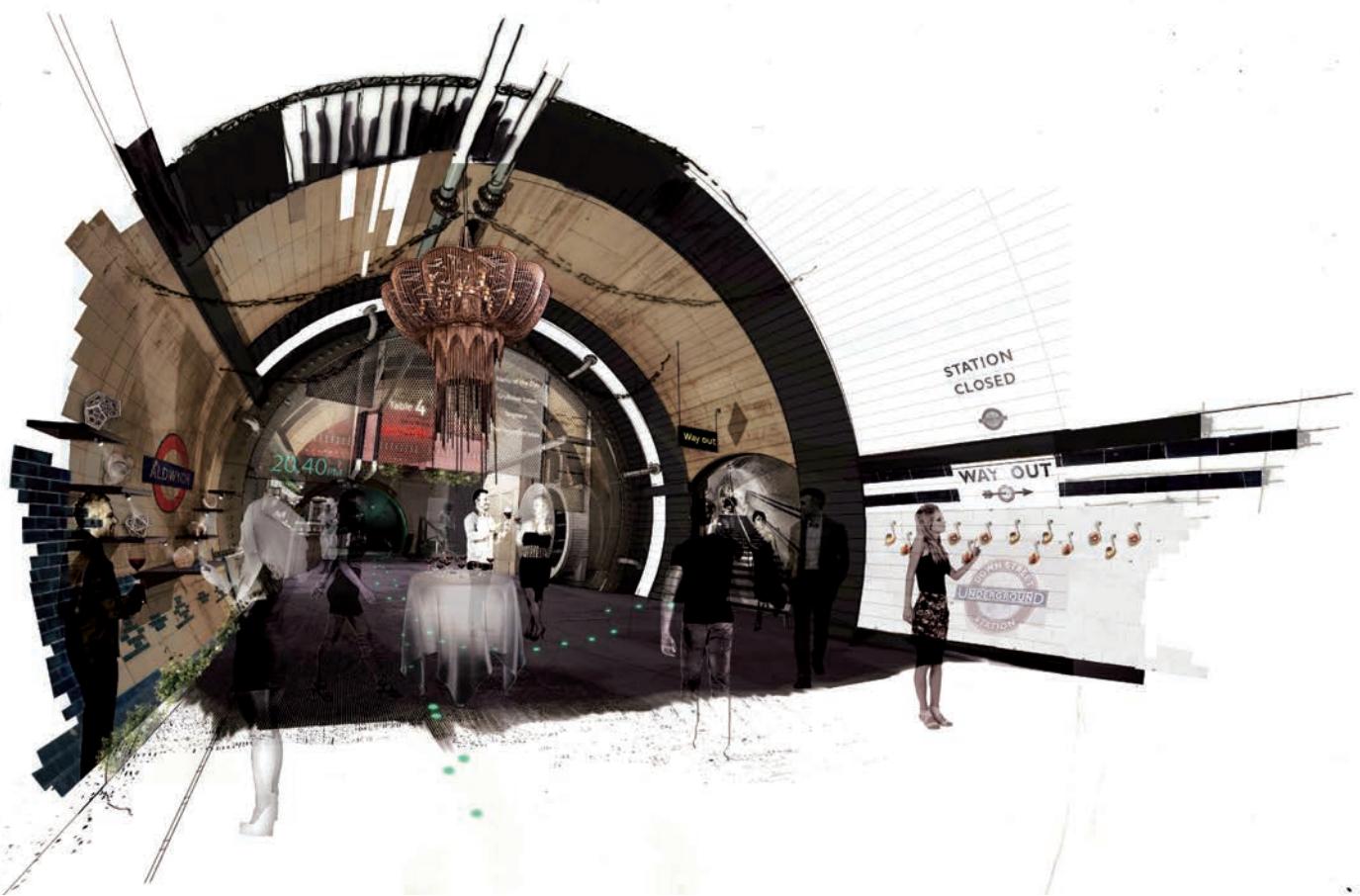


Drawing for Interior Design

SECOND EDITION





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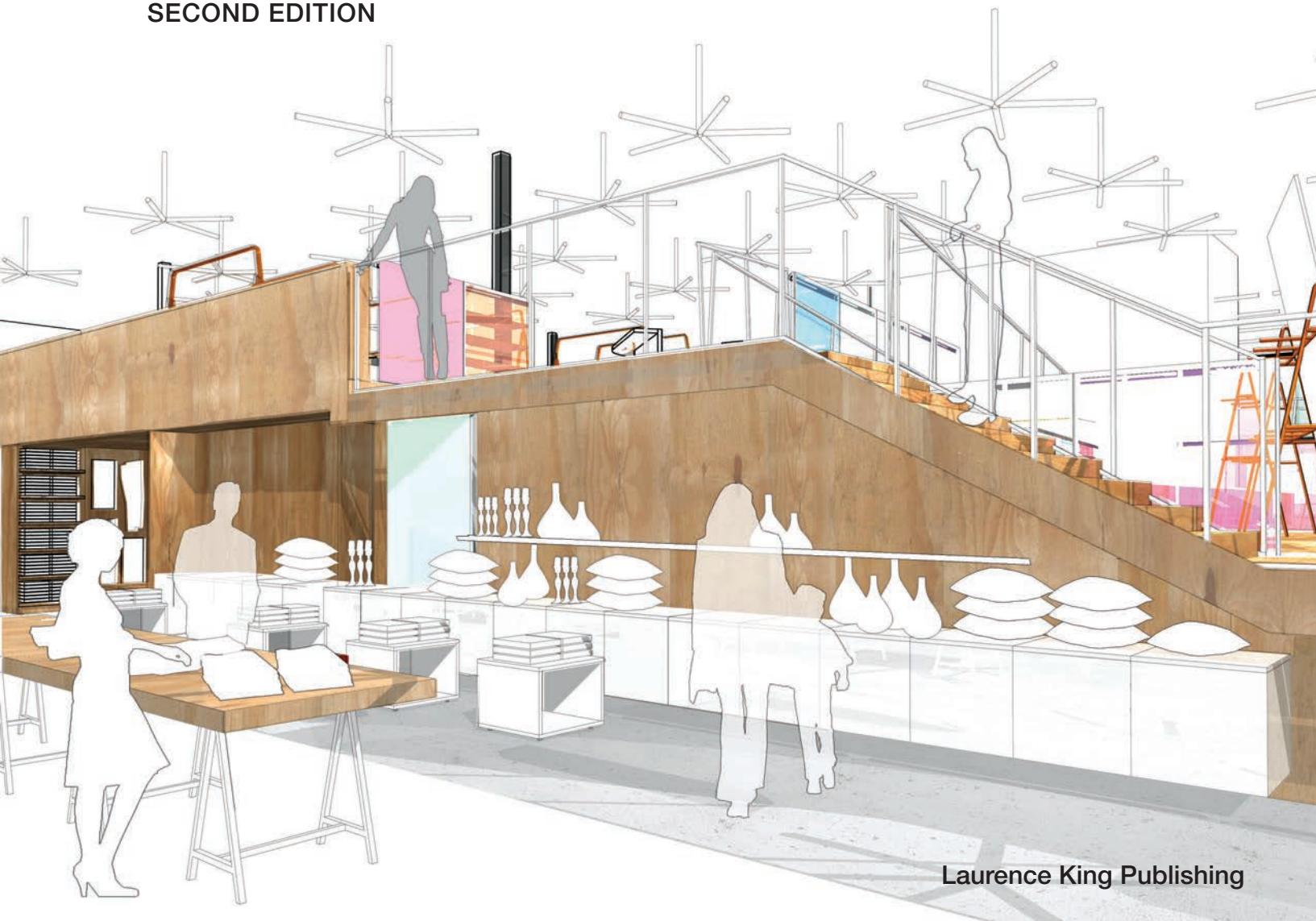
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Drew Plunkett

