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Introductory (pp. 3-9)

Part 1 (pp. 10-14)

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Norman Potter

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**: things . places . messages**

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*To Mark, †1969, and those with him at Bristol, Hornsey, Guildford*

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Architecture is organization. *You are an organizer, not a drawing-board stylist.*

Le Corbusier

Woe to the man whose heart has not learned while young to hope, to love – and to put its trust in life.

Joseph Conrad

The disciplinary barriers are impenetrable. If these barriers in education were to vanish, the architect as benevolent dictator would vanish too. Instead students could arm themselves with useful tools and knowledge with which they could assist a community.

Tom Woolley

*Sources for these and other references are given in part 23*

## Introduction

This is a book for students who design artefacts of the kind studied in design and architectural schools. Aside from the question implicit in its title, it asks what skills and aptitudes may be appropriate to the practice of design. A general discussion of such matters, including detailed recommendations for further reading, is followed by a directly practical reference section, confined to essentials, on various aspects of design technique (distinguished by a change of page colour). The absence of pictures is deliberate and considered. The reasons will become apparent to any thoughtful reader, as the argument of the book develops, but there is a terse summary of this reasoning in part 19 ('Questioning design'; see pages 158–9 particularly).

By the word 'student' I mean to include those of all ages coming freshly to their subject. At a certain level of awareness all creative workers gain in humility as their knowledge develops, and will wish frequently to return to their origins for refreshment of the spirit: to ask yet again who they are, what they could or should be doing, and why. I would like to think that this book will be a congenial companion to any engaged by such a quest, as much as to those who, starting their journey, turn to it for guidance.

It is well enough understood that design is a socially negotiated discipline, and there are telling respects in which design questions are political questions. No book about design is politically value-free, whatever its apparent claim to objectivity. I would like to make it plain, therefore, that this book has always belonged resolutely with the standpoint of the libertarian left, and still does so. It is a textbook of design, not a political tract; but that is its standpoint. It also adopts and explores – even more unfashionably – a generally modernist position in that context, holding that 'like the poor (it seems), what is modern is always with us; and open to transformation'. Constructive forces in the world should not be confused with those of reaction, but there is nothing very new in such conflicts; nor in the difficulty of their interpretation.

There are certain very general facts of modern life, within which any constructive activity must be seen as contributory. Untouched by them, any such activity is perhaps better suited to garden gnomes than to human beings. These facts include a global view of the human situation, which can hardly exclude the decimation of the rain forests any more than the appalling disparity of living standards, and life expectation, in the different parts of our world; not to speak of the nerve-centres in the self-awareness of our time, which have been the revelations of the concentration camps and the terrible lurking ever-present destructive threat of the Bomb – now so inconceivably destructive even in one warhead as to defy imagining. Yet if human solidarity and humane imagining mean anything at all, it is upon such awareness that every act of construction, however small, must in some sense draw, seek nourishment, become predicated – or withdraw into triviality and the blandishments of excess. A certain order of sensibility, if not of commitment, belongs to such perceptions; and a different one, to their suppression, or neutering. To expose and to clarify, not to embellish, was at once the joy and the seriousness of the modern movement, and it remains vital to its task and heritage.

To some of these questions, and to the underlying problems of industrialism as such, E. F. Schumacher has brought a notable diagnostic acumen as much as simplicity of heart, putting in very simple language what must surely be plain:

‘There are four main characteristics of modern industrial society which, in the light of the Gospels, must be accounted four great and grievous evils:

- 1 Its vastly complicated nature.
- 2 Its continuous stimulation of, and reliance on, the deadly sins of greed, envy, and avarice.
- 3 Its destruction of the content and dignity of most forms of work.
- 4 Its authoritarian character, owing to organization in excessively large units.

All these evils are, I think, exacerbated by the fact that the bulk of industry is carried on for the purpose of private pecuniary gain ... [but] the worst exploitation practised today is “cultural exploitation”, namely, the exploitation by unscrupulous moneymakers of

the deep longing for culture on the part of the less privileged and undereducated groups in our society.’

Schumacher also had constructive offerings, not necessarily to the taste or within the aptitude of many designers, but since in this book I am arguing that ‘design is a field of concern, response, and enquiry as often as decision and consequence’ – big words! – it may be encouraging to remember that we still have visible role-models within a radical Christian attitude. Trendies take note.

