# COMMUNICATIONS

## An Illiberal View of Liberal Education

A computer technologist is so patently unfitted to criticize Liberal Education that it is quite safe for him to expound his views without fear of damaging one of the dearest shibboleths of contemporary Canadian society. Therefore, I can proceed with a clear conscience, safe in the knowledge that I cannot cause my betters to deflect the juggernaut of anomie in our society from its path towards the ultimate alienation.

For present purposes I shall confine myself largely to university education. The first question to be resolved regards the purpose of education. To this there are at least two aspects, that of the *product* and that of the complete human being. The former we can dispose of easily. The world from which a student will eventually retire will differ considerably from that into which he graduated. A major purpose of education is to equip students with the tools to comprehend their environment and to adapt their lives successfully as it changes around them. Note that this is not a passive role for the individual, to fight an environmental change successfully one must first comprehend it. Society as a whole and employers in particular benefit more from citizens able to adapt than from those initially ready with specific skills but unable to adapt. A prime requirement for adaptive behavior is the ability to unlearn old responses, not just to learn new ones.

For the remainder of this screed we shall discuss the education of the complete human being. I assume that it is the objective of a liberal education to provide the intellectual foundations for the growth of a complete human being.

As practised, a liberal education is stated to broaden the mind by making the student conversant with the broad sweep of human achievement and culture, with some aspects of the physical universe he inhabits, and with the intricacies of societal forms. In operational terms the result is a set of degree regulations that first divide fields of study into *humanities* and *sciences,* then prescribe a mixture thereof as constituting a liberal education. A particular set of regulations might be summarised as follows:

Spend 6.6% of your time on English, 20% on your Minor subject, 20 - 40% on your Major. If your Major is a *humanity,* spend another 20% on a laboratory science, otherwise on a *humanity.* The rest allocate as you please.

Having surveyed the universe from Greek pornography to nuclear physics the student has been given his intellectual foundations, and must therefore be a complete human being. But what characterises a *complete human being?* Unfortunately we have no reagent available that will discriminate between complete and incomplete in one swift dip but we do have a list of attributes to describe what we mean. Considerate, charitable, compassionate, selfless, aware, concerned, etc., are amongst them. *Love thy neighbor as thyself* and *do unto others as thou would'st be done by* are two summary descriptions in common usage. Is a liberal education in fact conducive to this state, or does it actively prevent it?

First we have to consider whether any form of formalised education can compete with the home or *the school of life* in this endeavor. What is it that we are after? It is men and women who so conduct themselves in their daily lives that they offer no hurt to others, by intent or neglect. That is the basic desideratum. In addition we may also hope that our students will actively further the welfare of mankind and will themselves lead full creative lives. Reverting for a moment to the productive aspect of education one can do no better than to quote Isaac Asimov's Three Laws of Robotics:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings, except where such orders would conflict with the First Law.
3. A robot must protect its own existence, except where such protection would conflict with the First or Second Law.

Reflect a little, and you will find that the intent of these laws applies to all mankind's artifacts, material or socio-economic. But how, in the complexity of life, do you determine what may injure or harm a human being? We are back to general education, liberal education. A student cannot be presented with a prepackaged catalogue of harmful deeds, in part because it would be too large to remember, but more importantly because of the multiple causation of events, so that the harmfulness of a deed depends precisely on its context, and because of the changes in our environment that continuously alter the repertoire of deeds it is possible for us to perform in a continuously changing context to give rise to continuously changing effects. It is this complexity that now debars the home or plain experience from being a sufficient source of guidelines for conduct. We need to cultivate awareness of the repercussions of our acts, and of our inaction, and to alert ourselves to assess the probable outcomes. We need a structured, planned, curriculum to cultivate that awareness, progressively to introduce us to the connectedness and interrelatedness of reality, and above all to exercise the application of our human faculties.

A liberal education, as now understood, is incapable of fulfilling this need, because a liberal education surveys the broad spectrum, the great

ideas and ideals, the goals of mankind. It is about ends. Life and reality are foremost about means We may seek to bring joy to our beloved; that can only be accomplished by the right means. We may wish to restore the dignity of the Canadian Indian peoples, a worthy end that depends entirely upon the means employed. We may wish to realise the high ideals of the French Revolution; whether we do so depends once more upon the means. Instance could be added to instance till we cover the whole spectrum of human affairs.