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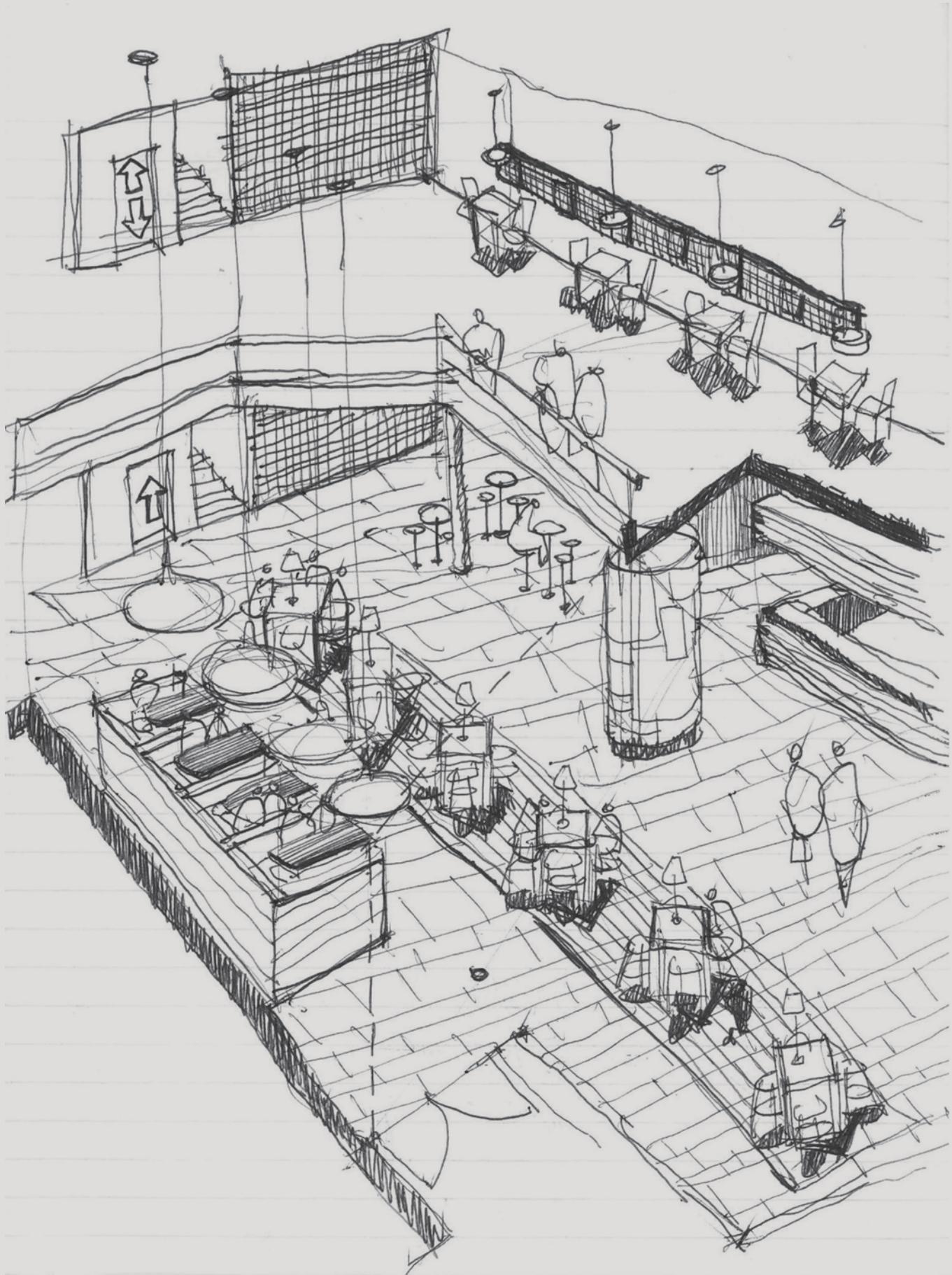
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Introduction

Why we draw

Good interior design does not begin with a drawing but with an idea, an ill-defined image that exists for a moment in the imagination and continues to flit, evasively, across the mind's eye. Designing is, in effect, the pursuit of that image: a succession of attempts to define it more precisely, to give it form, to examine it and assess its worth, to make progressively more objective decisions that finalize ideas and to communicate those ideas to clients, collaborators and builders in the form of drawn and written instructions.

Drawing, at first broadly and speculatively and then with increasing focus and precision, is the means to test rigorously

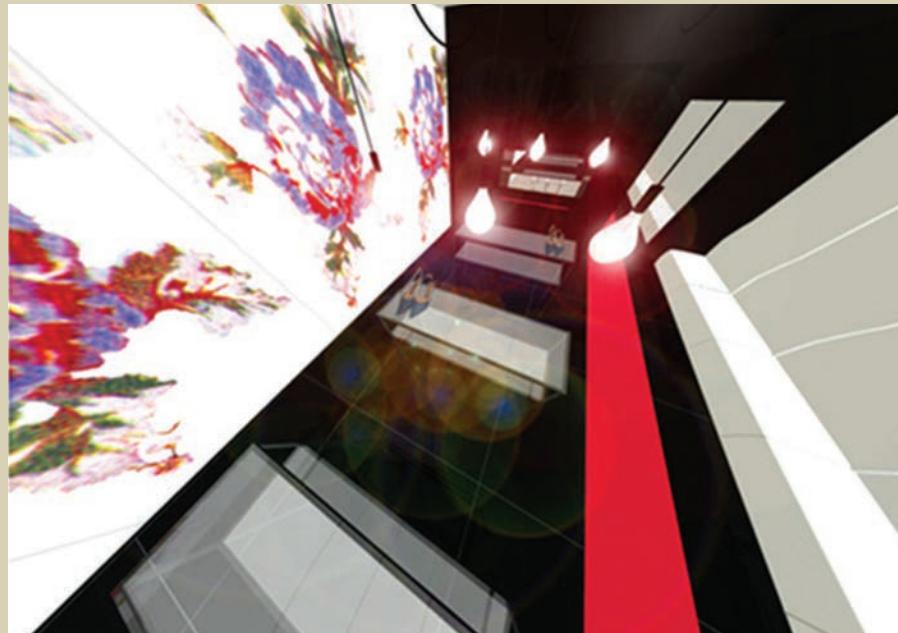
how a near-abstract concept can be viably translated into reality. It may be feasible to visualize and scrutinize concepts without drawing them, but it would be perverse to deny that the most immediate and effective way to design is to make drawings – and drawings may take many forms. With the advent of specialist hardwares and softwares they do not have to be, perhaps should no longer be, handmade pen or pencil lines on conventional papers. They should be made in the way with which each individual designer is most comfortable. They should change to suit the particular requirements of each project and, because they are a means to the end

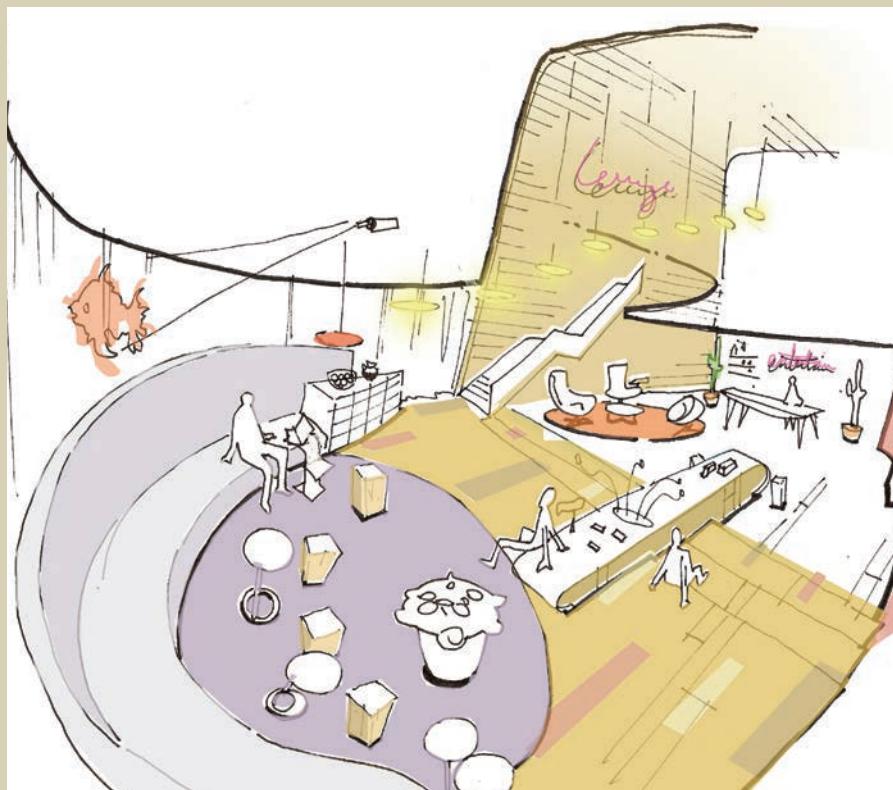
Right

A computer-generated conceptual drawing, in which lines and blocks of colour are augmented by scanned artefacts and textures.

