

# Design and Realisation as a Form of Knowledge

A. Cannon  
*Shoreditch College*

40

In the competition of a crowded curriculum the only convincing argument that can be made for the inclusion of a subject is thought to be the possession by the subject of some unique feature which enables a fount of knowledge to be explored, not otherwise available, or not susceptible of being otherwise encountered. It is this general proposition which has led curriculum builders to examine 'knowledge' or 'information about the world' in order to see what unique characteristics are exhibited and whether they correspond to the division into disciplines and subjects.

Peterson<sup>1</sup> talks about four main modes of thought: the analytical, the empirical, the moral and the aesthetic. Perhaps 'thought' is too narrow to use in referring to areas which include both the intuitive and the emotional; but the distinctions are nevertheless drawn between these four modes. Those suggested by Phenix<sup>2</sup> as 'realms of meaning': symbolics, empirics, aesthetics, ethics, synoptics and synoetics, (the last being personal knowledge of an intuitive kind — more easily acquired than communicated), becomes translated by Professor Peters<sup>3</sup> into: formal logic and mathematics, physical sciences, awareness and understanding of our own and other people's minds, moral judgement and awareness, aesthetic experience, religious and philosophical.

The grounds for making these divisions of knowledge is the claim that each belongs to a distinct category which differs from others in having its distinctive body of 'fundamental, ultimate or categorial concepts of a most general kind' with distinctive syntax and tests for truth.

An apparent confusion arising from a conviction we all share: that the world is intercategoryal, that — for example — mathematics is used by science, or formal logic by philosophy and so on, may be easily set at rest by pointing again to the claim: that knowledge falls into distinctive categories, which is not to say that the world divides its

activities into them. Life is inclined to be philosophically untidy, our working everyday knowledge strays through the categories, mixing scientific and aesthetic issues together and bringing philosophical and moral considerations to further confuse or, perhaps occasionally, to resolve. But this does not in any way affect the original categorisation of knowledge although it does sound a warning, reminding us that when we turn from philosophising to teaching, we should remember that the world at large is singularly unaware of knowledge categories but with the criterion of 'usefulness', will join together whatever knowledge is required to satisfy desired ends.

Although few would wish to suggest the seven categories as a curriculum, Hirst<sup>4</sup> does propose them as generative of objectives upon which a curriculum could be based.

"If we want general education, then this implies education in the distinct forms of knowledge; to drop any one of these would be effectively to prevent further development in that field."

Here the argument appears to have moved to a different plane, although it is claimed that the seven categories must be drawn upon to provide the kind of knowledge a liberal curriculum requires; there is also a hint that this is necessary to maintain knowledge itself. And this emphasises the 'knowledge' view of the curriculum as opposed to a 'child development' view, or the 'classical' as opposed to 'romantic' — Denis Lawton's phrase.

The preservation-of-knowledge or conservation-of-knowledge view of the curriculum is important in maintaining traditional values of scholarship but it may be more applicable to specialised than to general education. In devising a general curriculum we need to give attention to how children learn and how they fail to do so, the curriculum itself is merely a scheme. Even the stating of educationally desirable objectives drawn from a curriculum plan in

no way ensures their attainment. As Peters<sup>5</sup> points out –

“In particular it is assumed that, once objective has been isolated, the valuative questions have been settled and only empirical questions remain about means. But education is not like taking a bus rather than a taxi to work. Usually the values of the state of mastery concerned are instantiated in the process of learning. In thinking philosophically for instance, there are values immanent such as consistency, clarity, a sense of relevance, humility and independence of mind. But the process of learning to think philosophically instantiates embryonically these values. The skilled toolmaker works precisely, patiently and with a real respect for the properties of his material. He *learns* his trade by constantly practising in a way which instantiates, falteringly at first, these very values. Thus the process of education encapsulates aims”.

And so we are left asking questions about possible routes rather than objectives and with the recognition that the forms of knowledge can only be honoured if they are built into the teaching process. In addition it becomes clear that curriculum entry of a school activity may be based as much upon significance of a teaching process that it embodies as upon its contribution to the seven categories of knowledge.

The bid to include ‘Art’ among these categories, that is made by quoting Herbert Read<sup>6</sup>: *Is Art a Form of Knowledge?*, may not be a direct reference to the seven categories but is undoubtedly to be considered in curriculum building. Art, of course, is included as one of the activities of the aesthetic category. The very existence of such a category suggests a characteristic common to those individual activities that share the description ‘aesthetic’. This common feature it is suggested is the

‘aesthetic experience’<sup>7</sup>, a quality not of things but of our response to them and the visual acts provide a channel for this experience, as also do music and literature.