Liberal education easily seduces the students: mankind has always had a lemming affection for the great seminal ideas, the splendid ideologies, the pat solutions. We seem attracted to the apocalyptic, the cataclysmic, the great march towards the glorious moment of liberation. We are descended from hunters, for thousands of generations we lived by the tension and exertion of the chase, to be followed by relaxation, revelry, and repletion. Agriculture made no essential change, the toil and worry of planting and tending are followed by the concentrated plenty of harvest. It seems natural to us to formulate our problems in terms of heroic deeds or grim toil, to crest the wave, to be followed by beautitude. We can tolerate almost anything today if we but hold steadfast to our vision of bliss tomorrow.

Unfortunately the good life is not like that at all. It consists of meticulous pernickety attention to unending detail, every moment of our lives, with scant place for the heroic, and there is no promise of surcease.

Behavior that values others as persons and not objects requires attention to the unglamorous, the particular, without respite. A liberal education as conceived today is not able to educate students in the canons of behaviour required of the complete human being. It focusses upon the grandiose, the seminal, the heroic and the abstract. Then, professing great ideals, we consumate our idealism at the *auto da fé,* in a fascist or communost totalitarian dictatorship, or at My Lai. where the massacre of Vietnamese civilians took place. We have so well internalised our ends that we are oblivious to the means.

To achieve the conduct we crave we must first learn the multifarious ramifications of our acts, social and ecological. To teach this web of interrelations requires study in depth of some topic, gradually revealing the interwoven impingement of that topic to all other facets of humanity and of the environment. No instructor can now do this with his course within the framework of a liberal education. He has limited time available and has no relations with the other eighty percent or so of a student's activities, nor with his prior preparation except within the confines of his own topic. His class presents a ragbag of unrelated abstractions garnered from many fields. Tutorial, practical and laboratory work are seen as vehicles for inculcating general principles, not for the painstaking pursuit of the enmeshed strands of life, the latter only being possible if one has

the time to study apparently identical but actually different situations. I have been chided for seeking to enlarge the practical side of our computer science curriculum. Within the asumptions of a liberal education this censure is perfectly right, but the level of abstraction at which this floats the student prevents him ever coming to grips with the practical and ethical problems of computers in relation to our society. From conversations with students the same appears true even of the social sciences, presentations of seminal ideas in the abstract. The student who asks how to relate them to Joe Blow downtown is ostracised, by the instructor for infringing the canons of a liberal education, by his fellow students for hindering the garnering of abstractions for examination passing.

Perhaps a university is not the right place for providing practical detailed study. Perhaps the programme of Antioch College, where the year is divided into halves devoted alternately to study and to industrial employment, provides the right basis. If this is the case we had better rethink the structure and function of universities pretty smartly. But for the moment let us not pursue this extreme course.

The best illustration of the need for depth of study of a topic, including constant exercises designed to bring the study into use, is language. Language is the tool by which we affect, and are affected by, our social environment. The tool is equally adapted to conveying information and emotion, and, both ends are served by adept and skilful use of the tool. Equally, both ends are ill served by clumsy and inept use of the tool. However, the tool of language has a characteristic that, say, carpenter's tools do not share. A piece of wood needs no education to respond to a spokeshave, but the human mind and ear require education to respond to the appeal of poetry, or to any other use of language. It is a fallacy to believe that great thoughts will automatically communicate themselves effectively. The reverse is the case. Chaucer, Shakespeare, Shaw, even Churchill, wielded the tool of language to invest the trivial and commonplace with significance. Swift, whose material is certainly not commonplace, would by now be forgotten, an obnoxious writer of uncouth polemics, were it not for the language in which he clothed his work.

Furthermore, it is open to doubt whether in the absence of profound skill in the use of language one can have great thoughts, as our concepts and the relations we can draw between them depend upon our linguistic skill and knowledge. This assumption is a facet of the Whorfian Hypothesis and need not detain us further.

Thus, for creating harmonious, understanding, aware, discriminating social relationships, it is necessary for the participants to be skilled in the art of communication. Such skill cannot come from sweeping surveys of the seminal works of literature. It can but come from the ceaseless practice of communication, most importantly by drilling the pupil in school daily to write and speak upon some event of the trivial round of ordinary life.

