GRAPHICS AS COMMUNICATION

3.1 INTRODUCTION

The proposition in this chapter is that *Graphics* could be an effective way of communicating with and illustrating patterns for designers.

This chapter analyses the requirements of graphic thinking, and attempts to show the way architects visualise designs. As shown in the review of Ching (1979), graphics should explain and communicate, should bring out that which is perceived as obscure, should enhance the apparent features of design ideas.

The design patterns must be inspirational, but to assist a designer effectively, they should be open-ended (Lasseau,1980) - inviting and fostering participation.

The aim of this chapter is to find a way to expose the designer to elements and ideas in a systematic, graphic way which will clarify certain images that have been obscure and will communicate the interrelatedness of others. Images and ideas familiar to designers are analysed from different perspectives. The purpose of an appropriate design tool should be to inspire, to familiarise, and to scan across ideas in a systematic way.

Graphic symbols communicate ideas more effectively than most other ways of communication. Children are exposed to flash-cards at school in order to learn elementary reading and writing. Graphics are used in public buildings to communicate the functions of and directions to facilities. It is also used to communicate computer operations through user-friendly icons. The more simple they are, the more user-friendly. A person without much computer training can learn to use a computer extensively through 'icons'- graphic symbols and by pressing a button that will perform an operation.

Architects and designers are graphic thinkers. They are taught to think on two-dimensional and three-dimensional planes. They look at forms, buildings and space differently, as an artist looks at colours and light and composition. These perspectives have to be widened and analysed to bring out the best in the designer's potential.

Exploratory thinking is what is required from a designer. He or she should explore many possibilities, hopefully discovering new ideas to put together a good end product. To explore, to discover one must realise that one cannot see everything yet, that the vision has to expand, be developed, be thought through, and be allowed to grow and be fertilized by more ideas. Design in architecture does not consist only of the first idea. Many promising initial concepts have been spoilt by not thinking them through.

Exploring ideas and possibilities is a process: the designer has to start walking, has to start to look and see:

- the site,
- the restrictions,
- the brief from the client,
- possibilities of form,
- the context.

This chapter attempts to show how open-endedness (in Laseau's terms) can invite participation, can fertilize ideas while keeping the designer aware of the possible restrictions. The design process is about alternatives. The design-assisting tool should meet the challenge to help designers choose correct alternatives at the right time during the design process. The grouping of design patterns has to be systematic and logical, but allow the user flexibility of personal preference.

3.2 BASIC GRAPHIC ELEMENTS FOR ARCHITECTURAL DESIGN

The basic elements in graphic communication of design in architecture are listed and illustrated by Francis Ching in Fig 3A on the right: *point, line, plane and volume*. Dimensions come into focus: one-dimensional, two-dimensional (2D) or three-dimensional (3D). Patterns can be illustrated by means of 2D or 3D graphics.

The vocabulary of architects in 2D drawing consist of: plan, elevations and sections, and diagrams thereof. For some aspects of design, for example proportions, it may be more relevant to use 2D than 3D. The design of elevations can best be illustrated through 2D planes, whereas site aspects could have 2D and 3D input. 3D views include isometric and perspective views.

The aerial perspective view may have some value in expressing form , for instance where a pedestrian perspective view could have value in relation to scale and context. These elements of graphics are the basic means to communicate design patterns. The way that architects seem to visualise and think about design is analysed in the further sections of this chapter.

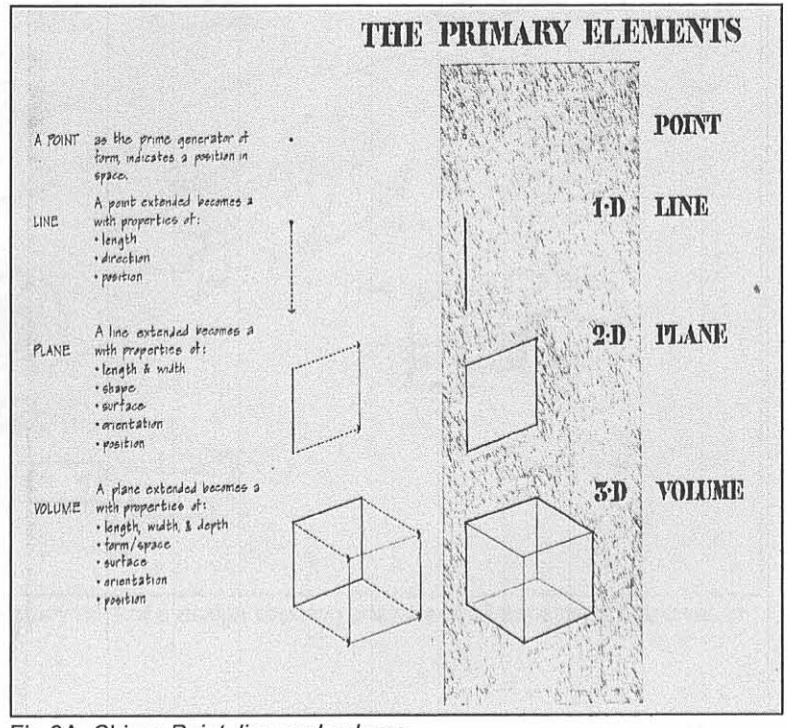

Fig 3A Ching: *Point, line and volume.*

3.3.1 PARTICIPATION AND EXPLORATORY THINKING IN THE DESIGN PROCESS:

Exploratory thinking by means of graphics is usually illustrated through case-studies. The following page shows graphic case-studies by Laseau (1980 : 85-87) which illustrate the aspect of participation in and exploration by the designer (Fig 3B, 3C, 3D). Basic choices in three different design approaches are analysed. The graphics vary between site plan, plan, diagram and sections and between 2D and 3D illustrations, and form a total picture of design-problem analyses. The graphics are inviting and show exploratory thinking. The designer is boldly sketching the different possibilities and their implications.

The three case studies are good examples of how a specific design can follow different approaches and how each has its implicit or explicit constraints and principles that shape the outcome of the design.

The design options are analytical and will have to be merged to form a design solution. This process illustrates the importance of decision making in design Influenced by priorities.

However, the diagrams are not always very clear. The graphics could have been better annotated or some keys provided to explain the various graphic elements. The user should understand the graphic language or keys clearly; there should be no room for misinterpretation.

The sketch-type analysis gives the drawings a sense of being preliminary and assists the thinking related to the development of a design.