It remains to ask, in an introductory spirit, what is special about this book, and justifies a new edition. First, it is original: that is to say written at first hand from my own experience as a designer, maker, and teacher; rather than from reading other books. It is useful, I think – useful evidentially to students – to have felt the modern movement in your bones, to have lived it. Such ‘being original’ is not exclusively useful, however. Creative critical scholarship – to which I have little claim – has something different to offer, and complementary: the special benefit of breadth, distance, and relative impartiality of view. This brings me to a second foundation asset of this book. Like – I suggest – the root impulse and need of truly modern design, it is not self-contained; it is contributory. There are other books by scholars, and many books of pictures. The first thing to learn about the deep structure of modern design is that it is *relation-seeking* and pleasurable so; but that, as the saying is, we shall come to. Good work was probably always difficult, and recently never more so; but I hope this book will encourage those who hold to it.



## 1 What *is* a designer?

Design:

*v.* to mark out; to plan, purpose, intend ...

*n.* a plan conceived in the mind, of something to be done ...

*n.* adaptation of means to end ...

*The shorter Oxford English dictionary*

Every human being is a designer. Many also earn their living by design – in every field that warrants pause, and careful consideration, between the conceiving of an action and a fashioning of the means to carry it out, and an estimation of its effects.

In fact this book is concerned mainly – not wholly – with a minority profession: of designers whose work helps to give form and order to the amenities of life, whether in the context of manufacture, or of place and occasion. The very clumsiness of this definition underlines the difficulty of using one word to denote a wide range of quite disparate experiences – both in the outcome of design decisions, and in the activity of designing. The dictionary reference above is selective; in practice the word is also applied to the *product* of ‘a plan conceived in the mind’, not only as a set of drawings or instructions, but as the ultimate outcome from manufacture.

This is confusing. The difficulty becomes acute if the word ‘design’ is used without reference to any specific context – used, for instance, as a blanket term to cover every situation in which adaptation of means to ends is preceded by an abstract of intent – though designing is thus usefully distinguished from ‘making’ or from spontaneous activity. Beyond this point, the word must refer to recognizable products and opportunities, or become hopelessly abstract.

The design work to be discussed is now usually studied within the art and design faculty of a polytechnic, in a school of architecture, sometimes within a university, and – not least – in some of the smaller art and design colleges that may provide vocational courses. ‘Distance-learning’ institutions may provide study courses, neces-

sarily at a generalized level and without the benefit of studios and workshops. And of course, with or without the aid of such studies and evening classes, it is perfectly possible to study design simply by doing it. It should not be necessary to say that architects are designers (even if the matter is, occasionally, in doubt). Taking that old stand-by the 'broad view', it is convenient to group the work into three simple categories, though the distinctions are in no way absolute, nor are they always so described: product design (things), environmental design (places) and communication design (messages). Such categories blur some further necessary distinctions (as between, for instance, the design of industrial equipment and that of retail products in a domestic market) but can form a useful departure.

In the field of product design, the professional extremes might be said to range from studio pottery and textile design at one end of the spectrum to engineering design and computer programming at the other. This is a very broad spectrum and clearly there are serious differences at the extremes. In the communication field, a similar spectrum might range from, say, freehand book illustration, to the very exact disciplines of cartography or the design of instrumentation for aircraft.

Obviously, the more aesthetic and sensory latitude available within a particular range of design opportunities, the closer they resemble those offered by the practice of 'fine-art'. The less latitude, the closer design becomes to the sciences, and to fields in which the scope of aesthetic 'choice' is truly marginal. The design of a traffic light system has an aesthetic component, but it would need a very special definition of aesthetics to embrace the many determining factors that must finally settle the design outcome.

The situation for architects is usually held to be more straightforward; historically, their position has developed a fairly clear set of responsibilities. However, the complex changes in building types, and in industrialized building possibilities, have combined with other factors thoroughly to upset this stable picture. Indeed, the architect's work has been so undermined by that of specialists in surrounding territory (engineers, planners, sociologists, interior designers, etc.) that the profession is no longer so easy to identify. It is still reasonable to see an architect as a designer with a special-

ized technical and functional competence, and again a spectrum is discernible, ranging from very open and ephemeral design situations, to those as critical as the design of an operating theatre.

