

Reviews

Design: Science: Method

R. Jacques and J.A. Powell (eds.)
Guildford: Westbury House, 1981, £18.00

Organisers of conferences sometimes use the technique of putting out a title which uses words and terms capable of attracting a great variety of papers and audience members. The present book, which constitutes the official part of the proceedings of a conference is an excellent example of the kind, particularly where entry is 'open'. The title uses words such as 'design', 'science', and so on which have clouded meanings, and it further suggests 'design science' and 'design method' which also have their ambiguities and rumbling internecine wars.

Although variety may be implied in the title it does not follow that every potential variant or niche is represented. Let us begin with 'design'. It is convenient to consider this in the good old terms of fine arts, applied arts, and useful arts where, respectively, we are concerned with the beautiful, the utilitarian and beautiful, and the utilitarian. (Readers will understand that shorthand descriptions are being used here and that the world is not so simple). A characteristic of most of the utilitarian is that it has to perform a number of functions and may be complex. For this reason design in the useful arts usually takes place before constructive work is done and this design can be intellectually challenging. There is evidence of a split in British culture somewhere in this region. Thus, near the end of January 1982, design became a concern of the Prime Minister. She, according to the 'Financial Times' 'gazes up at the local street-lighting, to decide whether it has been well or badly designed'. This might have suggested that she was considering shapes but the official report of the seminar she gave on January 25 tells us little. It is still unclear whether the 'dumb blonde' approach to design or the 'smart cookie' approach was in the ascendant. The civil servants of the Department of Industry seem to have neutered any centre of dissension.

On the Continent the word for design has implications which depend upon the language involved. The Slav 'projekt' is something which is done in advance (in English the word 'project' has taken on other senses). The German 'Konstruktion' is something which is construed. The French, notwithstanding their linguistic chauvinism, are now using the word 'design' but I do not have enough examples of usage to be sure of the meaning. My fear is that it will have something to do with good shaping or good styling, a fear which is based on a trial print-out from a computer data base.

Whatever their overt differences the participants at the conference appeared to believe in planning ahead, even if the form of planning might be unusual.

On the subject of 'science' there are roughly two schools of thought beyond the stinks lab stage. One is that science is what scientists do (and

anything goes). The other is that science isn't science unless it is according to Popper. There are some other positions in this game but Popper remains a Pope or shibboleth. Interestingly some kind of class shift seems to be occurring — whisky changed from being the drink of peasants in Scotland to one of the nobility in England — and the Popperian arguments which were high culture in a corner of the senior common room twenty years ago are now being used by engineers.

In the British empirical tradition science still remains very much a practical activity. It is something done at the bench or in the field. Now for design science. Here one may separate out a handful of meanings. At one extreme it may suggest the only true way of design, namely the systems approach. In another sense it is a way of design based upon fundamental principles. Or, in another twist it is designing scientifically. Then there is the sense that design is based upon the application of scientific knowledge in general, or, in some views, upon some specially developed knowledge. Again, there is the view that design is an activity which can be investigated scientifically and that such research provides the substance of design science.

At the conference it was clear that many of such interpretations were represented or misrepresented.

Then to design method. Someone, nearly twenty years ago, wrote that a design method is at least as well defined as the scientific method. The aim was to differentiate design from science and to claim a kingdom over which there was to be dominion. But there was another movement afoot — the design methods movement which, so to speak, was engaged in the compilation or procreation of algorithms. The backwash from this has confused the intention of the other.

Finally we have to put all the possible combinations or ways of construing into the idea of 'design research', bearing in mind that the conference was promoted by the Design Research Society. What does research mean in this context? Is it like philosophical research, or library research, or scientific research? And if it is research of any of these kinds where are the results? Nor should we forget Archer's category of 'designerly enquiry'.