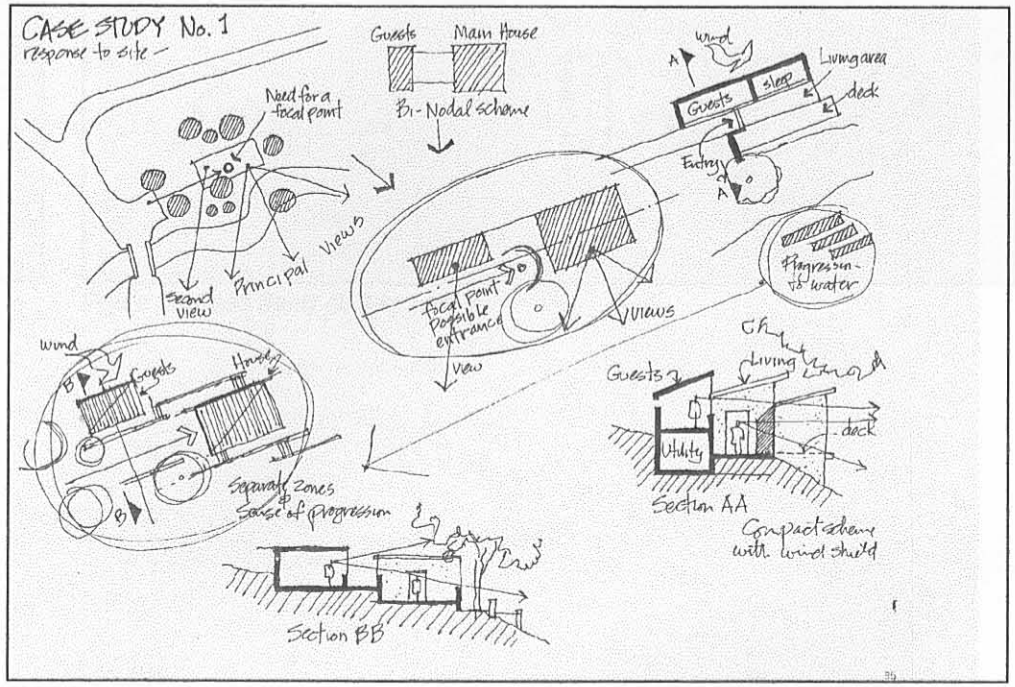

Fig 3 B *Laseau* : Case study no 1 of a design showing analysis of all aspects of response to the site

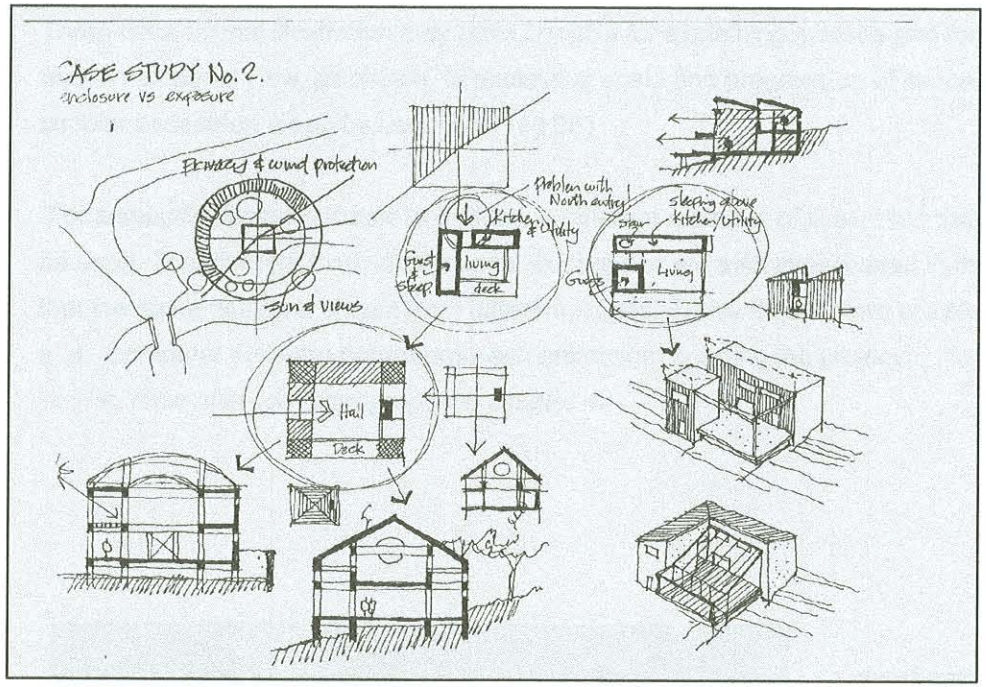

Figure 3C *Case Study no 2 by Laseau*

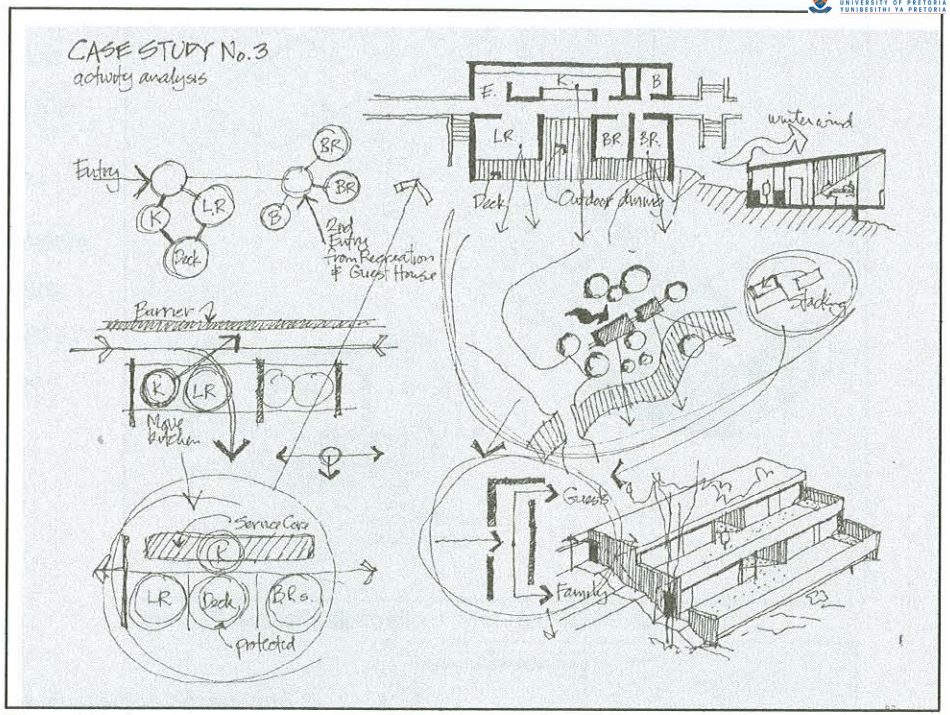

Figure 3D *Case Study no 3 by Laseau*

Three-dimensional illustration may have benefits for explaining masses and form when used in an aerial view, as shown, or explaining scale and progression of space as in the circular pedestrian views by Leon Krier (fig 3F)

For a specific design principle any of these different methods of illustration may therefore be used. The different three-dimensional illustrations are also inter-related in the sense that the same design is shown from different angles. Today these views are all possible in a 3D-Computer software programme with animation, bringing the project to life for the viewer. *(See also computer graphics, chapter 4.)*

