

Design is for the Future

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Introduction

"Socially-aware graduates wanted for practical problem solving". No, this is not an advertisement for design engineers – but for recruiting police officers. (Sunday Times Magazine, Feb. 17th. 1974). So in ten short years of so, the jargon of Design Education has made its mark. Integration, open-ended problem solving, rational decision making, graphicacy are ideas which now have achieved a currency far outside the parameters of Design Education. Yet, have we really travelled very far in practice?. In the 1973 Winter edition of this periodical, devoted to the spread of Design Education ideas, I read "If problem solving is the educational means to an end, how can it be called Design without successful 3D creativity?". Creativity Yes. But why 3D? I should very much like to have a musician as a design student on one of my courses. Musical composition seems appropriate to the design process as I understand it. But it isn't 3D.

Educational Priorities

Edward Jenkins of Cardiff School of Art in 1970 condemned "a self-conscious process of art-making, endowing the artefact with the 'mystique' of esoteric significance" and went on, "To be without the safety net of any artefact, and create and sustain a situation in which the individual can invent we should aim not so much at giving our students ideas but perhaps more towards giving students' ideas a chance". It seems to me that ideas not artefacts are the most important products of the group of creative subjects now collected under the umbrella title of Design Education. Certainly I seen no superiority of the 3D over the 2D artefact as an end-product of Design. A questionnaire that accurately elicits useful information, a flow diagram, an accurate report which enables action to be taken, – these all seem as valid an end product of the

Design process as any chair, pot or model hovercraft. The design process as I see it should cater for designing *anything*. A good deal of what goes under the heading of Design Education still results in a series of artefacts which are assessed at the end as if they were the sole criteria of the process, whereas, to paraphrase "you know who", the *process* is the product.

The most important aspects of design seem to me to be;

- (1) the relevance of the problem to the student or to society, or both.
- (2) the accurate documentation of design decisions so that their soundness and originality can accurately be assessed.
- (3) the assessment procedures and criteria which enable those decisions to be measured.
- (4) an adequate prototype which can be successfully tested.

The last is probably the least important. – In the real world the designer's solution is usually made by somebody else. No one can doubt man's pleasure in making things but to many people 'making' ideas is just as satisfying and every designer cannot be a craftsman. The fusion of intellect and intuition in the solution of problems is the essential of human experiences. Everyone is a designer. It is the task of education to make him a more efficient one. You will gather from this argument and the end products which were referred to favourably a couple of paragraphs ago that one cannot consider the Design process as applicable only to the practical subjects. In my view its attitudes, aims and techniques are valid in all educational disciplines. In other words Design education is just another name for *good* education. Good teachers of all subjects have been using enquiry-based, decision-making techniques for years. We are blazing no trails – except in the backwoods of our own subjects.

Wider Horizons for Design Education

As Mode 111, syllabuses proliferate the concern that designers should have for society and its environment could be much more widely spread throughout the school curriculum. The projected CEE Examination and the widening of the Sixth Form courses that are envisaged should encourage imaginative curriculum development. So much of what present Examination syllabuses demand is irrelevant, that there is room for a new insistence on this quality of relevance in our courses. It is with this in mind that I pose the proposition that a Department of Future Studies should be created in all Secondary Schools. This is not my own original idea. It was "lifted" from Alvin Toffler's lively book "Future Shock", which I first read a year ago. Nor is it divorced from Design Education. It is no coincidence that J. Christopher Jones used for his valuable book "Design Methods" the sub-title "Seeds of human futures". Design for present needs and we design obsolescence! It is the essence of planning that we look ahead — far ahead. In education this should be an important consideration in all subjects.

Toffler's phrase "future shock" is his name for the stress diseases that occur when people are subjected to too much change in too short a time diseases that are already manifest in our society and will multiply incredibly in the inevitably more complex future world of more people and more artefacts and thus more decisions to be made by everyone in private and public life. A measure of this increasing complexity is given by the economist Kenneth Boulding who says, "I was born in the middle of human history, to date, roughly. Almost as much has happened since I was born as happened before". The solution to the problem is education for the future. We cannot prevent change but by planning we can help people to cope with the problems involved by anticipating them and working out tools and methods to expand man's adaptive

capacities. (Freud: "Thought is action in rehearsal").

Education still looks back. Compulsory education was not introduced for altruistic reasons. It was necessary to churn out a working class better able to perform increasingly more complex industrial tasks. Education was not for the benefit of the individual it was to provide factory fodder. Schools looked like factories and were organised like factories. Many still are. Schools are not required to prepare people for life, as they should be, but for examinations. Even then we have a stupid system where the Universities announce that 'A' Level grades have no correlation with the quality of degree the student eventually achieves but continue to insist on high grades as entrance qualifications. (A lack of problem solving techniques in our Universities?) Our syllabuses are still mainly involved with teaching 'facts' ... though twentieth century science long ago indicated there are no such things. In the unbelievably near future all 'facts' will be dealt with by machines, man will process the information and make decisions. This is the world in which our present pupils will live, these are the skills they will need to survive. We must differentiate between data and skills.

