

The Language of Design: Drawing on a Profound Resource

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Design education has made enormous strides in the past two decades. Many teachers and lecturers have sought to articulate the nature of the relationship that exists between the various components of designing activity. The wide scope of this activity today necessitates that the analysis is maintained. While bodies such as the Design Council and Sharing Experience in Engineering Design (SEED) have done much to present a formalisation of the process, there are serious gaps in our body of knowledge. One of these gaps concerns the role of drawing strategies in the design process and has inspired a current piece of research that received the 1987 bursary jointly sponsored by the National Society for Education in Art and Design and Berol Ltd. This paper briefly presents this area of concern and focusses upon drawing as the essential language of design. It proposes that education seriously undervalues the potential of this profound resource.

Increasingly, students of design are drawn from a variety of backgrounds. Established graphic skills can no longer be expected of a student population that may include undergraduates who have followed maths and physics 'A' levels, or mature students who bring a wealth of industrial or educational experience. It is a profound irony, however, that very few of those who exploit a graphic skill in the design process have been able to articulate its function for them. Whilst acknowledging its exploitation, many people involved in design activity appear unwilling or unable to define the particular advantages of employing graphic strategies.

The demands for clarification and development of the role of drawing within design have long been voiced but very rarely met. In a short article in *Design* magazine in 1979 Phil Gray, then design group manager of Loughborough Consultants proposed:

'... the skill of drawing is so low on the list of priorities in design education that people now have to be reminded that drawing is, after all, a fundamental element in the design activity.'¹

Colin Tipping in 1985, echoes this view, stating that a fluent sketching ability is 'the single most important

factor in developing any general design ability.'² Evidence of research or analysis into the importance of this activity is, however, thin on the ground. It has been nearly fifteen years since Professor Bruce Archer proposed his three language model of education, in which drawing was identified as a fundamental component of the wider language of Modelling.³ The relationship of drawing to the modelling of ideas has received little subsequent attention from designers and design educators. Perhaps it is the immense scope of drawing that stifles a clear articulation of its function. Not only can it be employed to communicate precise intentions as in a technical or scale drawing, it can encompass mood and feeling. It may also be exploited at the very earliest conceptual stages. Between these extremes, drawing can provide a profound and diverse resource. Perhaps the variety of graphic strategies employed across the breadth of design activity has acted as a barrier to an understanding by those unfamiliar with drawing. Similarly, this variety may be seen to have hampered its translation and articulation into natural language by those designers in a position to do so.

Of the two extremes it is perhaps the communicative role of drawing that is best understood. An examination of the bookshelves presenting resources for graphics in design reveals a heavy emphasis on the clear and precise transmission of intention from the designer to the observer. While British Standard 308 represents a formal codification for communication via drawing, skills such as the control of perspective, the representation of materials and the development of effects with a variety of media are often presented solely for the achievement of a three-dimensional illusion on a flat sheet of paper. For many designers a great deal of activity can take place before there is any requirement for communication. What the bookshelves lack is an examination of the functions of drawing during the variety of stages that comprise design activity. These stages may necessitate skills in the manipulation of information or require particular perceptive abilities to 'see' new possibilities in old information. It is the role of drawing in assisting these skills of manipulation and perception

that has received little analysis.

The manipulative skills refer to a group of cognitive and physical abilities concerned with the rearranging and transforming of information in an act of deliberate and planning creativity. The perceptive skills may be viewed as those abilities for the seeing or reading or concepts beyond that which was intended through any given act of drawing or writing. For a variety of reasons the types of drawing promoted in many books of graphical communication are not always appropriate. Designers will exploit a range of graphic imagery to suit the particular requirements of that stage of the design process.

Speed is often essential. In the time taken to laboriously construct an image on the page, dozens of amendments may have been thought of and lost. It is these modifications, ideas and flashes of inspiration that are important — not the drawing on the page. The drawing should act as a visual record, freeing the mind to progress onto further developments. A fluent sketching ability facilitates this capturing of elusive ideas but it may only come about after extensive practise of drawing from life. Potentially, this use of drawing is available to everybody, but it is those with a developed proficiency who can exploit it fully. That is, those who have been encouraged to draw frequently achieve both speed and accuracy that facilitates evaluation and allows others to share in the rapid conceptual movement. Further manipulation may be inspired as a direct result of just such a drawing strategy.

Figure 1 presents an A2 format page from a recent project of a student in his second year of the Design and Technology degree course. The drawings have been made with speed and economy in the development of this DIY masonry grinder. Relying for the most part on a simple blue ball-point pen the student reveals a control of perspective and efficiently communicates his deliberations. The images serve their transitory purpose and are not overworked.