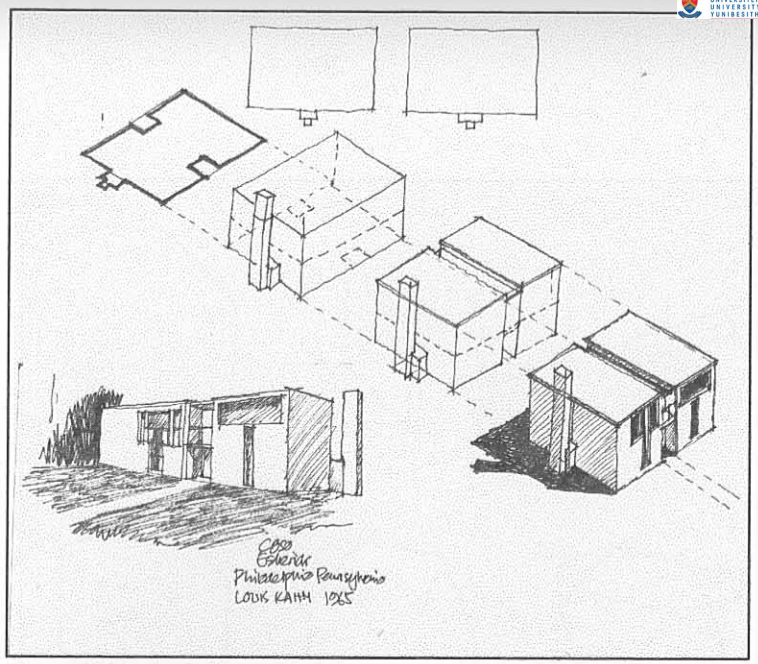

Figure 3E Author's illustration: from *House by Louis Kahn*

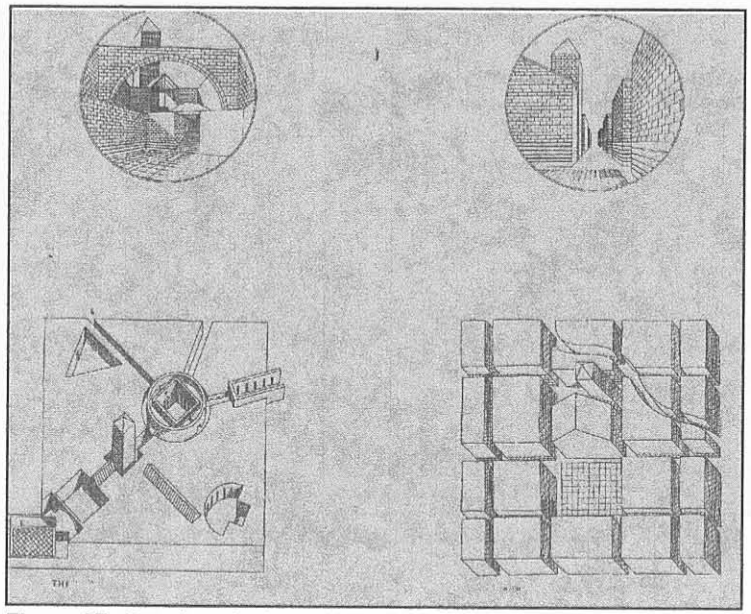

Figure 3F *Drawings by Leon Krier*: Pedestrian and aerial views

In investigating the illustration of design patterns graphically, the sketches to the right (figs 3E & 3G) were done to provide a better understanding of how pedestrian or aerial views can be used to effect.

The sketch of a simple house on the right shows the plans of two floors and the two views illustrate patterns of:

- *form (additive)* for the isometric view,
- *approach to the entrance* for the pedestrian view.

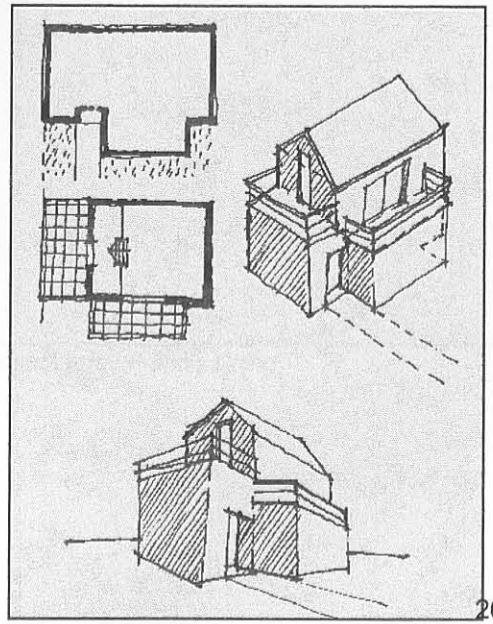

Figure 3G Author's Illustration: *pedestrian*

A progressive graphic development such as illustrated in fig 3J by Ching is needed to show how the design is developed and a form is transformed. The method of giving a progressive 3D-view of the cube and how the new form is derived and developed is very successful.

The elevation studies by Leon Krier in Fig 3H again show progression and development in design, a study to show how the urban street can be transformed. They illustrate scale, proportion and style and show a process of transformation. The graphics need only some explanation and very little annotation. They show how a large scale street-block can be transformed into several buildings with arcades and avenues. The different stages in the development of the design are portrayed.