Education and the Time Machine

Geography gives pupils a sense of *place* in relation to others but history notably fails to cope with *time* and the increasing acceleration of events. — "90 per cent of all the scientists who have ever lived are alive today". A generation ago Professor Flechtheim regretted that "our history courses terminate with the year they are taught". When experts fail to anticipate the speed of change. Six years ago the findings of the American 'think tank' at the Hudson Institute were published under the heading "The year 2000" by Kahn and Wiener. They listed 100 technical innovations likely "in the last third of the twentieth century". About a

third of them are already implemented — in six years. A study of Evolution has shown that “genetic diversity favours the survival of species, educational diversity increases the odds for the survival of societies”. (Toffler). Philosopher Robert Jungk argues, “Nowadays almost exclusive stress is laid on learning what has happened and has been done. Tomorrow at least one third of all lectures and exercises ought to be concerned with scientific, technical, artistic and philosophical work in progress, anticipated crises and possible future answers to these challenges”. With these aims it should be possible to implement a syllabus of Future Studies which satisfies many of the recommendations of Alvin Toffler in order to provide our students with the tools for tomorrow. It may well be advisable to experiment with such a course first in Sixth Form General Studies and non-examination courses but to make it a more satisfactory solution it would need eventually to begin in some form at the beginning of secondary education where it could be a very good linking device throughout the disciplines. It would help if all syllabus content of the latter was based only upon clearly identified areas of future need but this would entail the rejection of so much that is now taught and such a vast amount of extra work by subject teachers that it would be like “asking for the moon”. However, since this simile has become unexpectedly obsolete in our time, ... we ‘got’ the moon several years ago, — we can perhaps be optimistic in the face of obvious obstacles.

A Course in Future Studies.

It is possible that the following pattern might be the nucleus of such a course.

Future Studies: Implementation and Syllabus

AIMS. to define the boundaries within which possible futures must lie and to

develop the adaptive skills required to deal with rapid change.

1. The Generation of Ideas: De Bono.

Like all disciplines Future Studies would be helped by preliminary training in thinking skills.

For the first three years, for one lesson per week, if only for one Term in the year, a course could be developed using Edward de Bono’s Cort Thinking Lessons, which have already been well publicised. His techniques are illustrated in the TV programme “The Very Idea” with Professor Eric Laithwaite, scheduled by the BBC. His books on Lateral Thinking give plenty of material for the teacher but it is the underlying purpose that is important. The subject matter of any Department could be used as a basis for the lessons so it would not matter if the course were run by a teacher of English, Science, Humanities or any other discipline for Time-table purposes. The E.P. Torrance tests of Creative Thinking Ability could also be used. No topic should involve longer than a single period of 30-35 minutes.

2. Problem Solving.

In the Third Year the course would become more involved with problem-solving techniques of a “brainstorming” type. Written and illustrated solutions could be developed in more detail and over a longer period than in the first two years.

3. Basis of Syllabuses for CSE, ‘O’ Level, CEE, ‘A’ Level or Non-examination Courses.

Areas of Study.

A. ‘Known’ Problems.

based upon present difficulties into the future.

(1) Population increase.

- (a) Housing.
- (b) Energy. “half of all the energy consumed by man in the past 2,000 years

has been consumed in the last 100" (Toffler).

(c) Food.

(2) Technological Developments.

(a) Speed of economic growth.

(b) Transport.

(c) Communications.

(d) Explosion of technical information, (educational).

(e) The application of new discoveries.

(3) Transience.

Social experience is made up of our relationships with things, places, people, organisations and ideas. Transience is defined by Toffler as the rate at which these relationships turn over, which is increasing at an alarming speed. Sociological studies could be made under the headings of the five relationships quoted. They would include forecasts of the new forms that social groupings and governments will need to take. With "instant communication" it should be possible to achieve true democracy, for example.

(4) Future Novelties.

(a) underwater cities, marine farming, men with implanted gills. etc.

(b) climate control by satellites.

(c) new uses of animals and fish — Controlling them by implanted electronic devices to work for us.

(d) biological factories — domesticating micro-organisms.

(e) redesigning the human body for new purposes; cloning; development control of the human brain; populating planets by using frozen, fertilized human embryos; breeding new races of specialists, etc.

(f) organ technology — eg. cyborgs — fusion between man and machine.

(5) The Experience Industry.