It may appear that this reporting facility of sketching is sufficiently important in design activity to warrant its inclusion and development. However there is an equally important function

for sketching, that, when exploited in conjunction with that described above, transforms it from a graphic strategy into a profound designing tool.

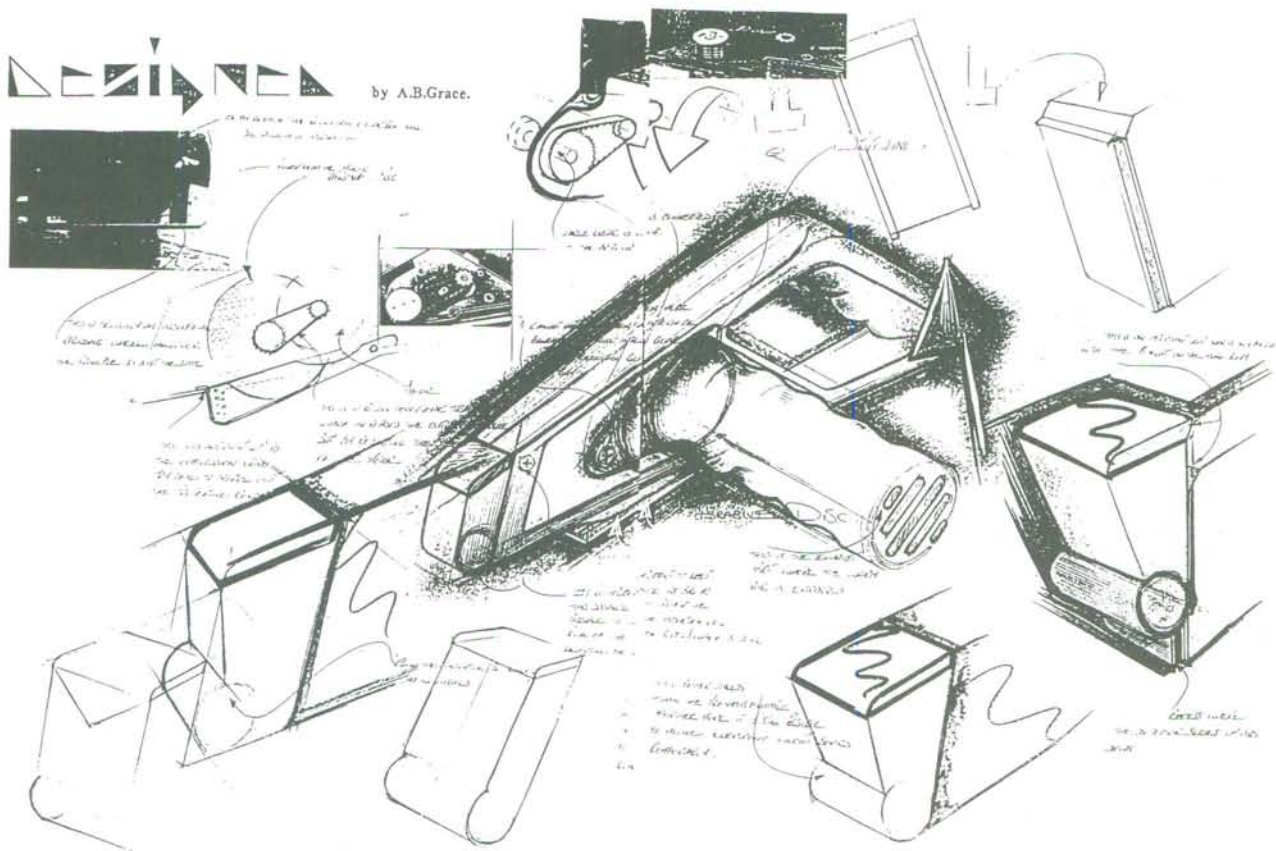
The twentieth century has seen the publication of a wide variety of psychological studies. Authors such as Vernon, Arnheim and Gombrich have sought to explain the mechanism of the mind but in reality we still understand very little about the perceptive ability of the human brain. The relationship of perception and graphic strategies is consequently an area of debate. However recent studies by the author have uncovered many examples where designers have promoted the perception of design issues and development through deliberately ambiguous graphic strategies. The ability to present the mind with ambiguous information would appear to be a fundamental capacity of drawing. Although this strategy is dependent on the ability of the designer to 'see' more than is intended, that is, he or she is able to employ higher conceptual abilities, it does appear that a variety of people

from sculptors to engineers have found some success with this procedure.