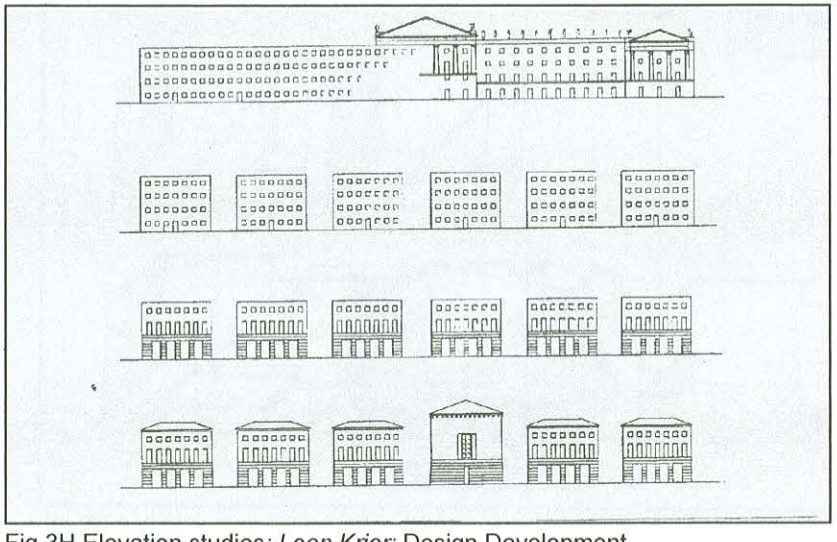

Fig 3H Elevation studies*: Leon Krier:* Design Development

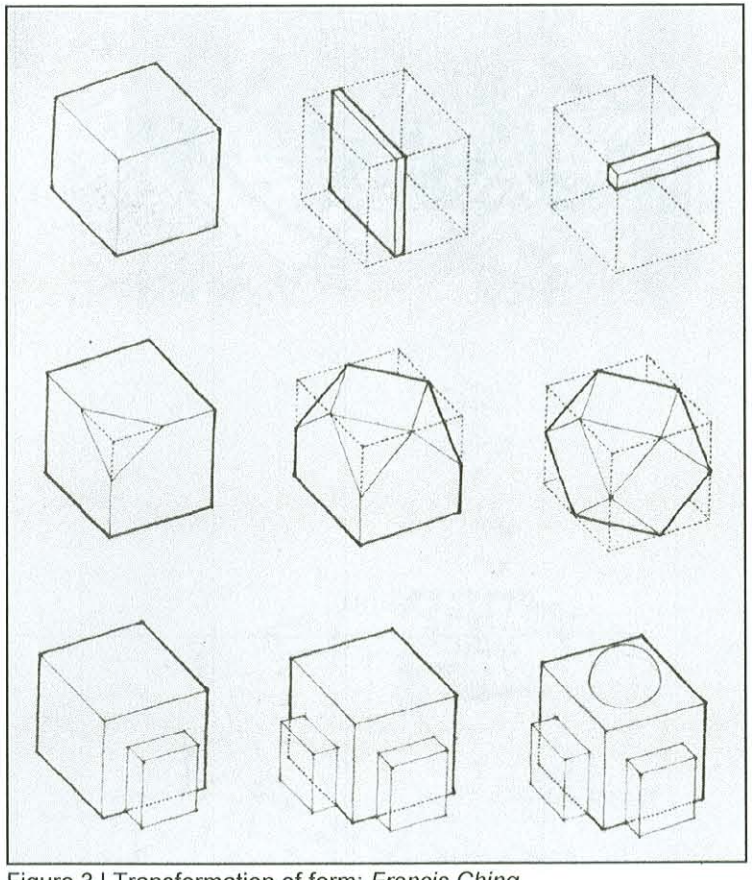

Figure 3J Transformation of form: *Francis Ching*

The following sketches were done to investigate the manner of illustrating the development or transformation of design forms:

The figure below, 3K, shows aerial views of two forms from cube, cut-out and add-on to the final design concept.

Fig 3L to the right shows isometric views developed from plan-form, elevations and site layout. (See also fig 3M, where this same design concept was analysed further.)

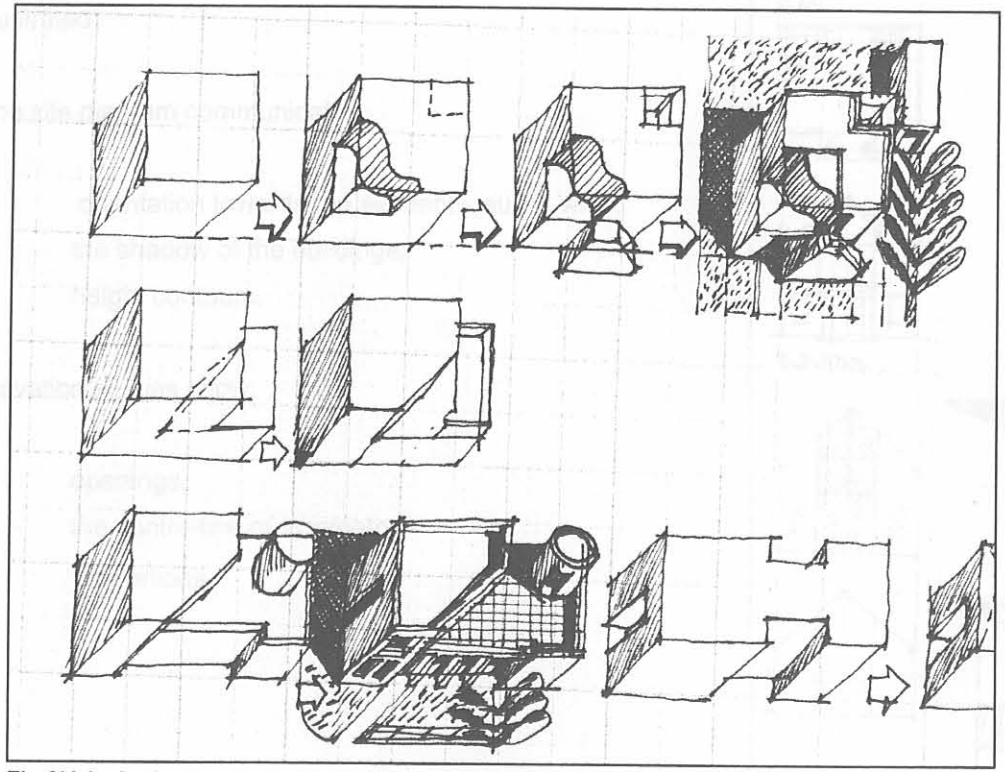

Fig 3K Author's sketch illustrating the development of form to a final design.