In "The year 2000" Kaln and Wiener do not

specify a particular future but alternative futures. They talk of choices and it seems that this is the basis of good futurology ... a number of options with the likely outcomes projected into the future. To predict the future we need logic, but we also need faith and imagination which can sometimes defy logic itself.

B. 'Unknown' Problems:— imaginative, fanciful projections into the distant future.

(1) Worlds of tomorrow.

(2) Aliens.

(3) Other dimensions — Time — Relativity.

(4) Mutants.

(5) Marvellous Inventions.

(6) Space — the Mysterious Universe.

Section B. will use as source material the stories of the great utopias and science fiction. The latter fell from grace with the general rejection in the twentieth century of romantic fiction, but today when so much that was science fiction has proved to be science fact, it provides a worthy bibliography. It is the sociology of the future. For our purposes it has tremendous value in that it stretches the mind and can help create the mental habit of anticipating the future which is one of the main aims of the course. It is an imaginative exploration of the problems of political, social, psychological, and ethical issues which could confront us.

But science fiction authors are not just imaginative. They base their work very much on genuine scientific information, pushing it into a new dimension or bending it so as to make a particular plot possible. But the whole history of the last fifty years is a series of upsets of the known and reasonable; even today, in particle physics and astronomy for example, current ideas may at times seem crazy — but the chances are they are not as crazy as the eventual solution.

In the 13th Century Friar Roger Bacon wrote:

Instruments may be made by which the largest ships, with only one man guiding them, will be carried with greater velocity than if they were full of sailors. Chariots may be constructed that will move with incredible rapidity without the help of animals. Instruments of flying may be formed in which a man sitting at his ease and meditating in any subject, may beat the air with his artificial wings after the manner of birds as also machines which will enable men to walk at the bottom of the seas". As Arthur C. Clarke says, "This passage is a triumph of imagination over hard fact. Everything in it has come true, yet at the time it was written it was more an act of faith than of logic. It is probable that all long-range prediction, if it is to be accurate, must be of this nature. The real future is not logically foreseeable the only way of discovering the limits of the possible is to venture a little way past them into the impossible".

Today, science fiction writers are becoming aware of the educational possibilities of their work. Isaac Asimov has recently edited a collection of stories, ("Where do we go from here?" published by Michael Joseph Ltd.), after each of which he comments on its scientific accuracy or otherwise and makes suggestions calculated to arouse the reader's curiosity in possibly fruitful directions. In addition an appendix lists two source books for further investigation of the relevant scientific principles. One example is a piece of fiction about imaginary events on a "heavy planet". Most fictional interplanetary travellers land on worlds with lower gravitational fields and air pressures than Earth's. On the more distant giant planets like Jupiter and Saturn the opposite is so and their denser atmospheres involve far greater pressures at their bottoms than we experience. The imagination is more than usually stretched by the possibilities. "Further Reading" recommends "Weather on the Planets" by George Ohring. (Doubleday,

1966) and "Earth, Moon and Planets" by Fred L. Whipple (Oxford University Press, 1968). Another story, "The Deep Range" by Arthur C. Clarke, writer of the film "2001" and known for his adherence to real scientific material as a basis for his stories, is a marine cowboy story about herding whales. It affords the valuable information that the sea can provide five times as much food as the land. "Further Reading" recommends "The Sea" by Leonard Engel (Time, Inc., 1961) and "Whales" by E.J. Slijper, (Hutchinson, 1962).

But perhaps a law of nature ignored or distorted may arouse more interest than if initially explained. Whatever the case this appears a fruitful way of introducing a wide variety of scientific and sociological information.

Practical Communication.

While Science students might prefer to develop investigations as indicated, there should be ample opportunity for Art students to project into the future their hypotheses about sociological developments, architecture, planning, methods of communication, novel artefacts, future uses of leisure, changes in human relationships, costume, transport and countless other topics. Every effort should be made to encourage them to communicate their ideas in ways that appeal to them personally, using up to date audio-visual techniques, etc.

In the second half of the course, after several brief practical assignments, each student should select a problem area from the syllabus and produce a major project. These might take the form of written work, such as a future autobiography indication of what might well happen to the individual student in the next 40 or 50 years, including the valuable exercise of thinking of how the changes will affect other members of his family as they grow older, new relationships that could develop, etc.

Students could invent games which pro-

ject the interaction of social and technical changes, offering choices between various alternatives, conjecture about the likely results of their decisions and giving as clear an indication as possible of the end result. Such a game, *Future*, has been marketed already in America and students at Cornell University have produced a number of games involving decisions on housing and community action projects. In this way students can experience the ways decision-making is made difficult where new technology and values such as the quality of life, personal freedom, etc., come into conflict.