The editors were not unaware of all this but it is necessary to set up a framework of reference for the review. The book is primarily concerned with argument and occasional acrid polemic. The big 'set-piece' papers by Archer, Broadbent, Cross, etc. are about this, in their different styles. Archer and Broadbent, in particular, are interesting by virtue of the detailed support they give to their themes, like them or not.

There are papers which advance models of design, deny the utility of models of design, decry the absence of models of design, assert that architecture plays by different rules. This is largely talk. There is little evidence that authors (with one important exception) have studied the available literature,

brought together the range of models proposed and then tested them.

In a section on user participation in design in building or re-building — a subject which has been kicked around for some fifteen years as well as having an earlier history — the contributions have a reasonably hard edge to them but Broadbent, in his envoi at the end of the book, written after the conference, puts the boot in heavily.

Two papers on methods are particularly worth reading. Rzevski describes a general method of dealing with the design of large systems which has been carefully evolved and worked through successfully in industry (GEC/Stafford). This has much to do with the handling of complexity and is particularly relevant to important areas of computer programming. O'Brien gives one of two papers which deal with the design of systems involving humans and information processing. His work at the Home Office for police forces provides an encouraging treasury of methods.

The papers on design education have to be seen as a hint of more to come.

Only one paper seemed to be concerned with reporting research, and that at a preliminary stage. This came from Roy and colleagues and dealt with design, innovation and competitiveness.

To a sceptical observer and reviewer, although steeped in the business, the overall impression is that it takes an awful lot of wind to get something off the ground. One of the editors, in summing up, says the same thing in a more polite way.

Whatever may have been the wider research outcome of the conference as such — no hypotheses were submitted to falsification in public and few new practical results were given — ironically it could be that some unrecorded proceedings marked a step forward in the official support for research studies of design. Some charming men from the ministry were there and already a small flow of funds is in evidence. This has to be linked with the increasingly obvious, although still miniscule, emergence of respectable postgraduate research on aspects of design.

Within the educational establishment's terms of thinking something appears to be stretching. This preceded the Prime Minister's seminar but must be related to it through that vast, imponderable, slow-moving, Hydra-headed swell of informed opinion that something has to be done about design. We shall shortly be celebrating the twentieth anniversary of the Feilden Report! And that is not to neglect precursors in the struggle.

Sydney Gregory

African Textiles and Dyeing Techniques

Claire Polakoff

London: Routledge and Kegan Paul, 1982, £6.95 (paperback)

This is a work of outstanding interest to the anthropologist, the craft worker, and also to the general reader. Perhaps only pottery can compete with textiles by the way in which a craft impinges on human life, entering into an intimate relationship with individuals, with the sexes, with all strata of society however sophisticated or naive. Textiles communicate without language and are a telling reflection on our personalities and our culture. In primitive societies religion and culture are so closely linked that the making of textiles and the use of colour and pattern are controlled by tribal taboo.

Claire Polakoff is well qualified to write this study, having lived and worked in West Africa and studied African textiles in the University of California. She is currently a curator in a textile Museum in Los Angeles, and is an active designer, using primitive techniques.

The main body of the book describes the preparation of dyes, tie and dye, the use of wax and paste resist patterning, hand printing with calabash stamps, making the extraordinary 'mud cloth' of Mali, and painting directly onto the fabric. All these techniques are traditional amongst the tribes living in West Africa between Senegal and Congo. They had formerly been in decline, swamped by mass-produced cotton prints from Europe, often aping original patterns, so that hand-crafted textiles were held in less esteem. But the reviving sense of nationhood has reversed this, and luckily there is still adequate evidence of method and knowledge of the meaning and religious significance of the patterns for continuity to be maintained.

Ms Polakoff concludes with an interesting chapter on the influence which this revival has had on the mood of Black America, causing it to look with confidence at its ethnic origins.

It is a lucid and scholarly text, well illustrated by photographs and some colour plates. There is a map, a glossary, an extensive bibliography, and notes on the text are printed at the end of each relevant chapter. It is a pity that the title does not convey the breadth of interest in this book.