Communication is the prerequisite for any social activity, and *the increase and diffusion of knowledge,* the avowed purpose of universities, is certainly a social activity. It follows that our students must be able to communicate. If they cannot they are not fitted to be students. It is a deficiency that the university cannot remedy. Insofar as the deficiency exists the academic community is perpetrating a fraud upon the taxpayer whenever it seeks to divert a greater share of scarce public resources to itself, before the deficiencies of school education have been remedied.

Just as practice is necessary to linquistic fluency so is practice necessary in every other field of study, if the student is to do more than repeat back glib examination answers. For practice not to become rote learning, the subject must be explored in depth, and it is upon reaching sufficient depth that we mine the gold of education, where we can explore the web of relationships between any field of human endeavor and all the other facets of humanity.

Within the present framework of liberal education the road to understanding is blocked save to a few Honours students. Instead the General degree student is fobbed off with an unrelated mishmash of generalities and is barred from any appreciation of the means that may effect society's ends. Unfortunately this state is more dangerous than ignorance, as a fervent pursuit of an ideal end usually results in the jackboot application of means that effectively deny the end.

In terms of educational philosophy, the problem is illustrated by the current ferment in sociology. On the one hand we have the view of Marion J. Levy Jr. of Princeton University: "I do not regard myself as being concerned with helping my fellow man". In contrast we have Anatol Rapoport of the University of Michigan: "History is determined by forces over which man has no control, so long as he is unaware of these forces. When he becomes aware of them, he can determine his future history". It is the fashioning of this awareness that is at stake in a university education. Because of the intricacy, interdependence, and complexity that our social and ecological relationships have reached, that awareness must above all encompass means, instead of being blinded by ends.

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## History of the Term "The Structure of Disciplines"

Matthew Meisterheim's article in the December, 1969 issue of *The Journal* ("Structure of the Disciplines and History") stating that the term "structure" has been popularized through Jerome Bruner's book *The Process of Education* is indeed a generally accepted view. Meisterheim did, however, include the possibility that Bruner might not have coined the term although the author could find no references to structure predating the 1959 Woods Hole Conference.

The purpose of this article is to examine numerous instances in which both the term "structure" was used well in advance of the conference from which grew *The Process of Education* and to note past educational and philosophical statements which stressed essentially the same position incorporated in the Bruner thesis. This is, however, not meant as an exercise to detract from Bruner's contribution to educational theory.

Three related concepts will be examined: (1) the position that each discipline has a structure unto itself and so can be identified by this characteristic, and particularly by its method of inquiry; (2) such structure is esssential in conceptualizing a body of knowledge and in establishing relationships among the many facets of a body of knowledge;* (3) a "spiral curriculum" makes it possible for structure to be presented to the student again and again, each time in a more sophisticated form until the student might well reach the frontier of knowledge.

*Conceptual Structure*

One does not need to venture far from Bruner's habitat in order to find a statement peculiarly akin to his position. Burrhus Skinner, the current *pater patriae* of those stating educational aims in behavioral terms and Bruner's colleague at Harvard, not only described his system in disciplinary terms but also used the term "structure". *The Behavior of Organisms,* a 1938 account of experiments with pigeons in the "Skinner box" described the laws of operant and respondent behavior and at the outset Skinner asked the question, "What will be the structure of a science of behavior?"[1] The question was again raised in connection with a discussion of the relative merits of topographical description versus experimental investigation for a method of inquiry in the field of behavior. Skinner's conclusion in this thirty - year - old work is that experimental investigation (the method of inquiry) will yield results compatible with the discipline, or as Skinner says: "The principle advantage . . . lies in obtaining a

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*This view of the expert can, however, be presented to any child at any stage of development provided it is matched to the level and ability of the child.