Other projects could involve future historical Time Charts; diagrams, drawings and models of future social organisations, environments, systems or artefacts; posters or brochures for future events; models of the way the experience industry could produce sensory environments for domestic or public interiors and exteriors; making their own science fiction or documentary films using adventurous techniques; forecasts of future art forms, musical instruments, etc., models of utopian solutions of all kinds.

The End Or a Beginning?

In a national newspaper on Feb. 23rd. 1974, Fred Hoyle, the eminent and far-seeing astronomer, said of Solzhenitsyn, "I'd like to ask that man to turn his gifts away from attacking the regime in Russia, which is bad enough, and towards the forthcoming end of the human species". Without designers we have no future comfort, no temporary ease from increasing stress. But, unless we are depending on miracles, without Long Term Design Education we may have no future at all.

The three major problems of the future still face us — population, pollution and the bomb. Recent experiments studying rats in overcrowded conditions have indicated the possible result of the first problem, if unsolved — neurosis, violence and loss of fertility. An end of a species?.

However, it is significant that science fiction mainly depicts an optimistic view of the future of the human race. So do the contemporary futurologists like the head of the American "think tank", Herman Kahn. The Horizon TV programme, "The future goes Boom", recently screened, depicted his boundless optimism. Although personally I found this almost too good to be true it is a clear indication that an educated anticipation of future problems leads to a belief that they are capable of solution and is the best weapon against "future shock". Once a thing can be imagined it can be done.

Kingsley Amis in the Gollancz publication, "New Maps of Hell" puts it succinctly," we could do with more, not less of that habit of mind which will look beyond the attempted solution of problems already evident, to the attempted formulation of problems not yet distinguishable". I consider this to be a logical extension of Design Education into the future and an essential area of study in schools today.

Bibliography.

Fiction.

Books by:— Jules Verne, H.G. Wells, Rudyard Kipling, Ambrose Bierce, Brian Aldiss, J.G. Ballard, James Blish, Ray Bradbury, Arthur C. Clarke, Robert Heinlein, Kurt Vonnegut. etc.

The classical literary utopias.

"Brave New World". Huxley.
 "Last and First Men" "Star Maker" by W. Olaf Stapledon. 1930.
 "Where do we go from here" by Isaac Asimov (Michael Joseph Ltd).
 "Gulliver's Travels" by Swift.
 "1984" by George Orwell.
 "The Jagged Orbit" by Brunner.
 "Earth Abides" by George R. Stewart.
 "The Marching Morons" by C.M. Kornbluth.
 "Way Station" by Clifford Simak.
 "The Martian Chronicles" by Ray Bradbury.

"The tale of the future: from the beginning to the present day: an annotated bibliography 1972" by Ignatius F. Clarke.

"New Maps of Hell: a survey of science fiction" 1961. by Kingsley Amis.

"The Universe Makers: science fiction today" 1972. by Donald A. Wollheim.

Non-Fiction.

Books on:— Human Adaptation. Automation. Business, Economic, Social and Consumer Patterns. Education and Youth. Family. Biology and Sex. Future Studies.

"Future Shock" by Alvin Toffler. Bodley Head. (Paperback, Pan).

"The Year 2000" by Kahn & Wiener (Report of the Hudson Institute).

"The Coming of the Space Age", "Profiles of the Future" by Arthur C. Clarke. (Gollancz).

"Can we survive our Future?" A Symposium edited by G.R. Urban. (Bodley Head).

"Surviving the Future" by Arnold Toynbee. (O.U.P.)

"Learning for Tomorrow" Alvin Toffler. Vintage Books, New York.

"World Facts and Trends. The impact of technology on environment, society and man's future." John McHale. Macmillan.

Films.

From "Things to Come" to "2001. Space Odyssey" and other selected science fiction films.

Postscript.

On 2nd. January 1974, Mr. A.H. Crocker, B.Sc., retiring Chairman of the AMA, began his address, "The Permanence of Change", as follows:—

"Any teacher of a few years experience will have seen considerable changes since he began his teaching career. Change is indeed essential to any living system, and the educational system is no exception. But as

Sir Isaac Newton realised many years ago, the significant factor is not change but the rate at which change occurs. Today there is no doubt that change proceeds at an ever increasing rate, both in scale and scope. We have to live with fast changing technology in a fast changing environment.

The effect upon the schools is extensive. The content of education is changing rapidly and our pupils have also changed radically in the last few years. The influence of mass publications aimed specifically at young people and the more general appeal of television have had a marked effect. Physically and mentally there is a wide gulf between the pupil of today and the pupil of only ten years ago. We have every reason to believe that the society of tomorrow will be much more complex than it is at present. How are our youngsters to be prepared for this new world?"