Dorothea Kay

The Complete Calligrapher

Frederick Wong

London: Pitman Books, 1981, £9.95

I was disappointed with this publication and found that I could not raise much interest or enthusiasm for it. Like a number of books on this subject it tended to lack real vitality, and therefore it also lacked conviction, and, for me, was rather boring.

This criticism is not to decry the competence of the author as a craftsman, for his skills are apparent in some of the illustrations. Many of these, however, tend to be a little ponderous in character and miss the true crispness of the fine calligrapher.

There are a number of better books on the market and the reader would do well to search the bookshops before selecting those he feels will benefit himself. This book adds very little to the information presented elsewhere and I would not recommend its purchase. Having written a number of books myself I do recognise that a lot of hard work has gone into the production of this one. Perhaps it will have an appeal to some members of the public who might find it more inspiring than I do.

John Lancaster

Sacred Calligraphy of the East

John Stevens

London: Routledge and Kegan Paul, 1981,
£6.96 (paperback)

This simply splendid book is of a highly specialised nature and will therefore, appeal to a rather limited range of readers. It is apparent that John Stevens is a keenly-inspired expert and he has taken endless time and care in preparing this scholarly work.

I must admit that as a calligrapher — in the Western sense — who has a love for calligraphic imagery: imagery that demands precise skill that evolves from concentrated effort and a natural talent, I enjoyed this book from cover-to-cover. I have dabbled in making both Chinese and Japanese calligraphy with brush and ink, and these are a combination of true art forms and religious forms of expression of a very high order indeed.

Calligraphers will find the book has much appeal and will certainly appreciate the beauty of pure abstract imagery that is revealed so abundantly in the illustrations. These actually complement an interesting text, which is comprehensive and intelligently researched, concerned with the sacred writings of places in the East such as India, Japan, Tibet and China. It includes a brief historical note of each one — a useful idea — and this helps to make it a compendium. It will prove to be an invaluable source of reference for scholars and artists who have an interest in the aesthetic traditions of the Far East.

My only criticisms are pragmatic ones. I found it rather difficult to open the book properly due to the fact that the grain of the paper runs the wrong way, and the book itself would have been brought to life if it could have included two or three colour plates. These are production rather than scholarly problems and I congratulate the author on a fine job.

John Lancaster

School Crafts — A Folio of Ideas

The Educational Institute of Design, Craft
and Technology
1980, £1.00

Design Briefs

The Educational Institute of Design, Craft
and Technology
1981, £1.00

A Further Folio of Ideas

The Educational Institute of Design, Craft
and Technology
1981, £2.00

The three books are produced in a loose leaf form with plastic side binders and have been compiled on behalf of the Institute by the President, Vice President and General Secretary from contributions by members. The first of these has contributions, twenty seven in all, ranging through wet weather puzzles, aluminium casting, time measurement, tools, toys, and candlestick designs, concluding with an insertion of the British Standards Institute leaflet, Guide for Teachers in Technical Education.

The second book, *Design Briefs*, contains only written design briefs, which, to quote from the foreword have been selected to show the different forms of layout possible. They provide a mixture of briefs which range from Foundation to 'A' level and use a variety of materials. Included in this booklet is a publicity leaflet on Precision Drawing by Rotring.

Book three, *A Further Folio of Ideas*, is an effort by the Institute to provide ideas for use in the school craft room and here I quote from the foreword: 'some are traditional, others basic in nature, but most are capable of being developed into some form of design project with a little imagination'. The foreword also suggests that a general title could be Puzzles Pastimes and Projects, a mixture of ideas which will provide something for all. The folio closes with inserts by The British Standards Institution, The Royal Society of Chemistry and British Thornton.