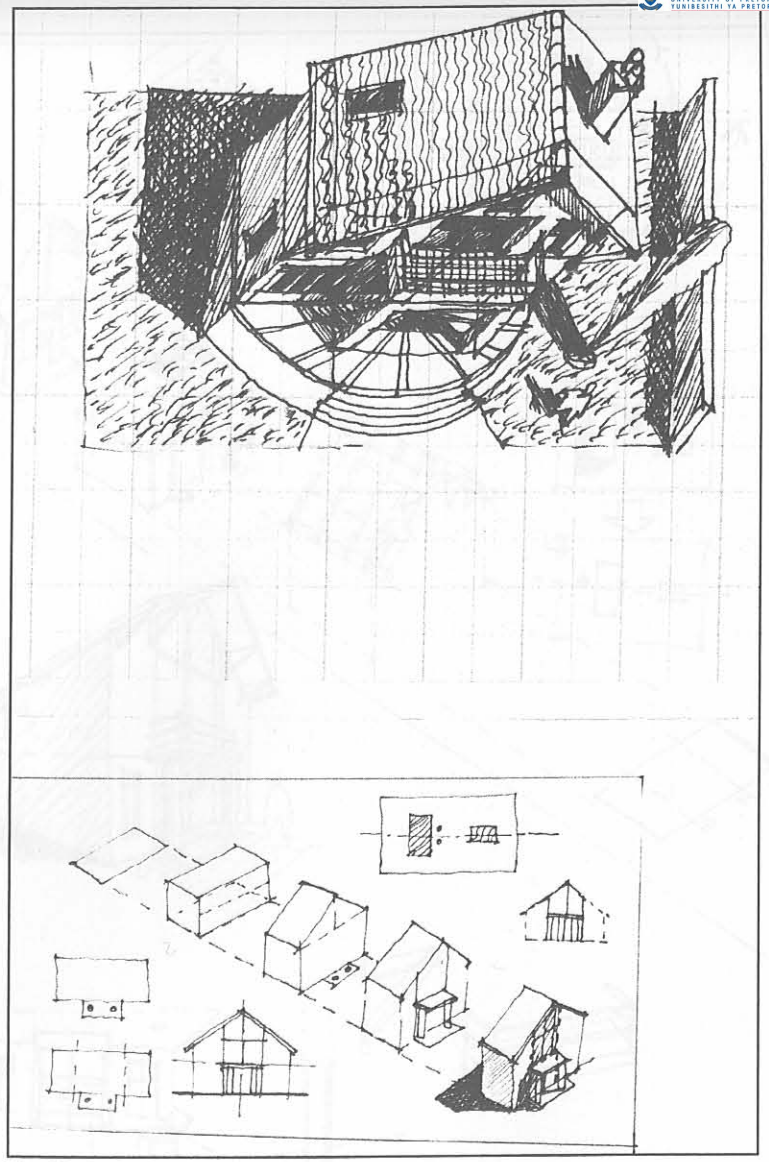

Fig 3L Author's sketch
above: final design,
below: development of the design

The sketch to the right illustrates how a pattern can be shown in all 3D-views, in 2D-views and in exploring the development of form and structure.

The diagonal axis is an isometric projection showing elements of the forms used. The development of the design is thus illustrated.

The site diagram communicates :

- orientation towards the elements: sun & wind,
- the shadow of the buildings,
- height contours.

Elevation studies show:

- openings,
- the centre-line of symmetry,
- proportions.

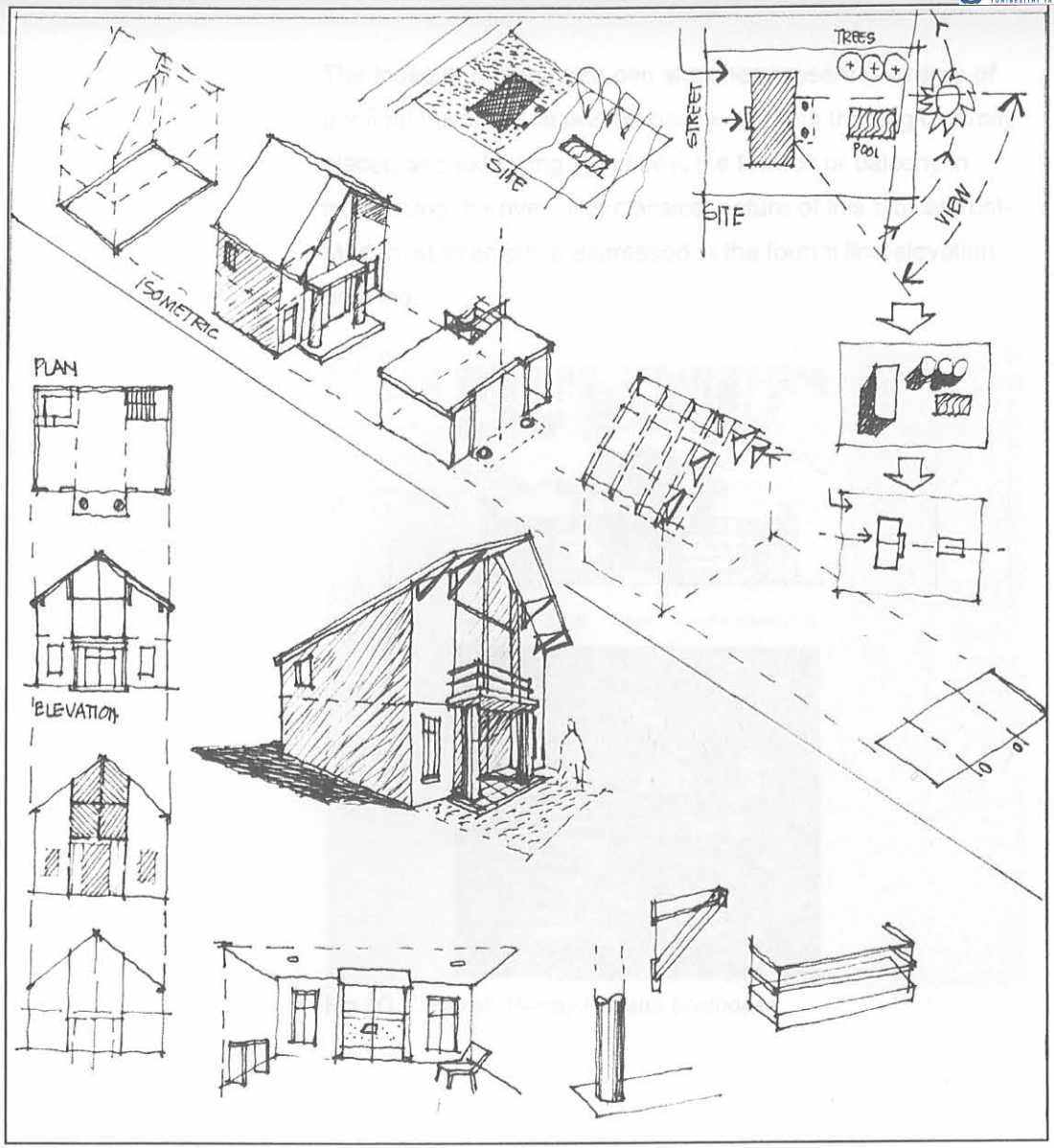

Fig 3M : A possible typical pattern/case study illustration (author's sketch)

The following example of design development (Fig 3N) shows the design conceptual sketches of the Henley Regatta Headquarters by Terry Farrell. The preliminary line sketches illustrate the development of the concept and proportions. The final line drawing (Fig 3O; top-right) is a sketch plan indicating the final elevation as viewed from the river. The photograph (Fig 3O; below) shows the project as built. In illustrating design patterns or case-studies the chronological phases of presentation and realisation can be presented as shown.

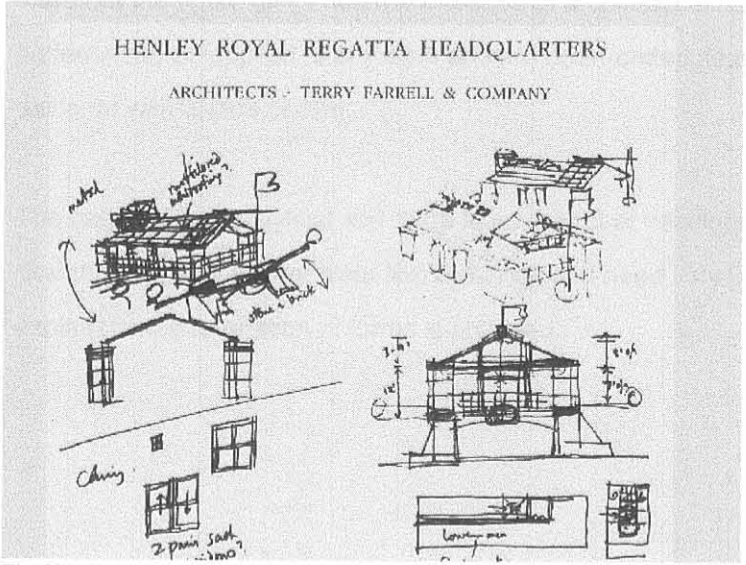

Fig 3N *T. Farrell*: Sketches of Henley Regatta Boathouse

The loose thumbnail size pen sketches present elements of the final building: the angled base-walls with the flag centrally placed and exhibiting symmetry, the terrace or balcony in front facing the river. The classical nature of this typical Post-Modernist example is expressed in the formal line elevation drawing.