Below right

Most interiors depend for their success on two- rather than three-dimensional gestures. The computer allows the essence of these to be represented accurately and convincingly, with a little added drama.



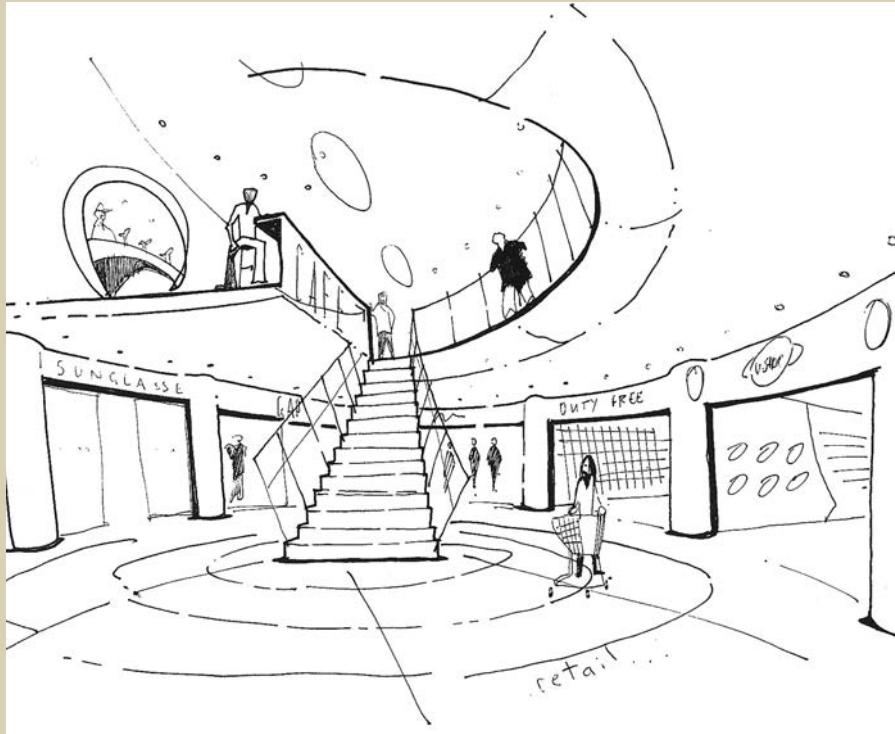
**Left**

A hand drawing scanned and 'colour-washed' by computer.

Below

Detailed description of the relationship between new and existing structures is much easier to create by computer. In addition, the image – generated from plans and sections – may be rotated on-screen for selection of the best viewpoint.



**Left**

The earliest sketches represent a designer's first attempts to give physical form to what must inevitably be unresolved ideas. Further refinement requires more precise representation and investigation.

of expressing ideas, content should be more crucial than technique or style, which will take care of themselves.

As a designer becomes more experienced, making a drawing, the right kind of drawing, becomes automatic, instinctive, an immediate expression of thought. It need not be carefully refined but it does seem that when one is intensely focused, absorbed in thinking about possibilities, and when the imagination and eye are practised, then the drawings produced have a quality that gives them a particular authority. Effective and successful drawing bolsters self-confidence and confidence in the ideas one is proposing – and establishes credibility with clients.

The act of drawing structures thinking and the coherent progression of ideas. Paradoxically its particular potency is recognized in the caveat that one should delay making the first drawing in order to allow ideas to float freely in the imagination. A warning acknowledging that once the abstraction of thought is given tangible shape, wide-ranging speculation comes to an end, and the identity of the project and the direction of its evolution are as good as settled. Every designer experiences that moment of frustration when a fruitless idea is obsessively and repetitively committed to paper, as if the hand is stubbornly denying the imagination the chance to move on. At times like that the only way to progress is to stop drawing and to think, to allow the imagination the chance to start again.

In effect, all drawings but the final one made in the course of developing a project have some shortcomings. All are made in the optimistic expectation that they will encapsulate a final solution, but under objective scrutiny all

except the last – while they may offer some encouraging evidence of progress – will be found wanting. It is the identification of their shortcomings that will further inform not only the direction that the design process should follow but also the questions being asked in the brief, for these are inevitably modified and complicated as one begins to understand how the realities of an existing building determine what is possible. Clients' perceptions and expectations must also change as the nature of an appropriate solution changes. Their contribution and agreement is essential for the progression of any project, and the rationales for decision-making must be communicated to them clearly. Well-made drawings are the most effective way of doing this.

Making a good drawing requires practise and an understanding of how it may best convey information. While all drawings, like everything a designer produces, should aspire to be beautiful their first obligation is to convey information, and ultimately their success must be judged on their capacity to do this. Ideas need to be assessed objectively, regardless of the quality of the drawing that describes them. Evidence suggests that a good idea will generate a good drawing – one that, because the designer is immersed in and confident about a solution, will distil and convey the essence of an idea and its physical expression.

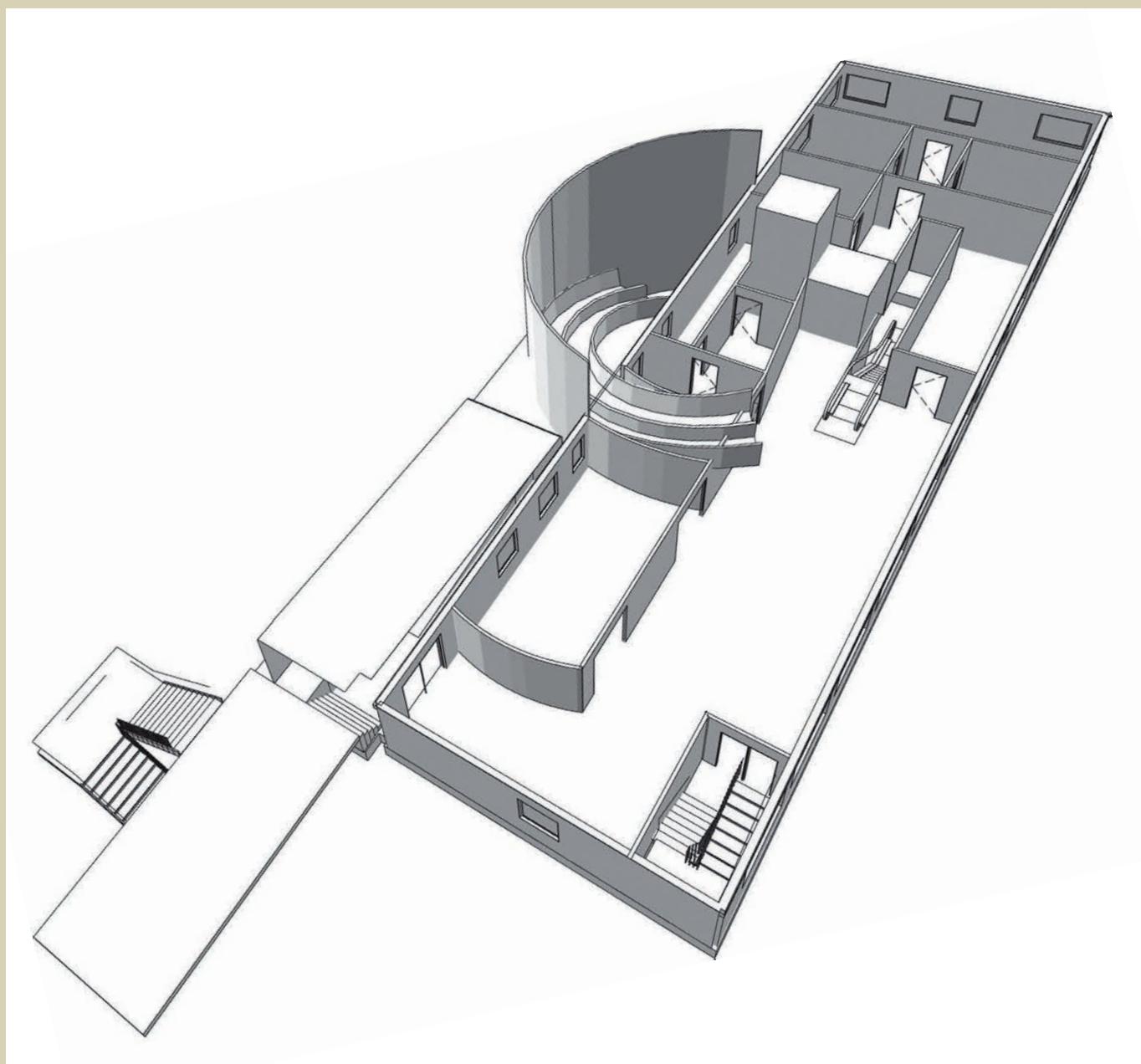
Different stages in the design process require different kinds of drawing. As the design becomes more precisely defined so the drawings become more exact; while initial sketches may be flamboyant and suggestive of an intense involvement with the creative moment, they are, because of their very spontaneity, more superficial than the prosaic