Figure 2 presents a design sheet from another second year student at Loughborough. The images are employed in a different way to those in figure 1. Instead of merely reporting the outcome of conceptual development the drawing has become part of the development process, actually provoking interpretation. A deliberate attempt at ambiguity can be identified from an examination of the graphic strategy. Images are overlapped while line weight and quality constantly change. This encourages changes in perception as the sheet develops. Details are examined alongside product concept, each feeding off the other. It is a graphic strategy that encompasses both convergent or focussed thinking and wider, divergent modes of thought but it is not without its dangers. Freedom and creativity must be tempered if evaluative strategies are to be brought to bear on the proposals. A return to communicative drawing such as scale or perspective images can

facilitate this and may often form the focal points of the sheet. The annotation forms an important subsidiary element to these creative and evaluative strategies.

In a very laboured model of this activity drawing could be used in a personal or ideosyncratic fashion to assist the individual to re-present information, assess relationships and requirements, or to prompt self-questioning through ambiguity. The outcome of this activity may vary between indecipherable scribble to accurate drawings. Subsequently this information could be redrawn by exploiting skills of communication and which allowed others to understand or partake in further development. However it is when these two strategies are merged that real benefits can be seen. When a student can personally manipulate information by exploiting confidently, an ability in a range of graphic skills the resultant work is often more thorough and more appropriate than earlier endeavours. It can be seen to communicate information effectively



allowing evaluation and assessment while at the same time providing a deliberately ambiguous platform aimed at exciting further development. Good design education has always tacitly acknowledged the value of drawing, but there are a number of historical reasons why it does not receive a more vigorous promotion today.

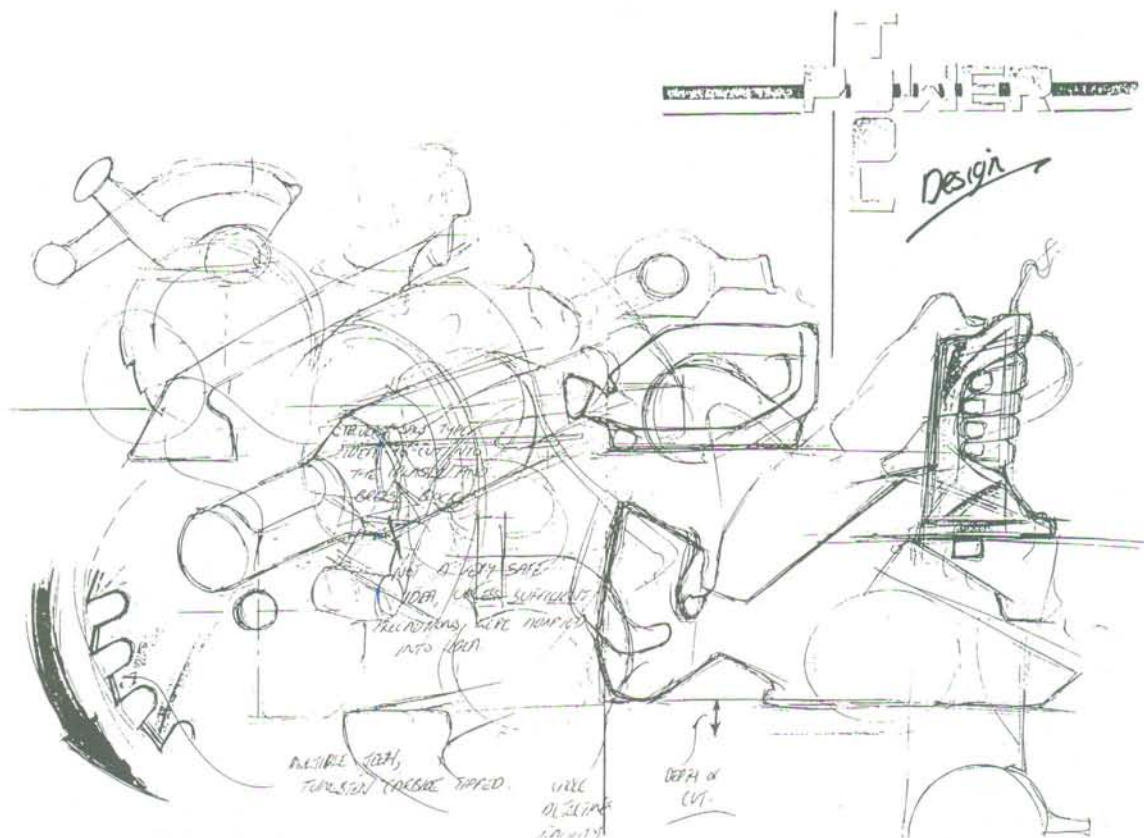
Graphical Communication has long been valued in schools where its contribution to many areas of the curriculum has been noted. In 1965 Balchin and Coleman identified the ability to communicate relationships in a manner other than by words or mathematical notation.⁴ They termed this ability Graphicacy and although the initial intention was to identify its role within the geographical sphere of the school curriculum, it has had a much wider influence. Contributions to the definition and application of this ability have come from many quarters including Brazil⁵ and Barratt⁶ who indicates the essential role that art education has to offer in the development of this ability. Boardman⁷

argues that it is the responsibility of a number of areas of the curriculum to ensure that each pupil has a basic competence in graphicacy in the same way as they may reinforce skills of numeracy, literacy and oracy. Inter-departmental collaboration along the lines advocated in the Design Council report on Secondary Education of 1980⁸ progressed this understanding but it is the rapidly developing subject area of CDT which is providing a new focus for the promotion of the skills of graphicacy.