The general purpose behind the collection and publication of ideas in this way is basically sound, and indicates keenness and interest by the contributors on the one hand, and tireless dedication by the members of the Editorial Board on the other. But I suspect that the Editorial Board have had difficulty in rejecting some of the work that has been offered for publication, and in consequence there are many 'old chestnuts', some no longer hot.

It is the intention of the Institute to publish another folio of ideas. Might I suggest a combination of ideas briefs and projects which would allow for more divergency of thought, and would teach the basic skills of thinking, planning and reasoning parallel to the appropriate practical skills.

Some of the ideas submitted are rather brief, and as the foreword suggests, could be expanded.

Guidance by the contributors as to how the work fits into a plan and make situation, where it fits into the overall plan for teaching Craft Design and Technology, and perhaps an example of one of the ways in which a brief or project has to be interpreted or expanded would be most helpful to teachers.

J.W. Thompson

The Medieval Monastery Five Shropshire Monasteries

Department of Education, University of Keele
London: Department of Environment, 1980,
£2.00 each

Anyone trying to interpret, for children, ruined monuments from many hundred years ago has a problem. When those monuments represent a way of life whose purpose is going to be a mystery to most modern children, the problem becomes a very perplexing one. Notions of the past are not simply to do with comprehending spans of measured time; they are more to do with understanding the frameworks of particular societies, the development and purposes of those frameworks, and the functions and responsibilities of the people living within those frameworks. The medieval monastic communities do indeed have descendents today but they are rarely experienced by young children and anyway function in many different ways from those of the past. For children, and I suspect for adults, the conceptual problems are immense.

For the producers of these materials the answer was to produce two packs. One meant to be used on visits to monastic sites and one containing background material on the development and building of monasteries and the daily life of the monks. This second pack would be used in schools.

The pack 'The Medieval Monastery' contains nine cards one of which is a teachers guide. The other eight deal with: how monasteries began, how a monastery was built, how to become a monk, the monks daily timetable, how a monastery was run, the monastery buildings, monastery finances, and the Dissolution. Clearly they vary considerably in both the conceptual level and, for young children, the motivational level. Each unit is a white A3 folded card, printed in black and containing text, illustrations, some questions, and in two cases suggestions for making something. The text is mostly purely instructional.

It is difficult to accept that these cards were 'designed'. There seems to be little rationale in the way that the layout has been prepared; if a grid of any kind was used it has been abused. The text is peculiarly distributed amongst the illustrations and the strange use of large blank spaces make one wonder what was being attempted. The preparation of the art work has been poor and the overall image is one of sloppy presentation. The unlaminated

white card was an unfortunate choice; even with careful handling the reviewers copy was showing marks. What they would look like after a few days handling by young fingers is not difficult to imagine.

The activities and questions on the cards do not, on the whole, make interesting or adequate conceptual demands on the children, and it is difficult to see how the demands made actually facilitate understanding of life in a medieval monastery. For instance, one card has a suggestion (for some reason called a question on the card) that the child makes an inventory of their own classroom or bedroom and set it out medieval style. Then what — nothing! There is enormous scope here for bridging cultural gaps. Why weren't the children asked to draw up at the same time, an imagined inventory for one part of a monastic community? This could lead to very interesting speculation about the differences and similarities. Perhaps the relationship could have been between the educational aspects of a monastery's life and the educational experiences of the children. (That educational aspect is, incidentally, something missing from this pack).

The second pack contains five units, each one related to a particular monastery site in the Shropshire area. Each unit contains a printed card folder and a number of children's work sheets (which may be reproduced for educational purposes). The general appearance of the folders is similar to the units in the other pack but with the addition of a photograph on the front. Each folder contains notes and a map of the site. These folders are more successful than the units of the other pack, possibly because the aims are a little simpler. On the whole the activities suggested would get the children looking carefully at the buildings and thinking about their uses.

Taken together these packs should help a child increase its knowledge about monastic life and the sites; in this respect they could clearly be of some use to a teacher. However I am less confident that they will increase understanding and I suspect that teachers aiming for understanding rather than just knowledge will have to do a great deal of work to supplement these packs.