plans, elevations and details that follow and explain in detail how the building will be made. It is in these precisely scaled drawings, showing little evidence of graphic gestures, that the designer becomes increasingly engaged with the reality of their proposal, the imagination is most intensely engaged and distractions are least intrusive.

The tools and materials with which designers make their drawings have always been in a state of evolution and the capacities of particular media have, inevitably, had an impact on the way designers 'see' their ideas and influenced how they, and others, appraise them. It is comparatively recently that the sedate evolution of the pencil, pen and felt tip has been abruptly and fundamentally interrupted.

Below

Drawings made to scale clarify precisely the interaction of elements within the project and allow final decisions to be made about proportions. Simple three-dimensional images, generated on computer, also help clients understand the composition and organization of a project.



The impact of the computer

There is still some disagreement about whether images produced by computer can be described as 'drawings' at all. Those who harbour doubts have a visceral feeling that a drawing is something that must be made by the hand and that the communion of hand, eye and intellect has a power which offers the only true road to visual creativity.

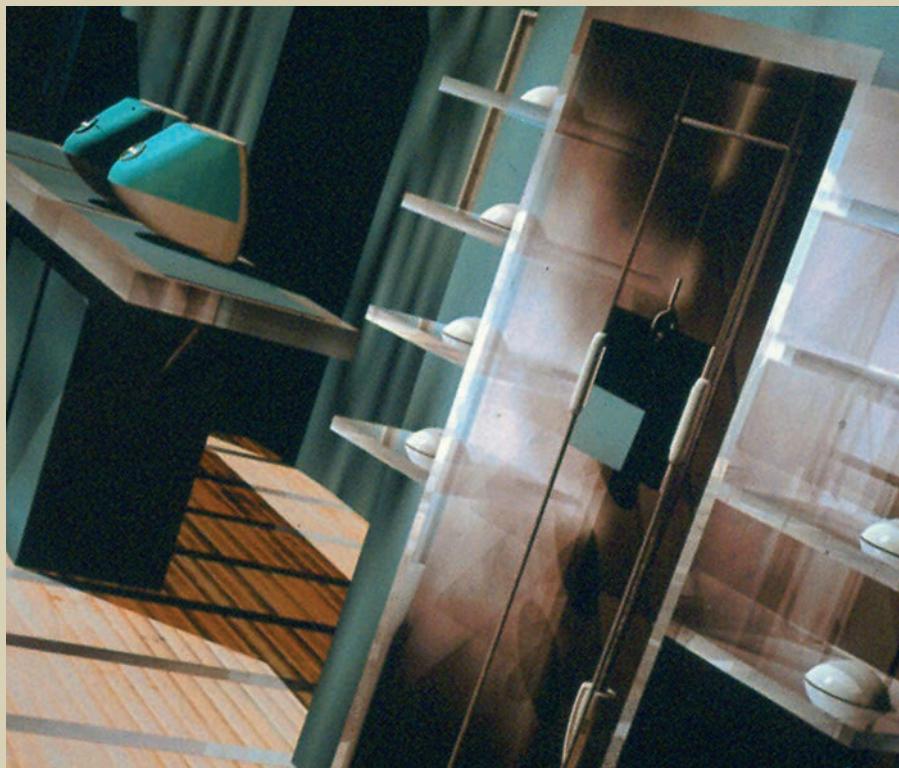
There is a sentimental presumption that drawing by hand represents a more 'artistic' activity than drawing by computer, but this is an argument usually put forward by those with a vested interest in their own well-developed and polished drafting skills. It also denies the evidence of history. The pencil on paper is an improvement on the stick that scratched lines in the mud and sand, and on the quill that dripped ink onto parchment. It made possible a better standard of drawing and added to the capacity of those making drawings to express themselves more effectively. The computer does the same, but even more dramatically.

The computer, although it has only been widely used in the field of interior design for little more than ten years, has become the drawing tool of choice - because it is the most effective instrument available to support the practice of interior design, and the material it produces is inherently compatible with the new and ubiquitous digital mechanisms of global communication. It is becoming progressively more easy to use, and such development is likely to continue as long as producers of hardwares and softwares compete to offer more user-friendly – and, therefore, from

their point of view, commercially successful options.

While the extravagant claims of the early supporters of computers – that the machines would take over the creative process – have gone unrealized, and are likely to remain so, the, only slightly, more modest reality is that they have had a fundamental impact on how people now engage with the process of creating interiors. Qualities that are essential in the making of a good interior – lighting, colour, texture, transparency and reflectivity – are all extremely difficult, some nearly impossible, to represent with traditional manual techniques. However, using computers it is comparatively simple to represent these essentials with a great – sometimes unsettling – degree of realism. Designers trained, and variously adept, in the use of manual techniques have been reluctantly compelled to acknowledge that the computer does those jobs better than they ever could. The fears that computer imaging would force uniformity of visualizing, and of the consequent built output, have been allayed by the evidence. The new medium has added to the creative palette, enabling rather than stifling creativity and diversity.

It is possible to make both good and bad drawings by either hand or computer. Merit is the result of refined technique and taste. A critical eye, rather than the computer or the hand, is what makes a drawing good. While the fear that all drawings made on computer and all interiors built from them would look the same has therefore been dispatched, but there is a generic look to computer-generated



Left

The computer has now become the drawing tool of choice for interior designers.

**Above**

The computer offers complex and complementary options for the rendering of three-dimensional images.

Below

The computer can introduce the extraordinary into the depiction of the (comparatively) ordinary.

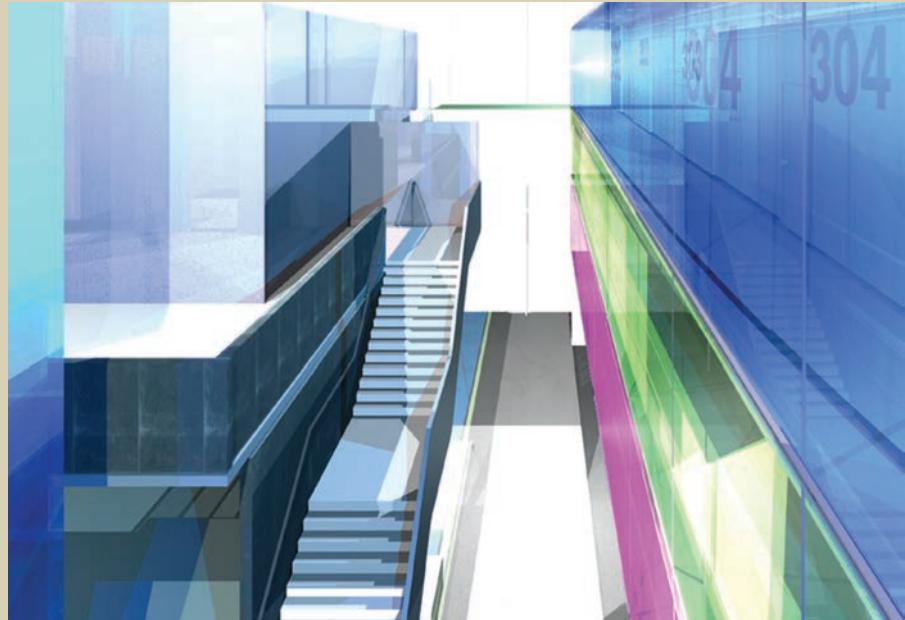


Right

The computer-made image is the most effective way of representing materiality and atmosphere.