Those active in the area of CDT have attempted an untangling and an articulation of the matrix of activities discussed earlier. While some aspects are well provided for, it appears that the skill of graphicacy and the role of drawing are widely undervalued. The reasons for this may have much to do with the roots of design education in this country. Traditionally those entering design institutions would have developed strong graphical skills at school or on 'Foundation' courses. There was, therefore, very little need to

provide a rationale for these and attention has been focussed onto alternative aspects such as material, production or marketing knowledge.

However, the subject of CDT requires informative resources for both teachers and students, that do not assume any of the foundation skills established through traditional Art and Design education. The breadth of any CDT course heightens the necessity for a language with which one can not only communicate, but which also can stimulate the manipulation of such concepts. Students of CDT need fundamental advice on the relationship between drawing and thinking. They could learn much from polytechnics and colleges of Art around the country who have done much to present this relationship. In schools, O and A level students of the subject could benefit immensely from studies that examine the potential of drawing but are instead offered a limited range of representational tips and tricks. The danger in presenting such resources to young designers lies in their deliberate



emulation of drawing styles rather than their exploitation of the underlying strategy.

Young children can produce wonderfully creative drawings that reflect their enthusiasm and vitality. The resources presented to them later on in their school life can stifle this by apparently valuing only a prescriptive and stylized model of 'correct' designers sketches. There is a need for students to be made aware of just how diverse this area is.

It is some indication of the importance placed upon drawing strategies that the industrial design professions and post-eighteen design education system have continued for so long to recruit those students with proven graphic abilities. Their skill is seen to extend beyond the ability to observe and record the known — it is an invaluable tool with which to explore and manipulate the unknown. Whilst there have been occurrences of shallow design ability being masked by a slick and persuasive graphic ability, most students have furthered their designing ability by developing unassuming and appropriate drawing skills. In a profession where dialogue is vital, skilful graphical communication can provide the confidence essential to all activities.

Drawing is *the* device by which one can heighten and develop perceptive skills as well as record ideas. It is for this reason that design courses look for those students with artistic talents in addition to practical and technical skills. Traditionally these courses extended this ability by subjecting design students to considerable periods of analytical, recording and observational types of drawing. Contemporary CDT courses are hard pressed to find time in a crowded design programme for the development of drawing skills. More to the point, the deficiencies in teacher training in terms of inadequate appreciation of drawing and lack of resources, result in school children receiving very limited development of their graphicacy.

Drawing is a tool, albeit a valuable and fundamental tool, that should be considered as a natural extension of the mind. In addition to assisting the brain manipulate and understand information, it can communicate

complex relationships concerning form, proportion, texture and colour. In schools we often encourage children to exploit design drawing as a means of recording their manipulation, not as a tool to excite the manipulation itself. Although this may facilitate evaluation by the teacher, the pupil may not experience the extending capacity of drawing during any designing operation. The excitement and spontaneity of images is rejected in favour of laboured and sterile 'pictures'.

In addition to the necessary control of formal graphic skills, drawing for design involves a personal response to analysis. Great care must be taken when promoting the work of those who have an acknowledged skill in design. As has been stated, the danger lies in teaching students of all ages to understand the product and not the process. The design teacher must be aware of the distinction between a graphical proficiency and conceptual movement, in terms of design development. Ideally each individual should be encouraged to grow in both areas. The confidence that comes from graphic ability can provide the perfect psychological platform onto which further skills can be based.

Drawing gives satisfaction, breeds confidence and promotes an inquisitive approach. It provides the opportunity to visualise and wrestle with concepts — even to change the world on paper. In many instances children and students will be encouraged to extend their knowledge and apply skills acquired in other subject areas. Drawing for design awakens latent creative talent in many, the opportunity to do so must be made available to all.

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What is needed is an integrating factor to place technology within a context that children recognise as being relevant and which develops those areas of group work and identification of the appropriate technologies to use. We need to adopt a tripartite approach to technology in which the two approaches (a and b) covered above are strengthened and developed by the concept and practice of Group Task Management.

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