Nigel Hall

Projects and Designs in Metalwork

Ian Punter
London: Batsford Academic and Educational,
1981, £4.95

The aim of this book is, 'to present a programme of practical work leading to the standard required by the C.S.E. and G.C.E. craft syllabuses, with metalwork as the main study'. There are some eighteen projects which include a bracelet, a wall

hanging bracket, plastic handled tools, a knife fork and spoon, scrolled book ends, candle holders, a side table and a desk lamp. All of the projects are presented in the same way, i.e. aims, a brief, requirements and procedure; a diagram of the basic form follows together with other possible related design ideas. At the back of the book is a comprehensive appendix which covers all of the processes needed to carry out the projects.

For teachers in need of ideas for practical work, this book should prove beneficial. Each of the eighteen projects builds up into a structured course, for they have been specially chosen to embrace a certain skill, material or process, or a combination of these. The author is a practising teacher and is obviously sympathetic to the present economic climate in that the projects have been kept small. He is also sufficiently realistic to point out that the choice of project will depend on the facilities available together with the ability of pupils involved; I am sure that there is something in this book for a great many teachers.

Many teachers avoid design and give pupils set exercises, while those at the other end of the spectrum set pupils open ended problem solving situations. This book places emphasis upon design and problem solving but at the same time presenting it in a carefully structured way. As well as incorporating a particular technique or process which is needed to be introduced, learned or practised, the pupil is encouraged to make decisions which have some control over the final form of the work. With each project, the pupil's decisions become more and more important and have greater influence on the form of the work. This, for many teachers, is a sound way of teaching design.

As well as the general layout of this book, its other great asset is the drawings. The line drawings which accompany the text are excellent. They are bold, explicit and are of exceptional clarity.

In conclusion, although the projects are by no means novel, certainly the way in which the material has been presented is highly commendable and definitely worth inspecting for oneself.

Ray Bland

Color Science for Lighting the Stage

W.B. Warfel & W.R. Klappert
London: Yale University Press, 1982, £17.50

Theatre design courses in America encourage students to study stage lighting technique. This approach underlines the whole text of Warfel and Klappert's book, *Color Science for Lighting the Stage*. The book attempts to study the range of gels available by comparing brightness, purity and dominant wavelength of each gel. Close matches have also been listed enabling designers, lighting

engineers, and cameramen to recognise subtle differences between colours and to arrive at a clear choice based on scientific analysis. The interaction of two and more colours is covered as are changes in illumination.

The book will be useful for anyone remotely interested in this problem as it explains fundamental problems for the beginner and reaches many conclusions which will interest the most experienced lighting engineer. It is a helpful aid for negotiating the range of coloured gels currently in use.

Practical problems do exist and these are honestly recognised. Manufacturers do change dyes in gels resulting in inconsistencies. Also tests carried out under laboratory conditions are difficult to transpose to the pandemonium of a theatre. Ways to overcome these problems are suggested and the book will help to open up this field to a much wider audience. It will make lighting engineers more accountable and hopefully force manufacturers to an exacting standard of gel production.

A. Vargo

Scottish Technical Education Modules (STEM)

Heinemann Educational Books, 1981

Module 1. Woodcraft. 37pp.
Module 2. Metalcraft. 38pp.
Module 3. Working with Plastics. 38pp.
Module 4. Combined Craftwork I. 36pp.
Module 5. Materials. 18pp.
Record Book to Module 5. 30pp.
(£2.25 per pack of 5)
Module 6. Drawing 1. 60pp.
Module 7. Forces: An Introduction to Structures & Mechanisms. 36pp.
Record Book to Module 7. 24pp.
(£2.25 per pack of 5)
Module 8. Design & Making. 29pp.
Module 9. Drawing 2. 61pp.
Module 10. Combined Craftwork 2. 27pp.
Module 11. Designing for Craftwork: An Approach to Problem Solving. 17pp.
Teacher's Guide. 116pp. (£6.50)
Reproduction Masters. (£8.00)
OMNIBUS PACK comprising one copy of each module and one copy of each of the two workbooks (£9.00)