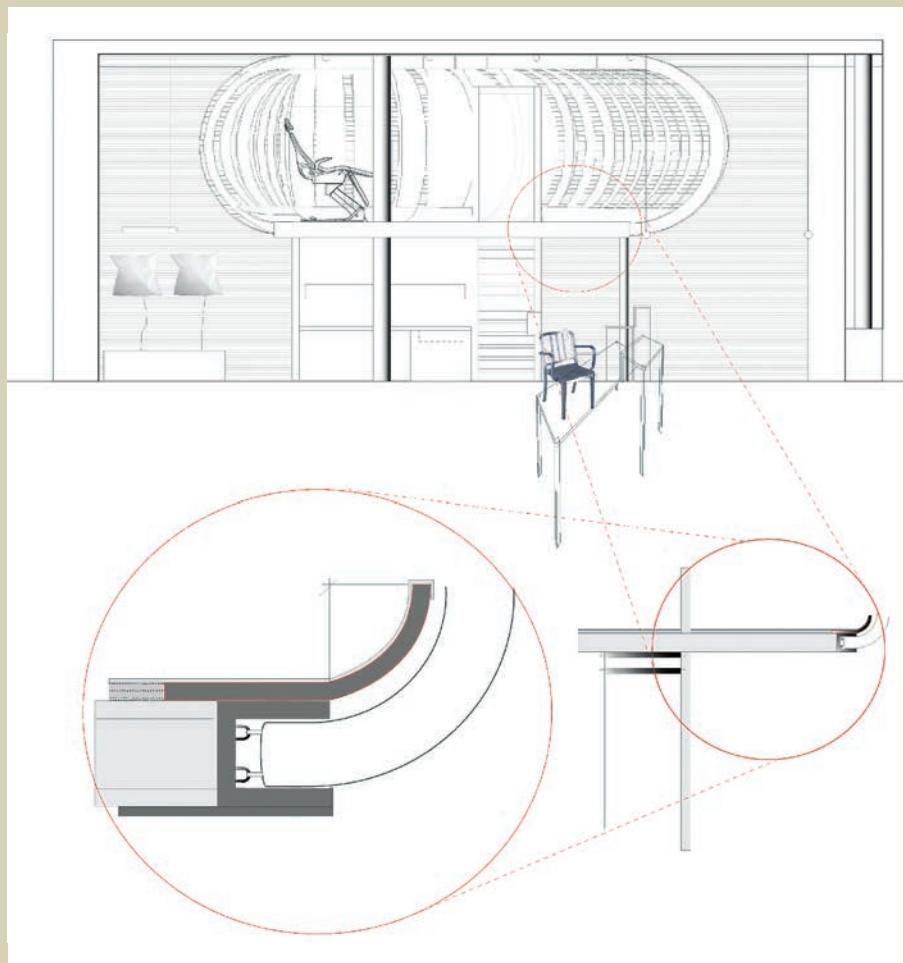
Below right

This image concentrates on the dominant elements in the space – the display system and products – focusing on them as the eye would and only hinting at elements of the existing building, which are of secondary, albeit complementary importance.



Right

Crucial construction details are identified, considered in two dimensions at a small scale (1:50 or 1:20) then drawn at 1:5 or full size with explanatory technical notes. Often when, as in this example, the construction process is complex and ground-breaking, development of the project will involve discussion with specialist consultants and manufacturers and drawings must initially communicate the designer's aesthetic intention to them. Subsequent drawings must incorporate information supplied by them (see chapter on production).



images. There is, of course, also a generic look to those made by hand and, just as with handmade drawings, the more one practises, and perfects the use of appropriate software, so the more distinctly individual the computer-generated image becomes. The maxim applied to traditional drawing, that the identity of the maker is always clear in a good drawing and that all bad drawings share an anonymous and unattributable ineptitude, is equally true for those made by computer. The mechanical, dispassionate and unadventurous implementation of instructions in a software manual will offer only the most prosaic description of reality, but the evidence suggests that for every designer, regardless of the quality of creative design work, the lowest level of digital drawing will be significantly more acceptable than that of an incompetent hand drawing.

Designers who use software creatively offer themselves, and others, the chance to consider a richer, more accurate and informative representation of their ideas. If one accepts that the opinions of a client are an essential element in the evolution of a successful project, then the more clearly and precisely ideas are represented the more productive the dialogue will be.

If computers significantly extend the possibilities of exploring and communicating the physicality of a

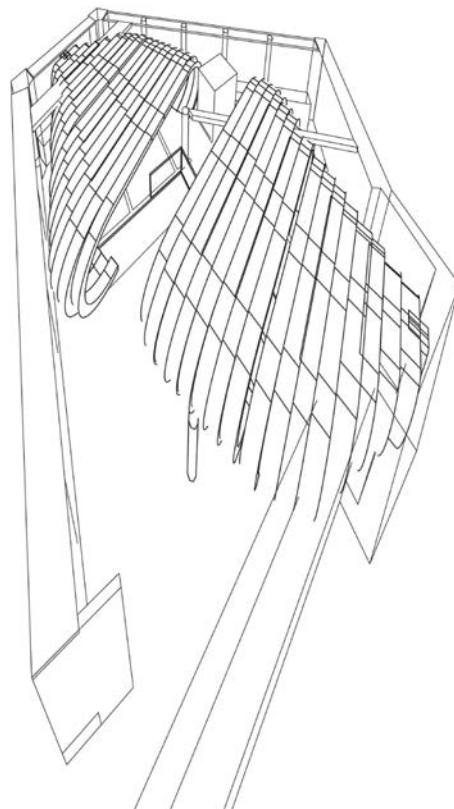
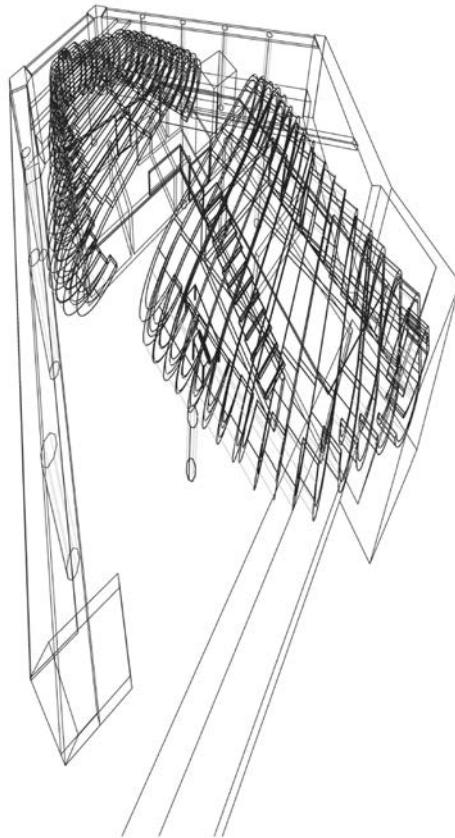
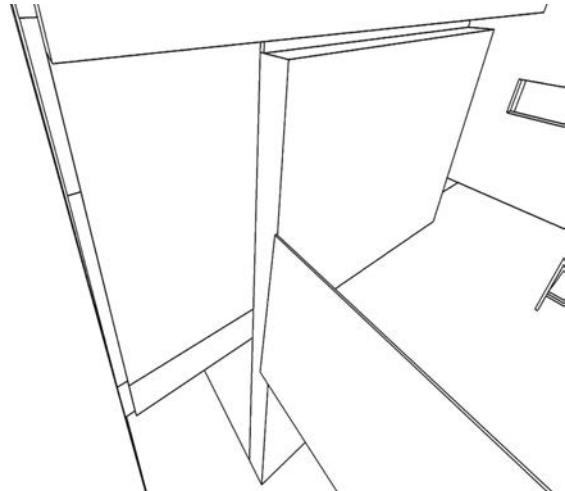
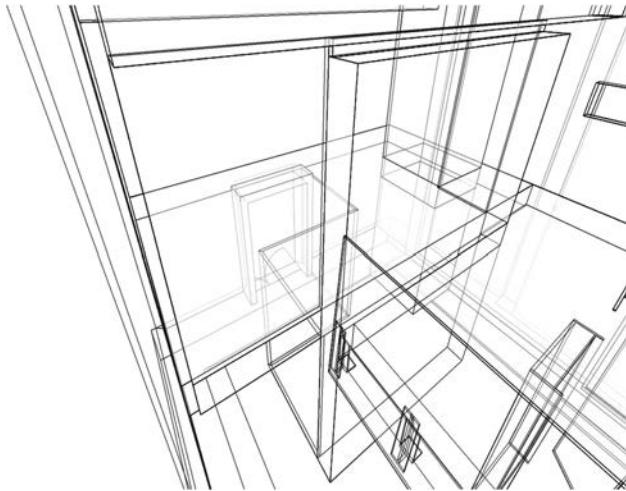
proposal, they have also impacted fundamentally on the making of the production drawings that provide builders with the information they need to construct the designer's intentions. They ensure drawings of extraordinary precision, to which text may be added without the labour intensive tedium of stencilling and in which the changes that inevitably become necessary as the project evolves may be incorporated seamlessly.