[1]Burrhus F. Skinner, *The Behavior of Organisms* (New York: Appleton-Century-Crofts, 1938), p. 5.

system of behavior which has a structure determined by the nature of the subject matter itself."[2]

Essays written in honor of Harvard's Professor Henry Sheffer also recognized that the areas of knowledge were most effectively identified by noting the methods used in their respective inquiries. Kaiser notes that "it is not necessary to distinguish between the questions, 'What is the method of this discipline?' and 'What is this discipline?' If we know that the discipline is an activity and we know how it is carried on, we know what it is."[3] Weiner, in the same book, *Structure Method and Meaning,* noted that in early civilization mathematics was considered a separate discipline based upon a recognition of its own internal logical laws.[4]

In *Die Naturlich Ordnung Unserers Denkins,* published in 1927, Ludwig Fischer dealt with *wesen,* the essence of fields of knowledge. Translated in 1931 as *The Structure of Thought,* the author approached knowledge as a whole, isolating particular regions by use of a set of axioms which were carefully selected so that "the analysis of the structure, without the extraneous help of any other concepts, suffices to give us a derivation of the whole region which, within any given science, it is desired to comprehend and to order."[5]

It was Ernst Cassirer, however, who delved most thoroughly into the history of discipline identification. His three - volume work, *Philosophy of Symbolic Forms* and his *Essay on Man* deal with the metaphysical question of the unity of knowledge and so examined the problems inherent in the division of knowledge into subject fields. In these works there are numerous historical references to this subject but Cassirer's main contribution to the history of structure is contained in *The Logic of the Humanities,* published in 1960 but written sometime before 1945. The author noted that Vico believed that only the works of human civilization are open to complete knowledge by man for only in these areas is the "inner structure" "open to the human mind because the human mind is its creator."[6] Vico's logic gave definition to the humanities, an area more difficult to demarcate than the more readily structured fields of science and mathematics. While Herder also investigated the nature of the humanities, Cassirer noted that Kant dealt with a structured analysis of the natural sciences rather than of *Kulturwessenschafhen* and in the *Critique of Judgement,* "probes for the fundamental concepts which make

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[2]*Ibid.,* p. 434.

[3]C. Hillis Kaiser, "The Method of Methodology," *Structure Method and Meaning* (New York: The Liberal Arts Press, 1951), p. 152.

[4]Norbert Wiener, "Pure and Applied Mathematics," *Structure Method and Meaning* (New York: The Liberal Arts Press, 1951), p. 91.

[5]Ludwig Fischer, *The Structure of Thought* (London: George Allen & Unwin Ltd., 1931), p. 10.

[6]Ernst Cassirer, *The Logic of the Humanities* (New Haven: Yale University Press, 1960), p. 53.

knowledge possible."[7] The author concludes that it was through the epistemological efforts of philosophers that scholars were successful in "erecting the structure of scientific knowledge."[8]

The tradition which produced such statements is a long and rich field of observation and speculation. King notes that Aristotle in *Nichomachean Ethics* and *Metaphysics* says that the organization of knowledge is based upon the end of the disciplines and the nature of the matter on which they work.[9] Mursell also drew upon such philosophic treatises in defense of his theory of knowledge and his thesis can be traced to his analysis of the works of Descartes. As a youth, Descartes became disillusioned with the trappings that were the mark of an educated man and in his *Discourse on the Method* states that "the ground of our opinion is far more custom and example than any certain knowledge." At twenty-three years of age he felt he was too young to attempt to find general truths and so, as described in the *Regulae,* Descartes set forth to apply his method to another field. The well known result — analytic geometry — was from the application of his epistemological method for isolating essential natures and yielded the *quaestio* of the curve. Furthermore, at the end of the second book of his *Principia,* order is seen to be the essence of both physics and mathematics. The ability to apprehend such basic structures, Descartes termed "intuition" which is the method of the expert investigator and is always directed at simple essences.[11]

King follows such a concept through Kant who believed that each discipline is a "clear cut separate system based upon a regulative idea and marked by a mode of inquiry. Consequently, modes of inquiry vary with disciplines."[12]

*Early Intellectual Honesty*

Bruner so firmly believed in the importance of apprehending the structure of a discipline that he, in an oft-quoted statement, advocated that ". . . any subject can be taught effectively in some intellectually honest form to any child at any stage of development."[13] The beginner should be concerned with the same *kinds* of processes and regards as the expert investigator or scholar working on the frontier of knowledge and as such

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[7]*Ibid.*, p. 62.

[8]Ernst Cassirer, *The Problem of Knowledge* (New Haven: Yale University Press, 1950), p. 38.

[9]Arthur R. King and John A. Brownell, *The Curriculum and the Disciplines of Knowledge* (New York: John Wiley & Sons Inc., 1966), p. 42.