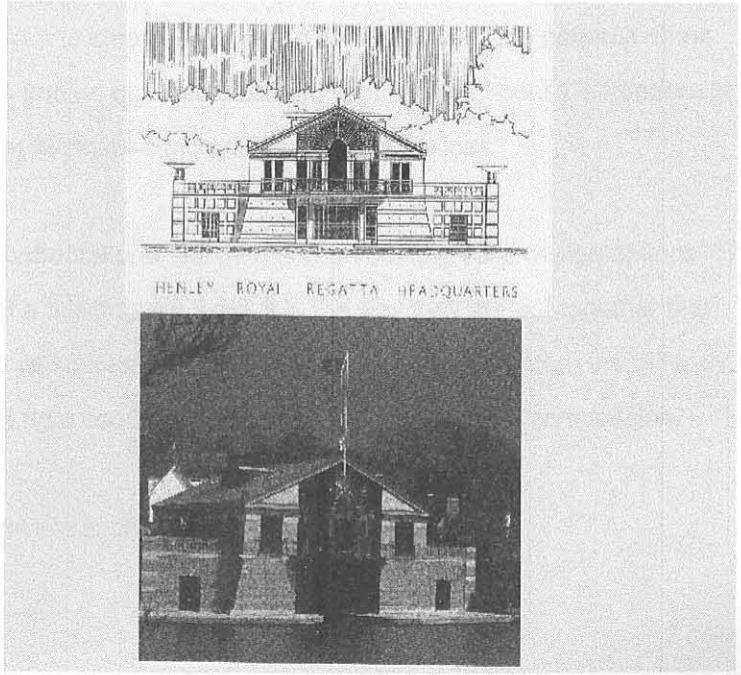

Fig 3O *T. Farrell: Henley Regatta boathouse*

3.3.5 *OPEN-ENDEDNESS IN DESIGN (ILLUSTRATED)* :

Thomas Thiis-Evensen uses *the floor, roof and wall* in architecture to investigate archetypes that provide open-ended patterns to architects. This is shown in fig 3P on the following page.

The patterns are not shown in relation to the rest of the building and therefore the figure gives no style or sense of architectural language. The patterns can be applied to any style and are open-ended, leaving the designer with a wide choice.

The patterns are analytical and there is an aspect of development of the design. The graphics are clear line drawings and need very little explanation. Interrelation of forms is provided.

The freedom from style and language suggests many alternatives. There is an exposure to ideas - exploration should follow. The patterns show possibilities and do not prescribe solutions. They respect the freedom of the designer but inspire thoughts and throw in ideas.

They are confrontational but gentle in presenting valid design options. The elements of a building are fixed: it is the way they are put together that determines its success, as good musicians will put together the different notes in the right sequence and rhythm to form a great composition.

(See also review in chapter 2, section 2.2.4)

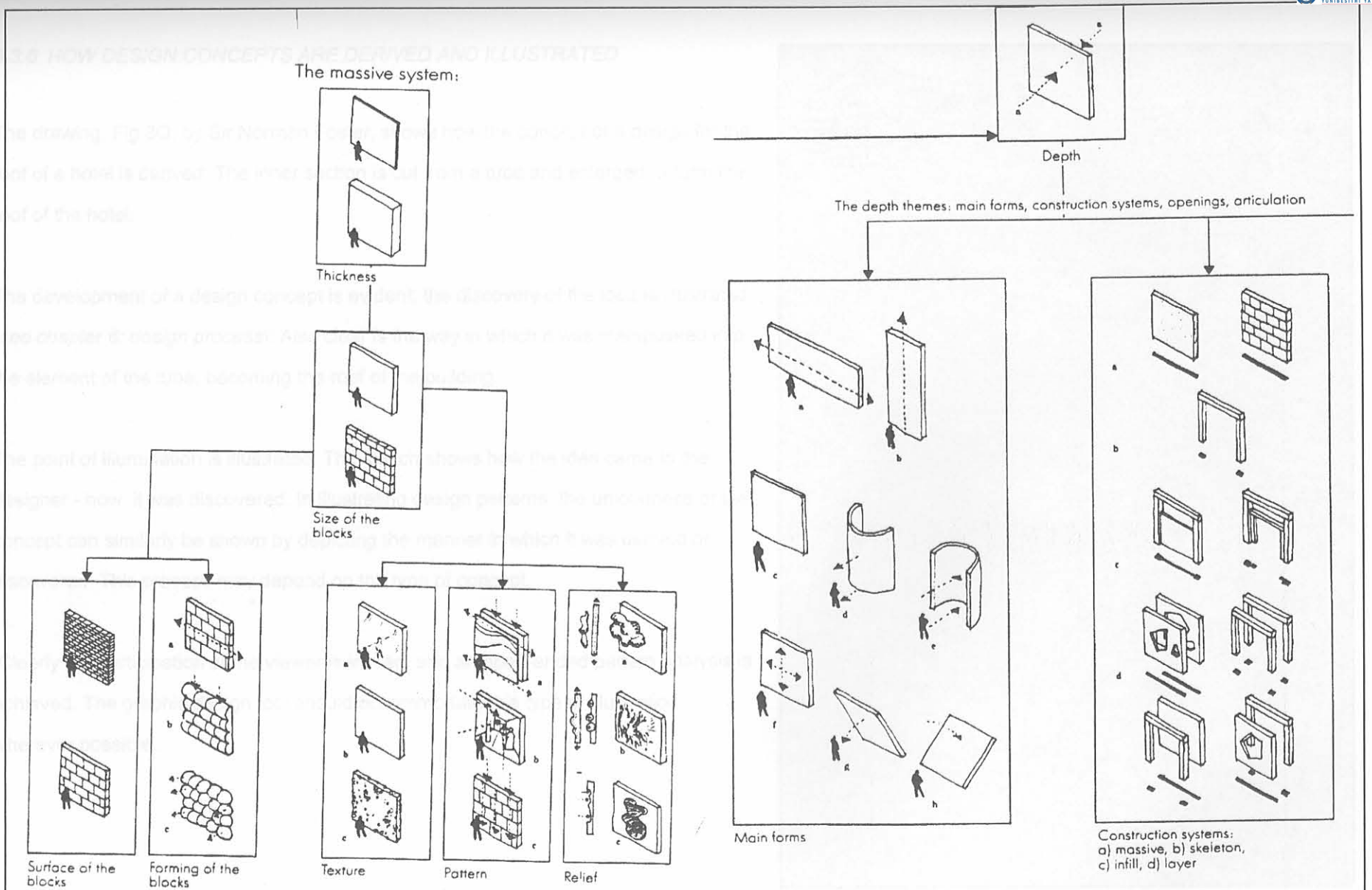

Figure 3P *'Wall experiences'* from *Archetypes in Architecture*: *T .Thiis-.Evensen*

3.3.6 HOW DESIGN CONCEPTS ARE DERIVED AND ILLUSTRATED

The drawing, Fig 3Q, by Sir Norman Foster, shows how the concept of a design for the roof of a hotel is derived. The inner section is cut from a tube and enlarged to form the roof of the hotel.