Compatibility of drawing software with information and communication technologies enables instant global distribution of drawings and an exchange of ideas that wholly supersedes the efficiency of any postal service, making creative collaboration with specialist consultants and manufacturers simpler and more spontaneous. Problems on a site half the world away can be digitally photographed and sent instantly to the designer, who may identify and communicate a solution just as rapidly. One reservation may be that the possibility, and perceived obligation, to reply quickly will discourage the extended consideration that a critical problem might require.

STEP BY STEP COMPUTER BASICS

Most drawing softwares offer a reasonable quality of three-dimensional image capable of meeting almost all requirements for developing and presenting ideas. However, in creating the most polished and realistic images it is often

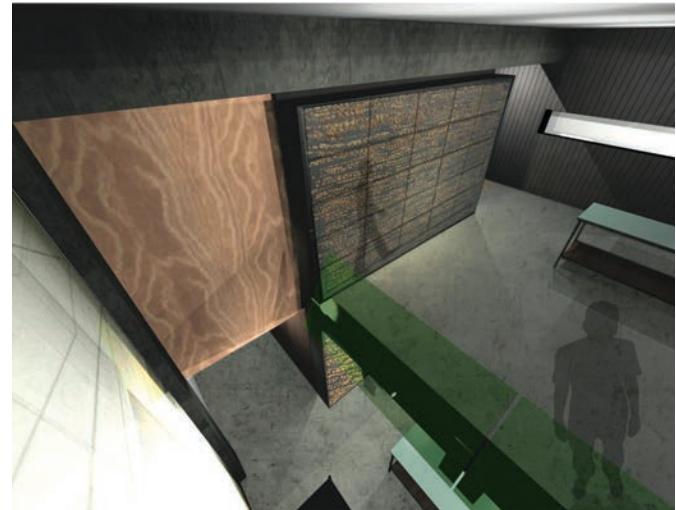
necessary to use a combination of programs, and, just as images made on different hardwares and softwares can appear very similar (as do drawings made by hand), so the basic steps in creating them are essentially the same.



1 In the first step – the 'wire frame' – all lines generated by the projection of plan and section are visible.

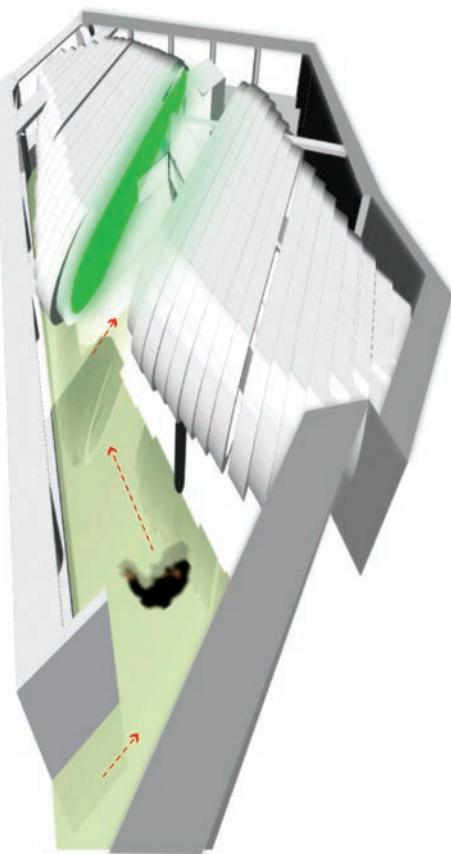
2 The 'hidden' lines – those obscured by the built planes of walls, floor, ceiling and other solids – are eliminated to provide the first clear three-dimensional 'model' of the space.

Two examples demonstrate this: the upper sequence is primarily concerned with representing materials; the lower sequence with representing form. Each uses different hardware and a combination of different softwares.



3 The first renderings of materials, textures and lighting are added. This stage allows an appraisal of the composition of the image.

4 The lighting and materiality are fine-tuned using compatible complementary software.

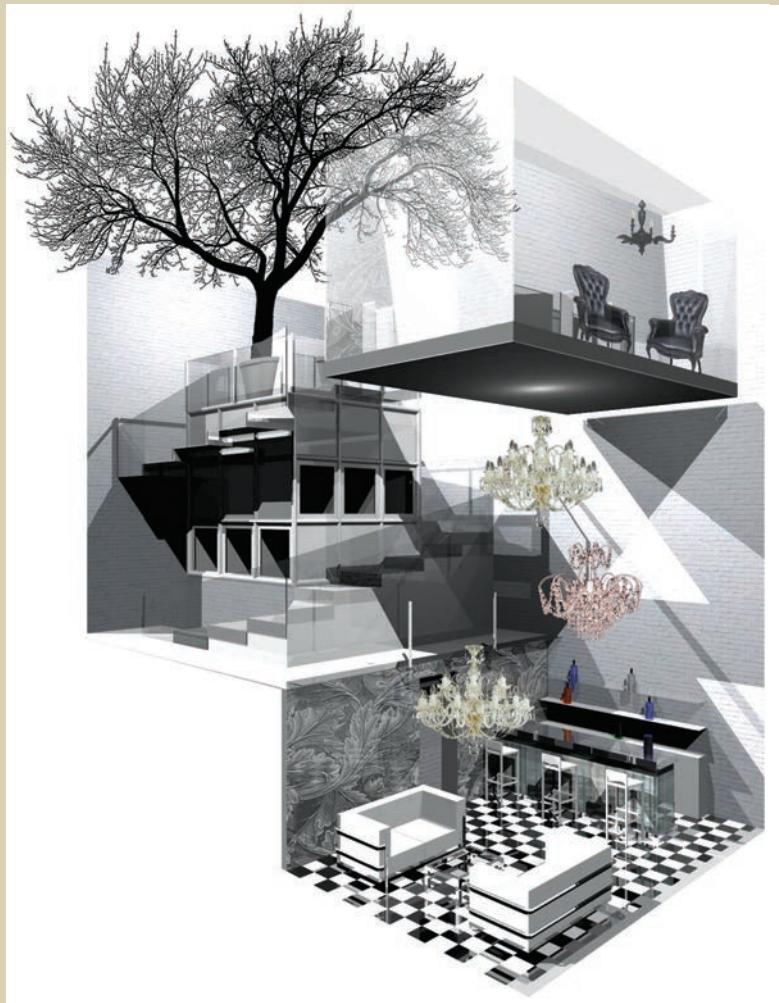


We are not, in this book, considering the particular merits of different software packages. Most of the specialist programs fulfil the essential requirements satisfactorily. Each is in a fairly constant state of flux as software designers create additions to their products, and often strikingly familiar, versions of successful rival softwares. Refinements to software packages almost inevitably make them simpler and faster to use and it is therefore increasingly easy for designers to move from one program to another. Comparisons of images made with different softwares, and combinations between packages, indicate that all can achieve a comparable level of refinement.