It is necessary to start somewhere, and this book takes a middle-zone standpoint. In most art schools this will include furniture, interior design, exhibition design, packaging, some wide areas of graphic and industrial (product) design, and some of the fringe territory leading into architecture. Students must make the necessary allowances to accommodate their own subject of study. This is chiefly necessary in part 2 ('Is a designer an artist?') and in some of the notes on procedure (parts 11–16) – or the studio potter will certainly feel that everything in this book is unduly complicated, whereas an architect might feel that there is undue simplification. All designers, however specialized should know roughly what their colleagues do – and why; not only to fertilize their own thinking, but also to make group practice effective, and for other reasons that will appear.

There are many roles for designers even within a given sector of professional work. A functional classification might be: impresarios, culture diffusers, culture generators, assistants, and parasites. Impresarios: those who get work, organize others to do it, and present the outcome. Culture diffusers: those who do competent work effectively over a broad field, usually from a stable background of dispersed interests. Culture generators: obsessive characters who work in back rooms and produce ideas, often more useful to other designers than the public. Assistants: often beginners, but also a large group concerned with administration or draughtsmanship. Parasites: those who skim off the surface of other people's work and make a good living by it. The first four groups are interdependent, necessary to each other. It should be added that any designer might shift from one role to another in the course of his working life, or even within the development of a single commission, though temperament and ability encourage a more permanent separation of functions in a large design office. Thus no value-judgement is implied here, except upon parasites who are only too numerous.

In small offices – or of course for independent freelance workers – there will be little stratification; 'the office' may tend to move in one direction or another, but the work within it will be less predictable for any one member – excluding, perhaps, secretarial or admin-

istrative assistants and often temporary draughtsmen. A 'consultant' is often a lone wolf who deals in matters of high expertise or (paradoxically) of very broad generality. Designers will be found in every quarter, sometimes working independently, sometimes for government or local authority offices, or attached to large manufacturers, to retail agencies, to public corporations, and elsewhere in places too numerous to mention. Artisan designers will have their own workshop and perhaps their own retail outlet. There are a few design offices that will design anything from a fountain pen to an airport, and will therefore employ specialists from every field (including architects) – a rational development and a welcome one, but implying some genius for large scale organization which, in turn, may tend to level out the standard of work produced. (As numbers increase, it becomes a problem to keep work flowing through at a productive pace, yet have enough – not too much – to allow everyone a fair living.) Students usually need a few years' office practice before setting up by themselves; often this happens in small groups of three to six designers who will share office and administrative expenses.

Most designers are educated in a formal way by three-to-seven years in a design school (or school of architecture) leading to appropriate qualifications. Some have had unorthodox beginnings – by dropping in the deep end and learning to swim – but self-training may need sympathetic patrons, is apt to be patchy according to the opportunities that occur, and needs a special pertinacity. Apprenticeship rarely means more than training as a draughtsman. A few factories or retail firms may encourage employees who show design aptitude. Evening classes and correspondence courses are mostly directed at cultural appreciation or do-it-yourself horizons, but intending full-time students can build up a portfolio of work by this means.

A note of warning: the word 'design' appears freely as noun and verb, and where words like 'formal', 'realization', 'consciousness' are used without qualification, readers should examine the context and think for themselves. I have used the word 'student' suggestively; trying it for size.

There is a perfectly good sense in which a creative worker remains, perpetually a humble student of his subject. This is not to be

confused with the timidity of the 'permanent student' whose name haunts the lists of application for grants, research funds, and finally, minor teaching appointments. These must again be distinguished from the serious student of scholarly bent who 'reads' the subject and may make a distinctive contribution to theory or criticism. By the word 'student', therefore, I mean those who still question what they are doing, and ask why.

There is no word by the use of which sex-discrimination can be avoided. Readers must accept that when 'him' or 'man' is used, these words embrace both sexes (unless the text does draw a distinction). Women should not be deterred from course-work that includes the use of machinery and unfamiliar work with hand-tools. Invariably such skills are gained rapidly and practised with enthusiasm.

This, then, is the apparent situation of the designer and where this book begins. Returning to the statement that every human is a designer, and using it as a springboard: we do well to remember that designers are ordinary human beings, as prone as others (given half a chance) to every human weakness, including an exaggerated idea of their own consequence. Consider the following questions: Should a designer design for a factory in which he could never imagine working as an operative? Is design social-realist art? Is it handy to be in a state of moral grace when designing a knife and fork? Does design work justify its claims to social usefulness, or is it a privileged form of self-expression? Is a profession a genteel self-protection society with some necessary illusions? Should a designer be a conformist or an agent of change?