The development of a design concept is evident: the discovery of the idea is illustrated (*see chapter 6: design process*): Also clear is the way in which it was manipulated into the element of the tube, becoming the roof of the building.

The point of illumination is illustrated: The sketch shows how the idea came to the designer - how it was discovered. In illustrating design patterns the uniqueness of the concept can similarly be shown by depicting the manner in which it was derived or discovered. This process may depend on the type of concept.

Clearly the participation of the viewer is invited, and an open-ended pattern analysis is achieved. The graphic design tool should accommodate this type of illustration wherever possible.

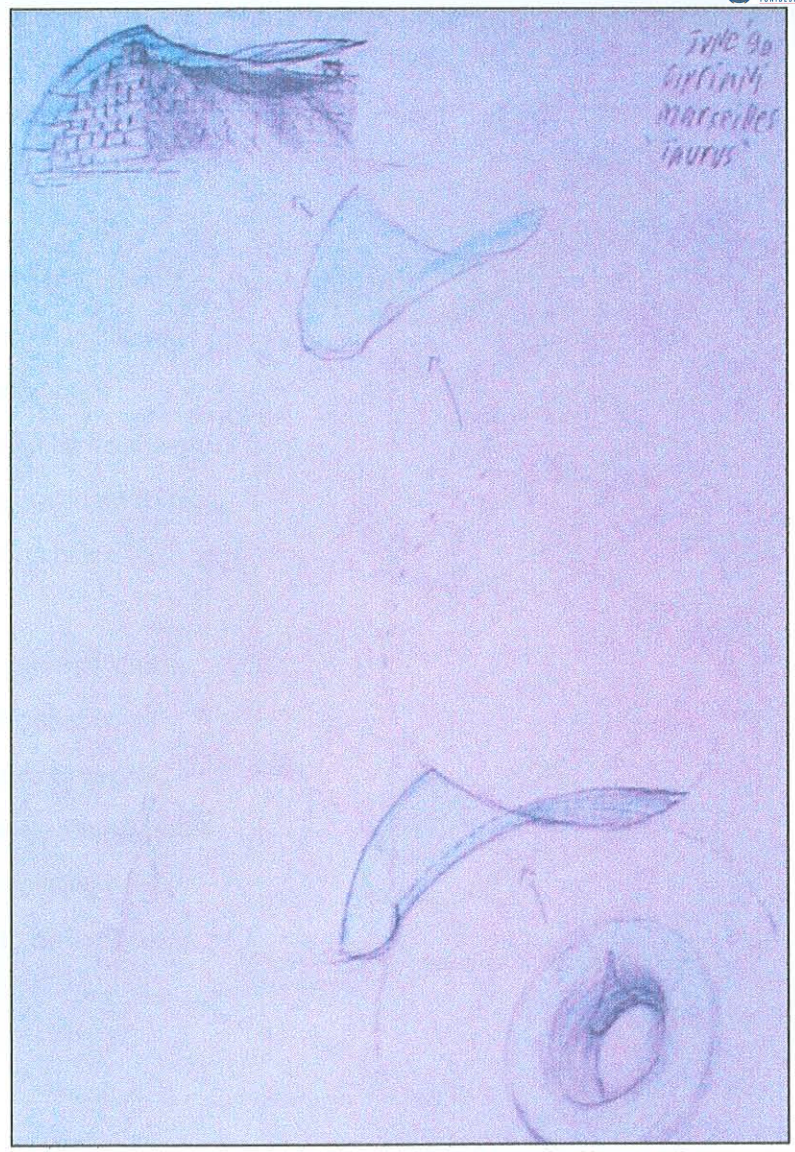

Fig 3Q Design sketch for roof of hotel: Marseilles *Sir Norman Foster*

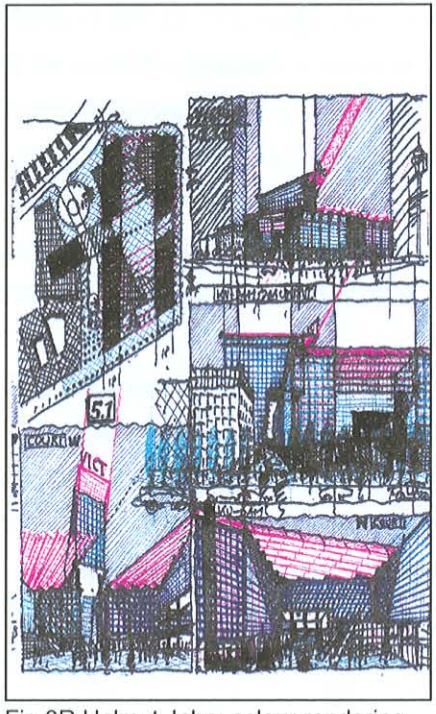

Fig 3R Helmut Jahn: colour rendering of *Victoria, Berlin*

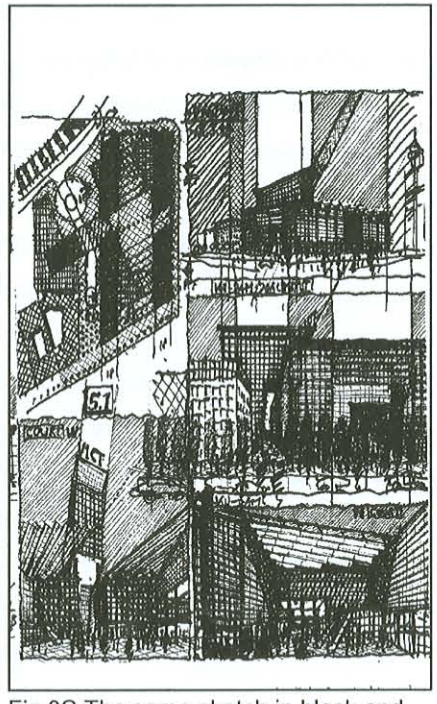

Fig 3S The same sketch in black and white

Two illustrations of a conceptual sketch by Helmut Jahn are shown in Fig 3R and 3S. The impact of colour in communicating a design idea is clearly illustrated. The colour sketch shows what difference colour can make in illustrating a design.