Those who first used computers in design practice were not only learning an unfamiliar way of working but grappling with equipment that was significantly more difficult to use than current (and, presumably, future) versions. They were also trying to disengage from the habits

of drawing by hand, having to organize the way they put a drawing together in unfamiliar ways. Cumbersome early programs, untested in the fields of practice, did perhaps require a significant degree of induction and dedicated experience of use, but it would now be a short-sighted employer who would reject a talented designer on the grounds that they were unfamiliar with the practice's preferred software (although this may continue to be a useful diplomatic way of rejecting an unsuitable applicant).

Any good interior design school should be inducting students into the use of computers at the beginning of the course, allowing them to find and evolve their own way of thinking with this essential tool. Just as one should not be aware of the pencil in one's hand when drawing, so, ideally, one should not have to deliberate over procedures for making an appropriate computer image.



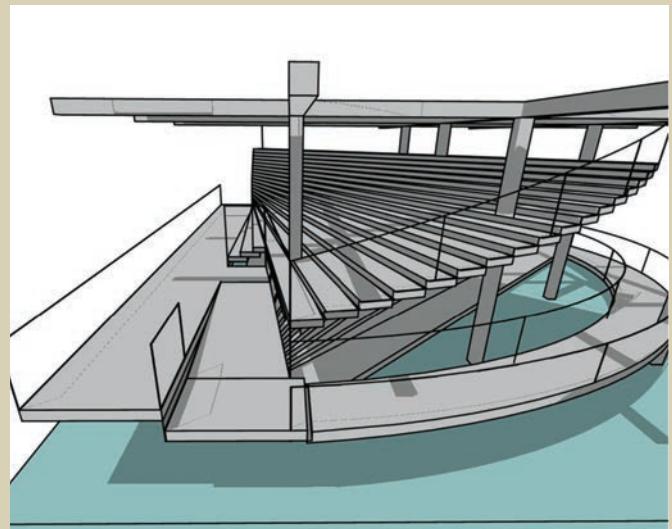
This page

The three-dimensional images for these three projects were generated by different software programs and refined using other specialist softwares, to import textures, materials, and furniture.

The essential skill in making an effective drawing, particularly one that attempts to represent an interior realistically, is to be able to visualize it accurately in one's imagination – the same skill that was necessary to make a good drawing by hand. Because the image in the designer's 'eye' is the crucial ingredient in determining the 'look' of a drawing, there is likely to be more variation in the work of two individuals using the same program than in two drawings by the same designer on two different software programs.

On this page drawings show how the computer makes possible the production of images that are distinctly different but that complement the style of the projects they illustrate.

When experienced designers have polished their computer-imaging skills, it becomes impossible to attempt to identify the programs they use and the impact of these on their work. Designers' individual ways of seeing become the determining factor in the expression of ideas. Rather than forcing graphic conformity as was, and is still sometimes, argued, the computer makes possible an extraordinary diversity of image. Examples on the following pages – each pair is the work of one designer – demonstrate this.



This page

Two images by the same designer. The limitations of hand skills do not allow such extreme diversity of expression.