[10]Descartes, "Discourse on the Method of Rightly Conducting the Reason and Seeking the Truth in the Sciences," *The Harvard Classics,* Volume 34 (New York: P. F. Collier & Son Corporates, 1938), p. 16.

[11]James L. Mursell, "The Concept of Intuition in Descartes' Philosophy of Science," *Philosophical Review,* XXVIII (July, 1919), p. 398.

[12]King, *op. cit.,* p. 46.

[13]Jerome Bruner, *The Process of Education* (Cambridge: Harvard University Press, 1960), p. 33.

should be introduced to those concepts which constitute the structure of a discipline. The neophyte scientist should have the same general concerns as an Enrico Fermi, the budding pianist the same musical goals as a Rubenstein.

Mursell, in *Developmental Teaching* (1949), stated essentially the same position in noting that "a little child . . . should begin the study of any subject matter with exactly the same kind of processes that are exemplified in the work of the greatest experts, although the difference in organization and efficiency is enormous."[14] Some years earlier, in a speech to the Ohio Education Association, he attacked the problem of "What is Progressive Music Education?" and in February, 1932 stated, "There may be a vast difference in degree between the musical mentality of the little child in the first grade and that of the great artist, but if the child is being rightly taught, *there should be no difference in kind.*"[15]

What Mursell had previously called essence was, in 1946, referred to as the "key or clue" or the process of the expert which should be sought at all levels of attainment. In describing instances of successful projects carried on in a third grade class, Mursell noted that in each case the fundamental modes of operation of a discipline were revealed. He concluded, "If one wishes to think competently about nature, one must think as the scientist thinks. If one wishes to think competently about society, one must use categories and techniques of the social scientist. If one wishes to understand the past, one must see it from the viewpoint of the historian."[16]

This was a unique view although not an altogether uncommon one and similar statements can be noted in other works. Essentially they were a reaction against mechanistic teaching which often stressed the externals of a subject, neglecting the essentials, spirit, or inner structure of a discipline. Humanistic psychology too made contributions to the idea of getting across to the child as early as possible the "flavor" of a field of knowledge. Revesz, Stout, Ward, and other European psychologists were making such statements and Koffka's *The Growth of the Mind: An Introduction to Child Psychology* introduced holistic or gestalt principles to teaching and learning. These ideas were on a collision course with the incremental S-R Thorndike theory and the result was a crash program of progressive education. Such men as Kilpatrick, and even Dewey eventually had to criticize the behavior - based theory. Kilpatrick, particularly, had to revise his lectures and publications in order to take note of the fact that one learns most effectively by approaching a subject through

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[14]James L. Mursell, *Developmental Teaching* (New York: McGraw-Hill, 1949), p. 31.

[15]James L. Mursell, "Progressive Music Education," *Ohio Schools,* X (November, 1932), p. 295.

[16]James L. Mursell, *Successful Teaching: Its Psychological Principles* (New York: McGraw-Hill, 1946), p. 110.

its major essence, subsequently analyzing and resynthesizing the constituent elements.

*Spiral Curriculum*

Bruner's "spiral curriculum" is a part of *The Process of Education* that is seldom noted although it is a description of the general method for teaching structure. The central focus, the essence of a discipline, Bruner recommended, is to be presented, developed and redeveloped with a continuous movement toward more complex issues.[17] If then, mathematical ability and knowledge is viewed as thinking in relationships, this is to be the central theme of such teaching whether it concerns itself with the distribution of crayons or the investigation of vectors and becomes a recurring spiral with ever widening scope, heightened understanding and yet firmly based upon a controlling principle.

Mursell, in what he termed a "cyclical approach" made use of similar principles in his book *Developmental Teaching* (1949) in which the essence of subject matter was defined and continually stressed in various settings. This central concern is to be introduced at the youngest possible age, redefined, and nurtured in a recurring cycle of synthesis, analysis, and resynthesis. Because a subject field is approached in its entirety (as far as structure is concerned) there is no process of addition, rather, the discipline is encouraged to "develop".

Bruner stands at the apex of a long and distinguished group of philosophers, psychologists, and educational theorists who have sought to define and isolate the essential elements in fields of knowledge so that the process of education might be rendered more efficient. Certain of these in the continuum have been noted and yet others of equal or greater importance are probably still to be recognized. This might well be a fertile and revealing area for a comprehensive historical study.

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[17]Bruner, *op. cit.*, p. 54.