The Scottish Technical Education Modules (STEM) are the fruits of a major curriculum initiative which began in 1969 with a Working Party set up to 'consider the curriculum in technical subjects in the secondary school in the light of recent trends and developments . . .' (See *Technical Education in Secondary Schools*; H.M.S.O. for the Scottish Education Department).

A National Working Party and four Regional Working Parties were set up to work out a coherent modular syllabus and to generate and evaluate

a comprehensive package of teaching material for the age range 11 to 14 years. Following trials and modifications, the publications are offered as a resource from which individual schools can select and arrange as they think appropriate.

The Teacher's Guide serves both as an introduction to the overall project and as a detailed guide to the modules, listing objectives in each case and providing plans of campaign. Although each module is intelligible without recourse to the Teacher's Guide, the two are closely linked and it is necessary to have the latter in order to understand fully the modular scheme and the terminology used.

The Guide describes all modules as organised on a 'core plus extension plan'. All pupils are expected

to work through the core material and, depending on ability, one or more of the extension activities. These extensions thus have 'the very practical function of enabling teachers to pace the work of the class'. Teachers are also urged to 'use the inbuilt flexibility of this 'core plus extension' system to construct what could amount to individual courses for individual pupils'.

A rationale for module selection and course planning is provided, and this makes it clear that those who prepared the material envisaged it being used in a very flexible way. However, it is also stated that certain modules should precede others — and those with priority involve basic skills work in the form of tightly prescribed manufacturing exercises.

One is left in no doubt from the nature of the modules themselves and the contents of the Teacher's Guide that the principal focus throughout is on designing and making things. Indeed, the section headed 'Selection of Modules' concludes that the selection of modules should be biased towards those which provide the most opportunities for designing and making'.

The modules themselves are a fascinating mixture of what would now be described as relatively traditional craft work (Modules 1 & 2), and more liberal elements of design (Modules 8 & 11), technology (Module 7), graphics (Modules 6 & 9), and multi-media work (Modules 4 & 10). If one is selective, the complete package clearly lends itself to a number of interpretations ranging between 'traditional' and 'progressive', and in the current climate of sharply divided opinions about the nature of CDT, this can be thought of as either a great strength or a great weakness.

Whatever one's views of the balance of the entire package, there is certainly a large amount of excellent teaching material waiting to be extracted. The drawing modules, for example, add up to a very comprehensive treatment of illustrative techniques with as many opportunities for interpretation and comprehension as for drawing itself. The materials module, with its accompanying record book, is a fine introduction to materials; the content is carefully considered and — perhaps most important of all — it is presented in an appealing and interesting way. The same can be said of the Forces module and its accompanying record book, but it seems a pity that both are so brief in relation to the importance of the subject matter.

Together with the Reproduction Masters which enable schools to run off data sheets, answer sheets, etc., STEM represents a very comprehensive package indeed. To what extent the whole of it or parts of it might be thought useful depends very much on the prevailing philosophy in a particular department, but I would imagine there is something of interest here for everyone and it would therefore be worth examining the OMNIBUS set. Certainly, curriculum projects and publishing events on this scale are rare occurrences, and one can hardly afford to ignore them.

John Cave

THE BRITISH COUNCIL

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The course is designed for those involved in various aspects of curriculum development in technical education (as defined above) such as officers of curriculum branches of ministries or departments of education; staff of curriculum development centres; inspectors and advisers; staff in colleges of education, technical colleges, university departments of education; senior teachers. The over-riding qualification is that they should be engaged in planning and decision-making in the field of curriculum development in technical education.

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