Few would deny an initial place in the curriculum to the aesthetic category in its various manifestations, at least in early schooling – perhaps until 13 years – but eventually certain channels will be found to be more or less open to individual students. Some students will be reached through literature or music or visual arts, some through specific aspects of these, or through various combinations of them, but eventually they will vary in their appeal to the individual student and will be emphasised or reduced according to individual temperament.

The idea that *art* (visual art as practised in school art rooms) is mandatory in the curriculum is based upon a belief in every-child-an-artist, an idea that is less and less born out in fact as the age of innocence passes and the task of expression becomes more and more formidable to the growing child. Art (in the specialised form already indicated) may remain an open channel of communication to some, it undoubtedly does so for those who decide to adopt it as a career, but its relevance, in its subject form, to the generality of pupils is open to question.

It is not, however, being suggested that aesthetic category should be ignored in terms of the visual arts, although the standard art room, or even art school (if we recall recent controversy) have not been wholly convincing. It is argued that a way of finding alternative means to the visual aesthetic experience must be sought.

The problem of the curriculum in its pure form, that is, when forms of knowledge can be recognised through the disciplines is one that arises from the very logic of the divisions. Such a curriculum observes a structure which is largely irrelevant in terms of use and learning method. It does not

follow a 'world of work' model which might confer intelligibility through application, it follows a scholastic model where intelligibility is laboriously built up from first principle.

In this respect the choice of such a structure for a learning activity appears arbitrary. To the pupil's question, 'Why am I studying this?', the scholastic structure can only answer, 'this is the way the subject/discipline is built'. The world model structure, on the other hand, can answer the same question by pointing to applications, to needs, to choices and so on.

We shall return to the *world* structure later but at this point it is necessary to examine the other claimant for curriculum legitimacy, design. It would be idle to further define the term, since this has been done adequately elsewhere and since differences between concepts of design turn so frequently to be matters of differing emphasis. If then we take the problem-solving aspects of design, fitting a need as it were, we must seek the unique feature — if any — that this process has, which other forms-of-knowledge have not.

We may ask 'What further dimension of knowledge is reached? — what would such knowledge be about? In what respects would its tests-for-truth be unshared by other forms, aesthetic or scientific? — Which of its moral considerations are not served by the moral form of knowledge? The questions need only be asked to find the claim untenable. Problem solving is procedural not propositional as Hirst points out in his now classic, answer to the problem-solving solution to educational matters. Hirst<sup>8</sup>. Problem solving is a way of going about things, it presupposes subject knowledge. Furthermore anyone who recommends problem-solving as an educational ploy is hardly innovatory — even if we ignore Dewey — since most subjects have recognised the worthwhileness of this approach in appropriate circumstances.

'But design is more than problem-solving', it will be said and it is perhaps in the difference between mere problem-solving and design that we shall find the unique feature required to satisfy the forms-of-knowledge criterion. Professor Archer makes the illuminating observation that design deals with problems which cannot be precisely defined<sup>9</sup> and that the design process is therefore one of progressively clarifying the terms of the problem. This is an important aspect of the design process and one that designers (even children designers) need to bear in mind, it may even help to loosen up the rather rigid adherence to the formal linear design approach now becoming so popular, but does it confer the unique quality we are looking for? In fact it cannot be argued, other subjects than design include progressive definition of terms, and analytical procedures and such treatment of ideas is freely made use of by the forms-of-knowledge already given. This is actually recognised in the proposals which recommend extending design to all subjects: it is a procedure they already share. The only feature that design activities do not share with other subjects of the curriculum or do not find embodied in the existing forms-of-knowledge, is the unique stage of *world changing* known as realisation. 'World changing' may seem extravagant when used to describe the minor works of the school workshop but the term does point up the difference between describing the world — as most school subjects do, *prescribing* a change, as design does when the proposal is left at the notional drawing stage, and actually changing something to meet a proposal. This event is different in kind from all the others hitherto considered.

As to whether the working of materials qualifies as a form-of-knowledge, in the sense already given, may be open to discussion. White<sup>10</sup> decides against on the grounds that one can *imagine* tool processes, the cutting of timber, for example, and

therefore no further knowledge is gained or no other knowledge is achieved by actually doing the cutting since the action of cutting is procedural. It occurs as an event in a series of prescribed events. It makes no statement, offers no proposition that something is the case and so attracts no test for truth. This could be countered by pointing out that it is the nature of craft activities that the proposition is expressed in the procedure. Wood is cut in particular ways, worked to specific sequence, because of a proposition about fibrous materials.