Those who feel that such questions are diversionary and a waste of time, should perhaps put this book down; others read on, but not for easy answers.

## 10 How is design work done?

Much design work is carried out in a very direct and informal way. The degree of formality becomes a function of scale and the number of interests represented. Of course an artisan designer (of any kind) works very directly and with a minimum of 'communication procedures'. As was explained in part 1, however, this book takes a middle-range view of design opportunities and here matters of procedural technique become critical, for reasons given in the following parts.

The step-by-step account of events that follows is intended to place design procedure in its normal context for (say) the design of the interior of a small department store, in this case to include some structural work, all fitments, and graphics; or that of a large exhibition, which would be comparable. The sequence is 'normal' for present purposes, but naturally there are variants.

From such an account it is possible to abstract out an analytical model of the design process, and thus to see what is irreducible over a wider range of problems. This would merely confuse the descriptive purpose of these notes, but readers are directed to methodological references (see part 9) for a systematic view in such terms.

The procedures show the designer approaching an unknown situation, making himself familiar with it, taking instructions, making sure they are fully understood, weighing the possibilities, discussing them, arriving at conclusions, offering proposals, modifying them, providing drawings and other instructions to a third party, and supervising the outcome. The result is something new in the world; a product, an environmental change; a new set of possibilities. In dynamic balance to effect this change are the interests of four persons or groups of people: the owner or client or employer (the word client is used because, for the designer, it is the least ambiguous); the user or public or consumer; the designer plus any technical advisers; and the contractor or manufacturer. Each party deploys social resources in a different way and there is no parity of representation between these interests; that of the larger one (the

user or public) often being, in effect, mute. There is, however, an ongoing economic relationship between the client and his market or public, which has to some extent its own system of checks and balances: the designer and contractor come into the situation briefly as agents of change, with the designer most potently concerned with its nature. His responsibility is therefore a complex one: is he working for himself, for God ('good work'), the client, the builder or manufacturer, the public or user, or in some embracing respect the interests of society as a whole? He may feel that the resources available (labour, skills, materials, and including the special skills of his client and his own professional training) are a social resource, and that their effective control through money at the disposal of the client, is largely an arbitrary matter; that his role is simply to free and 'optimize' an outcome as best he can; or he may take the view that his direct contractual responsibility is to his client's personal interests which he is called upon to serve, and all else must be so governed. The designer must be aware of the highly contingent nature of all his decisions in these respects; he must also remember that each possibility is a new one.

1 Letter or telephone call from client or equivalent  
Arrange a meeting at his and your convenience.

2 Meet client

This is an unpredictable occasion, though the client will usually be anxious to convince himself that you are competent, experienced, personable, and able to look after his interests. Prepare accordingly. If you decide to take some work, a vast and shapeless portfolio may prove damaging by making the client feel that you are setting the pace, and in doing so, exploiting his own lack of technical expertise. Equally it is unwise to turn up with batteries of assistants, tape-recorders, and measuring tapes, etc. It is most essential to *listen* properly, and to take notes; listening being that part of conversation that a designer must practise and get word-perfect. Briefs; see 15.

3 Visit site, meet other interested parties

This is again an informal occasion – not a site survey – but an important one, because first impressions are important. Note them. The

'parties' may be the clients (plural) or the client's business associates. Take camera, but only use if the occasion seems suitable.

4 Exchange of letters (leading to contract or letters of contract)  
Must be considered in formal terms; free of too many references to 'I', and not overburdened by design jargon or unsuccessful attempts to sound like a business man (e.g. 'the favour of your letter' and 'may we assure you of our best attention at all times'). The best form usually is a direct and friendly letter, practical and reserved in tone, with facts or lists separated out as an accompanying sheet, such that the client can hand this round without his colleagues having to work through the more ephemeral or personal bits. At the beginning of a design job, it is often helpful to a client to have a very simple account of the design sequence that you usually follow, so the client knows what to expect and roughly when to expect it. Be careful, however, unless the job is one you have encountered before. A letter is a good vehicle for this simple information. You should advise a client that consultants may be necessary (engineer, quantity surveyor, etc.) and you should make him aware that formal consents may be involved, and that it may be necessary to consider his personal insurances, his obligations of tenancy, the rights of adjoining properties, planning and fire office consents, and (in the case of an exhibition) the exhibition regulations.