In Fig 3T colour is used in a illustration to highlight important elements in patterns. The grid or modules are here shown in thin red lines; shading is expressed by hatching and the paved areas by the grid (in blue).

Colour communicates more information - it expresses elements separately, thereby more clearly defining what is meant to be expressed.

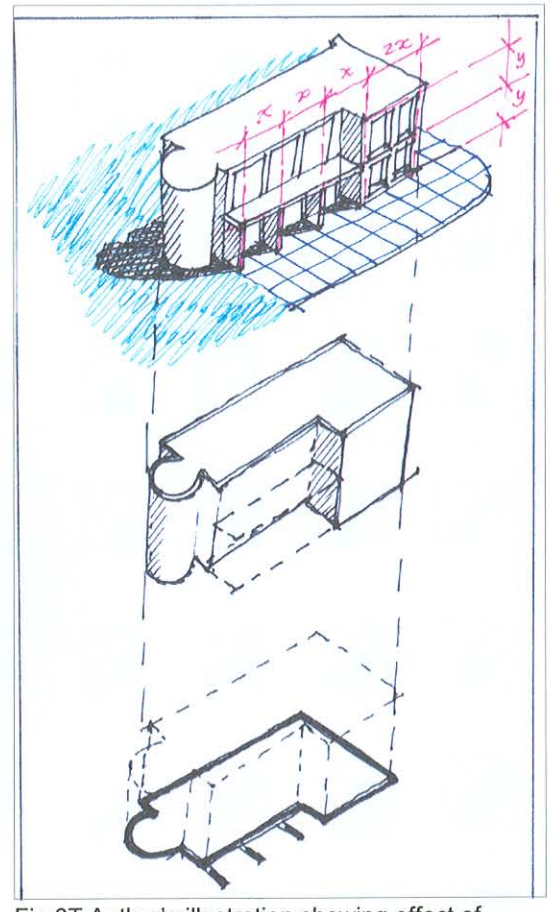

Fig 3T Author's illustration showing effect of colours.

Porter (1979:72 - 73) wrote about *'concepts in motion '*:
'If we want to appreciate a concept fully we need to experience it from all sides and at all angles, turning the object in our mind before its transfer and subsequent articulation in graphics. For the purpose of an animated perception, varieties of isometrics and indeed, perspectives are employed - their frames of reference or vanishing points being mobilised through sequential drawings which assess the implications of an idea in the round.'

This book was written well before 3D-CAD software programmes were developed. As shown in section 4.6 of the next chapter, all the views are possible in CAD programs to visualise them 'in the round'. In a documentary film on his life, the sculptor Henry Moore, acknowledged the range of drawings required to account adequately for more intricate forms. He described his need to create for a single sculpture up to forty, fifty or even hundreds of drawings to convey its complexity (Porter:1979:75)

On the right is an example of creating multiple views of an artifact to have the viewer appreciate it's total three dimensionality. In a 3D - CAD programme even further interaction is possible; the viewer can choose whatever view he or she wants and print out a series of representations of it.

(See also 4.6 in the next chapter, indicating possible views created in a CAD programme for architectural form.)

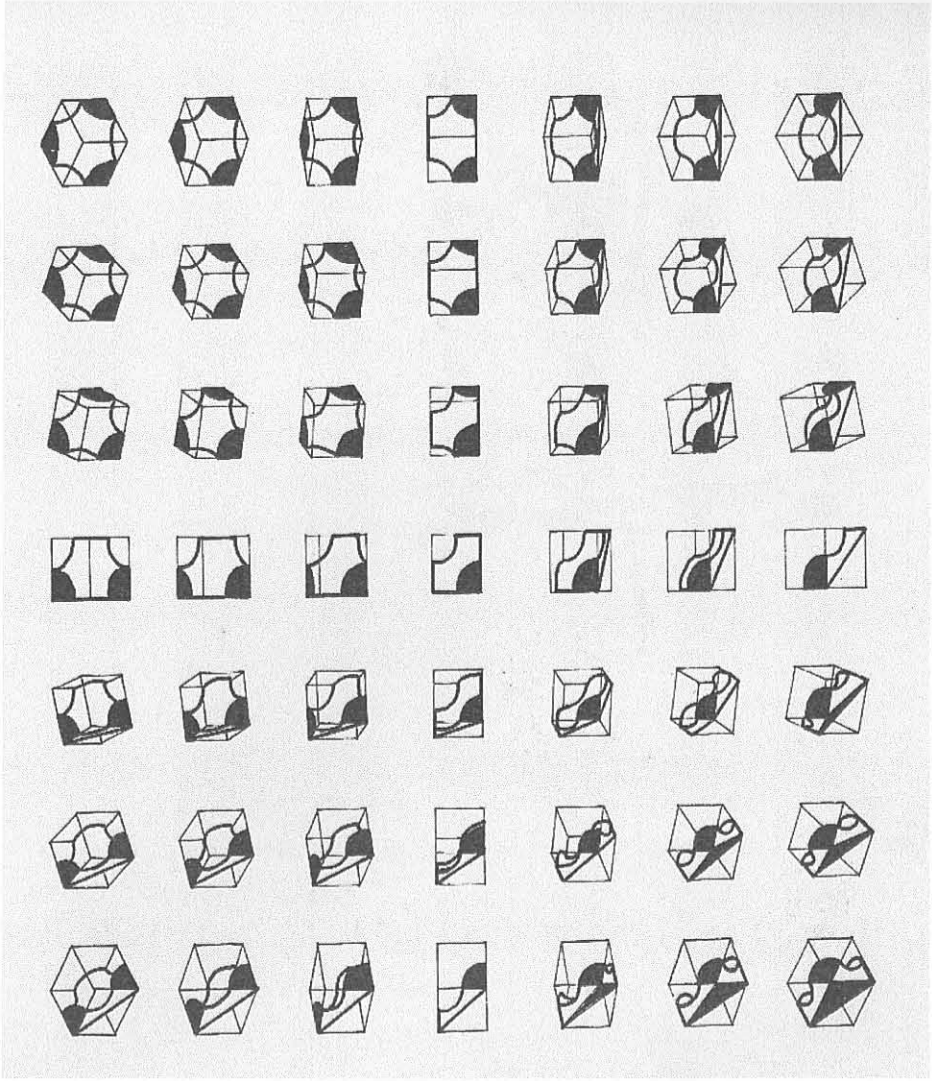

Figure 3U *Dynamic Graphics:* student sculpture project.

This chapter has shown that graphics can be used to communicate design patterns effectively and can be illustrated in several manners:

- Participation and exploration,
- Three-dimensional: aerial or pedestrian views,
- Indicating design development,
- Open-endedness,
- How concepts are derived and illustrated,
- By colours for different elements,
- By dynamic graphics.

The following chapter will analyse graphics further in the form of computer graphics.