Borax is applied in soldering because of a proposition linking heating, oxydising and bonding, and annealing recognises a proposition about working, work hardening and the effect of heat. In these examples the tests for truth are largely empirical because the proposition fits into the form of scientific knowledge. But is there not in addition, a knowing what it is like to make a tool meet the resistance of working material, adjusting tool aspect and force to produce exactly what one wishes? No doubt it would be possible to describe bowing a violin in language dealing with angle of bow, vertical force, direction of movement, fingering and time base; or propositions could be made about string vibrations and sound; or about friction and resistance; but would any of this amount to playing a violin? And in addition, however detailed the account is made it would not be a way of teaching to play, there is an incommunicable element, an aspect that cannot be put into words or numbers. This is 'connoisseurship', Polanyi's<sup>11</sup> term and it is — personal knowledge — in a sense that we build it up through our own experience.

"In effect, to the extent which our intelligence falls short of the ideal of precise formalization, we act and see by the light of unspecifiable knowledge and must acknowledge that we accept the verdict of our personal appraisal".

"What has been said of skills applies equally to connoisseurship. The medical diagnostician's skill is as much an art of doing as it is an art of knowing. The skill of wine tasting continuous with the more actively muscular skills, like swimming or riding a bicycle".

Polanyi coins the phrase 'tacit knowledge' to denote the special knowledge upon which the perceptual motor skills depend and it is argued here that once one has shown that this kind of knowledge exists, largely kinaesthetic though it is, it must be admitted as a category, perhaps entitled 'Kinaesthetic'.

"The Kinaesthetic sense provides information about the position of our limbs and the pressures which we are exerting with them. Without this internal, proprioceptive, information no purposive controlled activity would be possible. It provides the means for control of movement and for "feed back" of information about the movements made"<sup>12</sup> in making this statement, Seymour — in 1966 — used quotation marks on "feed back" today we would omit them. The change is a measure of our general recognition of Kinaesthesia as a source of understanding.

In conclusion therefore there appears to be no strong case for regarding Design or Art as forms of knowledge in the philosophical (Hirst) sense, but the realisation aspects of each would appear to be candidates for an eighth category — 'kinaesthetics'. And therefore in making an epistemological claim for inclusion of Design in the curriculum, it is the central feature of making and testing that provides the unique quality not offered by other forms of knowledge or their disciplines. Any 'mere procedure' criticism levelled at the crafts — the procedural criticisms — is even more strongly to be levelled at the design process which has no unique propositional content, nothing not to be found in logic or mathematics.

It is only when the design process is  
*concluded on page 26*

## Soft Furnishings in Glass Fibre

Under construction now are two pendent type light fittings consisting of a cluster of cylindrical glass fibre shades. One for the lounge and one for the dining room. The dining room creates special problems as we require a low level light over the table but the ceiling rose is not convenient for this. An interesting design has developed that will balance out the light over the table area. The light fittings have involved the two boys in producing a scale model and:—

- (1) Glass Fibre work for the shades
- (2) Basic electrics to wire up
- (3) Design problems associated with the type of material and electricity, the light and heat produced and the overall effect on the atmosphere of the room the fitting is trying to create.

At present the flat is ready for use although quite a number of small jobs need to be done.

We have purchased a small amount of kitchen equipment and by borrowing some more from the cookery room have all the basic essentials to enable the flat to be used by the girls.

From now until the end of term the fifth year girls in twos will live in the flat for two days, being completely independent, going shopping, cooking, washing and generally looking after themselves.

It would seem that at last the project is near completion and that the girls will begin to gain some benefit from it.

In future it is hoped that groups of pupils will be able to use the flat for homemaking lessons throughout the year and that fifth year pupils will be able to live in the flat for a week at a time before they leave.

*continued from page 43*

seen as a totality, including as essential its world changing or realisation that it makes an educational case and educational good sense. It is this practical craft element so often ignored because of its workshop connections or 'gentrified' into classroom theorising that gives the touch of uniqueness to the enterprise of designing in education.

## References

1. A.D.C. Peterson. Arts and Science Sides in the Sixth Form. Oxford University Department of Education, 1960.
2. P.H. Phenix. Realms of Meaning. McGraw-Hill, 1964.
3. Hirst, P.H. and Peters, R.S. The Logic of Education. Routledge and Kegan Paul.
4. Hirst, P.H. Changing the Curriculum. Ed. J.F. Kerr. University of London Press.
5. Peters, R.S. London Educational Review Vol. 2, No. 3. Autumn 1973. University of London Institute of Education.
6. R.C.A. Discussion Paper. Royal College of Art, London.
7. E.F. Carritt (et al) The Theory of Beauty. University Paperbacks — Methuen
8. Hirst, P.H., *op. cit.*
9. Archer, B., R.C.A. Paper. Conference, Cheshire. Royal College of Art. London.
10. White, J.P. Towards a Compulsory Curriculum. Routledge and Kegan Paul.
11. M. Polanyi. Personal Knowledge. Kegan Paul.
12. W. Douglas Seymour. Industrial Skills. Pitman.