Obviously, correspondence continues to the sweet or bitter end of the design process.

5 Contract or letter of contract  
Legal documents, highly conventionalized. Should be separately studied as an aspect of 'professional practice', the subtleties of which are outside our present terms of reference.

6 Letters of record or enquiry to other interested parties  
Such letters will always be short and to the point – such letters are almost conventions and most of them go into the filing records of local authorities, etc.

7 Site and premises survey, subsequently drawn up  
It will save endless work if this is done properly because the draw-



ings must be very accurate descriptions of fact, accompanied by photographs, recordings if necessary, and extensive notes. Sometimes you will employ a surveyor to produce the measured drawing; you will still need your own observations for design purposes. See part 14, 'Survey before plan'.

## 8 Questions

The asking of questions, and finding the right ones to ask, is fundamental to such dignity and relevance as a designer's role can conceivably possess; this process is no conjuring act or trick of the trade with intent to deceive; on the contrary, the purpose of questioning is to identify and solicit such truths as may be available. See part 15, 'Asking questions'. Here, it should merely be noted that questions may be asked orally, in which case it is sometimes acceptable at this stage to use a tape recorder, or questions may be submitted rather more formally as a questionnaire. Questions will include requests for factual information available to the client (e.g. for a shop, very elaborate questions about stock and sales policy). It is unwise to ask questions casually by letter or at random meetings. The client will usually respond well to carefully prepared questions; they are a measure of your concern for his interests.

## 9 Research, permissions, consultation

This will involve a consultation of all other parties or interests involved, particularly local authorities in the form of the district surveyor, fire and health officers, etc, together with all necessary technical information (catalogues, etc.) and anything else necessary to complete your reference data. There may at this stage be any relevant form of public consultation, which can occur through representative bodies or pressure groups, or by the summoning of meetings, or by taking samples of local opinion, or by the more controlled 'opinion poll' method, or by seeking available evidence from past experience. It is doubtful if any of these approaches would be employed for the scale of work under discussion (though they could be), but it is necessary to mention them here. Research and consultation is a considerable and continuing task and is not neatly confined to this stage of the job.

## 10 Sizing up the job

At this stage you should have enough information to work out an office programme with a clear allocation of personal responsibilities for the conduct of the job. This exercise will give you an intuitive idea of the possibilities latent in the design work (conditioned by time, money, and the nature of the problem) and just how far you can afford to develop them. This will affect your whole subsequent approach; your personal strategy.

## 11 Preliminary ideas

Design begins here in a formal sense, though you may by now have a design concept or a 'mental set' from your first meeting with the client or your first view of the site (this is a matter of experience). Mistrust mental sets until they have proved their relevance. This is the stage at which ideas are roughed out diagrammatically and working principles examined, tested, and agreed. Such ideas may take a mainly visual form (but will usually be diagrammatic in character) or, if you use a 'report' as a kind of developing discussion with yourself, may be verbal argument accompanied by concept diagrams. It is difficult to generalize about the thinking that may go on at this stage.

## 12 Report

A report is not always necessary, but it is a most valuable instrument for two-way consultation. See part 16, 'Reports and report writing'. The report will embody your proposals in principle and your reasons for suggested courses of action. The report may include diagrams and a plan layout, and may include catalogues and other references. The report should *not* commit you to what the job may finally look like. You should normally include a discussion of alternatives, for three reasons: to show why your proposal is the best one (as it should be), to make it clear that all possibilities have been adequately canvassed, and to gain 'reasonable assent' to what you propose, which is best done in an open contemplation of the options. On the other hand, it is unwise to present evenly balanced alternatives, unless you are really convinced that it is right to do so (your client may think, 'what the hell am I paying him for?'). The report is not a brief, however. One of its purposes is to focus discus-

sion, and another, to bring to light new considerations which your client, or other interested parties, may not have thought of hitherto; finally, its purpose most succinctly, is to make the definition of a brief securely possible, and less liable to be faulted. Always remember therefore that a report is a consultation document.

