a group of speakers who share the assumptions and understandings, embedded in a linguistic tradition, which he has made explicit. Much the same thing must be said for my account of "educational technology." If there is a group of speakers for whom, when all is said and done, "education" equals "learning" and "technology" equals a "systems approach" to selecting means to ends, then my admonitions will not have much bite against their way of using the expression "educational technology." If, however, I have succeeded in making explicit some important logical features of these terms, features which do not just reflect current fashions but are deeply imbedded in our linguistic traditions, then my account may win some acceptance. For example, if it is objected that my conclusions get their bite from my "Petersian" interpretation of "education," I must reply that they rest on a stronger and more basic ground: the fundamental insight that "education" picks out a

practical enterprise which includes non-instrumental forms of commitment, and that there is a crucial distinction to be preserved between technical versus non-instrumental forms of thought and action regarding what is involved in choosing goals and standards and formulating courses of action.

Regarding Scheffler's classification, the definition embodied in my criteria might be regarded as descriptive or descriptive-programmatic, insofar as I have attempted to describe how the terms "education" and "technology" are in fact used, but have also suggested that these understandings should be preserved in using the expression "educational technology." Some might find my definition of "educational technology" to be a non-inventive stipulative one, in that I appear to be recommending a departure, for the sake of clarity, from how that expression has often been used. "Educational technology" is such a recent expression that it is difficult to do a descriptive job of defining it, since a substantial background of shared understanding of the term is lacking. That is one reason why I have appealed to what may be understood by the familiar terms "education" and "technology." What kind of definition I have offered, in Scheffler's terms, would appear to be a matter of one's point of view, so its classification within Scheffler's schema must remain relatively inconclusive.

I hope, though, that I have succeeded in calling attention to some crucial logical features which ought to be considered in any use of the term "educational technology."

Whether or not they are adopted is a further matter, but I have sought to put forward what I think are compelling reasons for adopting them. If it is asked what difference adopting my criteria will make, it is perhaps a defensible reply to propose that it will require taking these reasons seriously in educational theory and practice.

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