13 Pause: recipients consider your report, copies of which you may have sent by post or presented personally.

14 Meetings, conversations, etc: to discuss the report and your client's reactions to it.

### 15 Brief

A 'brief' is a statement of your agreed terms of reference for developing a design to presentation stage. In a small or simple job the brief will emerge much earlier, in correspondence with your client. Here, the brief emerges from final agreement after the report has been fully discussed, with all modifications taken into account. It is highly desirable to set out your brief in a manner that obviates any kind of misunderstanding, but it is by no means an onerous task (not comparable in length or scope or detail with a report). Its purpose is to reassure the client that all his reservations have not been brushed aside, and to remind him that from now on work must be seriously under way without his interference. This is the last chance for the client to reject your approach to his problem (unless he finds your presentation drawings unacceptable).

### 16 Development

Here begins 'design' in the wholly conventional sense. You will have a model from your survey; if not, make one now. According to the nature of the job, you will proceed on the drawing board, in the layout pad, and in your workshop (if you have one) examining and developing ideas and testing them against your problem analysis if you have one as such, or against the reference data you have accumulated from your client and other sources (or against your report if you used the report as an analytical tool). You will discuss alternatives with trade representatives, with your quantity surveyor if you have one, with any relevant local authorities, and you will

form a good idea of the cost involved. All this will lead to a 'presentation' of your ideas, or rather your intentions, to the client.

### 17 Presentation

This will normally involve a model, sample sheets, diagrams, notes, sketches or 'perspectives', graphic layouts in whatever form appropriate, and will be personally 'presented' and argued for by yourself to the client or more usually to his board of directors. You may need an assistant, and, if it is a combined graphic-construction job, both of you will be present. A design presentation should go pleasantly enough if the work outlined above has been carried out properly. A presentation should be seen in definite terms (if it is inescapable) and any alternative ideas should merely be supporting evidence for your proposals.

### 18 Modifications

Certain changes may be necessary in the light of your client's response to the design presentation. Normally, such changes can be agreed informally (covered by letters) in your own office, and will not involve the effort of a further presentation.

### 19 Working drawings

The largest task now begins. Working drawings, or construction drawings, are detailed accurate informative *instructions* on which the work will be carried out. This is too complex to discuss here, except to say that drawings for consent will normally be done first, and the remaining bulk of the drawings must be carefully planned for the intended contractor or subcontractor or manufacturer. Drawings may be submitted to a quantity surveyor in order to receive a bill of quantities (a measured account of all labour and material items involved in the job) or may join a written specification and schedule in submission to competitive tender. These are technical matters which need not worry you in this short summary. Discussions with contractors may involve many modifications as the work proceeds, but if the contractor is unknown (i.e. to be decided by tender) such modifications will ensue after the contract has been settled.

## 20 Tender

Designers (in this case, as distinct from architects) will often work in an informal way with a contractor already well known; in which case much of this procedure loses its worrying aspects, but inescapably, however the job is done, a very large number of drawings must reach the contractor with sufficient notes or verbal description (as in a specification) to leave no room for doubt. (A specification describes in words the quality of materials, workmanship, etc, and otherwise complements drawn information.) Students may hardly be concerned with these procedures and this part of the working sequence has been simplified accordingly.

## 21 Contractor begins work

### 22 Site supervision

This is an important part of design procedure. Even with the best will in the world, and a very good set of drawings, things will always go wrong on site and last-minute alterations will be essential. The designer must also make sure that deliveries are properly in hand. It is best to confine site instructions to the site foreman acting as a general co-ordinator. Visits will also be necessary to the joinery shop, to the printers or typesetters or indeed to any supplier or subcontractor.

### 23 Payment

The designer will normally certify contractor's claims for submission to the client. In the case of shop-fitting or similar work, an agreed proportion is held back for a six months 'defect liability period'. Design fees will often be regulated (in a purely advisory way) by national professional bodies.

24 Inspection at completion stage, and subsequently after any defects are corrected.

25 Final settlement of finance and records. Photography. Filing and storing of records. Job over.

NB It is rash to assume that the final relieved handshake is 'terminal' to a job – as newcomers will soon discover.

The above account is too tidy and logical, and has some rather alarming simplifications. In practice, constant new factors upset the brief, confusing or enriching it, and every kind of contingency will disturb a logical sequence. The design process is anyway a continuous interplay of creative thinking with reference data. However, in jobs of any substantial scale something like this apparent sequence is the only way to uncover the creative possibilities and to realize them. It will be seen that 'communication' becomes of first importance, with every new situation making its own quite distinct demands.

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