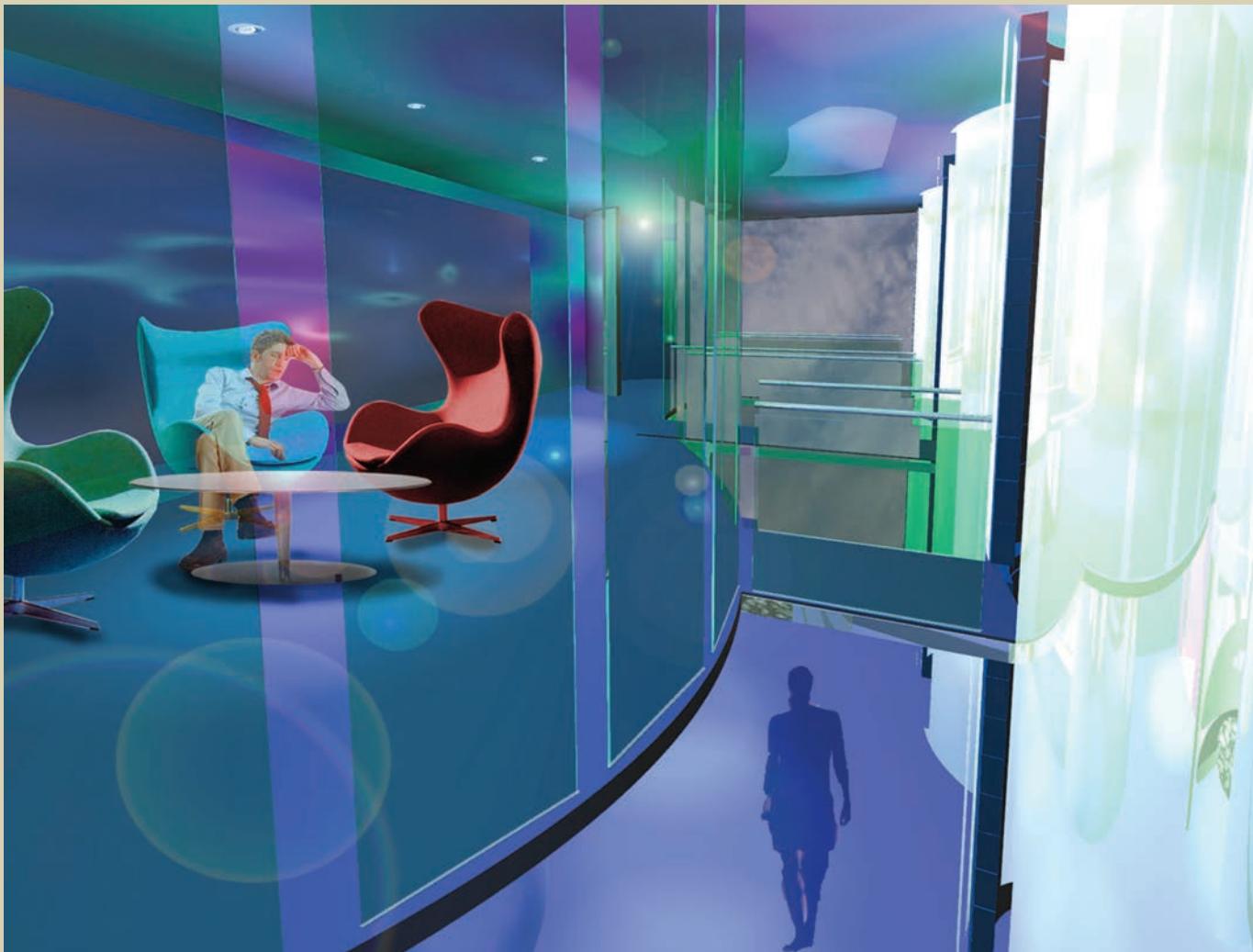


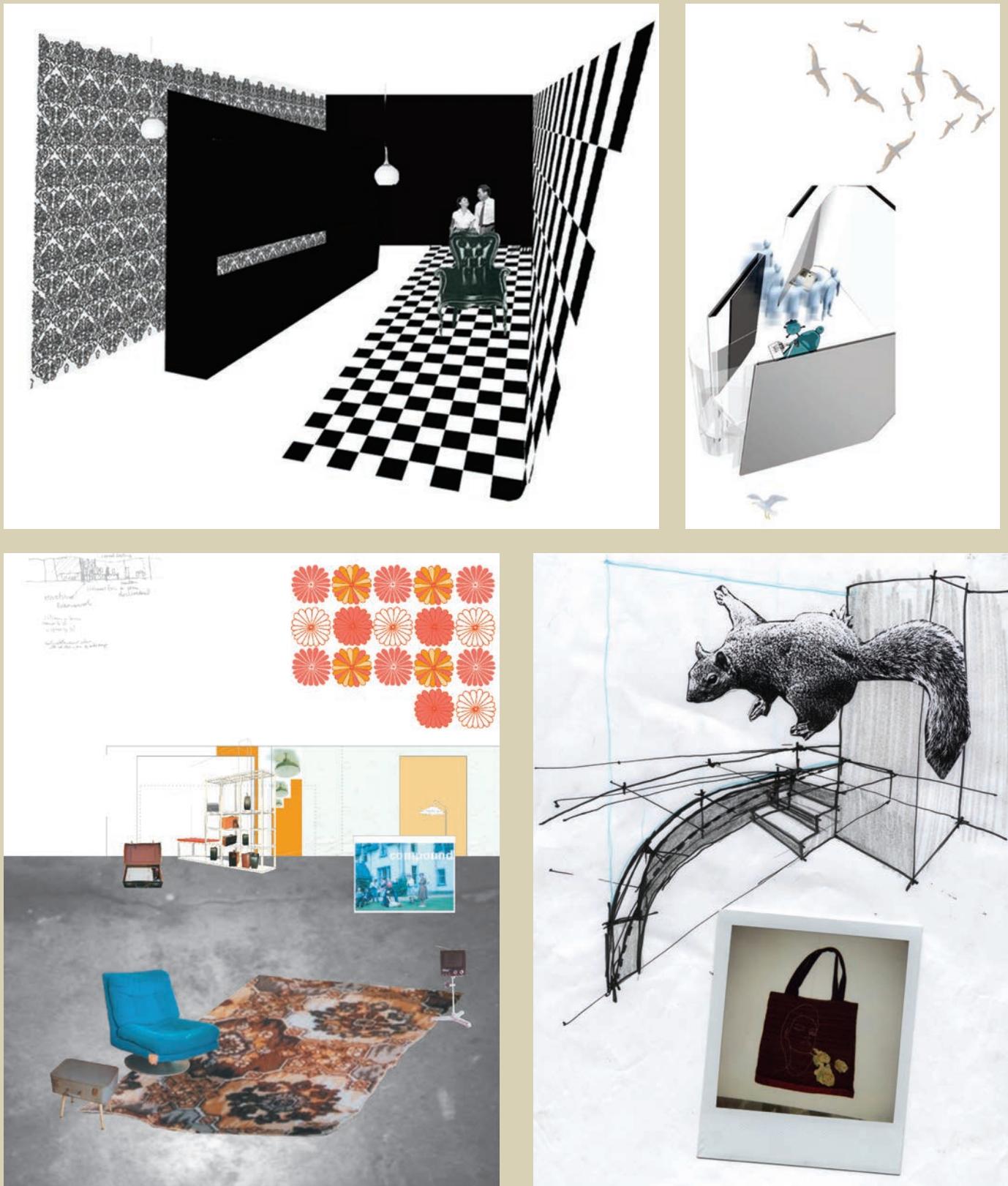
**Left and below**

The unique character of two proposals, by the same designer, is distinctively represented, and complex detail convincingly realized.

Opposite, top

In the work of designers who are experienced in the use of computers it is sometimes impossible to identify which programs have been used because it is the designers' ways of imagining their proposal that become the determining factor in the expression of ideas, rather than the software itself.



**Above**

Diverse, unconventional images, partly computer generated, partly computer-scanned found images and hand drawings, confound arguments that computers lead to graphic conformity.



Left and below

Images of different areas of the same project, one dealing with the contrast of new and existing materials and textures, one dealing with the hard-edged precision of a new space.



**Above and right**

Two drawings sit at opposite ends of the graphic spectrum. In that above light is harsh, colours are brash and sharply outlined. In the other lighting is soft, colours are muted and edges blurred.

The future

The often embarrassing history of predictions about future technologies suggests that dogmatic speculation is largely futile. The extraordinarily rapid development of computer-generated visualization suggests that the activity will continue to change significantly, but it is perhaps possible to speculate about the likely direction of emerging software and hardware.

It is likely that increasingly specialized programs will continue to evolve to deal with specialist needs but, as professional preferences and priorities become increasingly clear, operating systems are likely to become increasingly compatible. One significant example of this is BIM (building information modeling), a process for the generation and management of production information, the coordination of drawings made by all designers, working in all disciplines on a single project, so that, when any change is made, its impact on the project as a whole is identified and immediately communicated to all others involved so that they can respond to its implications. A mechanical and electrical engineer will immediately be aware of changes made by a structural engineer and be able to assess their impact, if any, on proposals for cable and ducting distribution. This changes the nature of collaboration. Meetings, involving teams of designers and consultants, that would once have been initially devoted to explanation and evaluation, can now concentrate on finding solutions.

As CAM (computer-aided manufacture) develops, its capacity to relate to CAD (computer-aided design) increases and the communication of instructions from designer to maker has become increasingly streamlined and refined. CNC (computer numerical control) technology now makes it quite feasible to link a designer's laptop in one hemisphere directly to a fabricating machine in the other. A computer programmed machine has no preference for straight or curved lines. Variations of lengths and radii, which would require time consuming manual adjustments to machine settings and templates, may now be infinitely varied and adjustment is made simply and definitively on the designer's computer. The maker whose job it was to interpret and implement drawn instructions is relieved of those time consuming obligations and, for better or worse, the quality of the finished object will depend primarily on the capacity of the designer not only to produce the drawings but to understand precisely the nature of the finished component, the appropriate range of materials, the nature of joints and fixings. Consultation with the maker of an artefact will be less important in the evolution of ideas and replaced by the advice of manufacturers about the practical and technical performance of their products. CNC software already ensures the most economical use of materials by maximizing the number of components, regardless of their size and shape, that can be cut from a standard sized sheet and, perhaps

it is reasonable to assume that software development will identify and incorporate other practical, economic and environmental data in the design/manufacturing processes.

So far CNC production has led to the, perhaps predictable, proliferation of spaces sculpted by horizontal and vertical ribs, which realize three dimensional form with a minimum of material. Inevitably, as designers experiment with the technology more subtle – and more extraordinary – proposals will emerge. Already there are examples of intricate CNC-produced mouldings that may encourage a return to the use of ornament in interiors. The old Modernist argument that machine production made intricate ornament obsolete is itself made obsolete by the capacity of digitally facilitated creativity and production, which allow the creation of intricate elements without the cost of highly skilled labour. 3D modelling makes it quite feasible to produce bespoke door furniture and other components hitherto sourced from manufacturers' catalogues. The caveat should perhaps be made that objects that are too easily produced may not be subjected to the same scrutiny as those that now evolve, often frustratingly slowly, in the collaboration and prototyping processes.

The computer's capacity to create animated 'walk-throughs' of interiors is an established, if expensive, presentation option. It can be initially spectacular but is compromised. Spectators' experience of movement through the space, particularly if the sequence is viewed on a monitor screen, is limited, and the images lack the three-dimensional depth of a physical model. This latter problem may be overcome by digital projection at a large scale, which makes interpretation easier for those unfamiliar with reading drawn images, and, increasingly, by the development of the software and hardware that generates three-dimensional images with perceived depth. Ultimately success will depend on the refinement of the representation of materials within the images and on the ease by which spectators control their movement through the interior. Ideally, the image should respond to the direction of the spectator's gaze, providing detailed close-up views. When such visual refinement is achieved the logical progression will be to complete the sensory repertoire by adding sound and sensations of touch, and perhaps when warranted, smell.

Something more extraordinary than these prosaic suggestions, as yet unanticipated, will materialize. Those who learnt and matured as designers in pre-digital times will fade away and ways of visualizing and, therefore, thinking about interiors will change. The creative process for interior designers is not about how you draw but about what you draw and the more effective tools have inevitably prevailed.



Above

The CAD data that creates the perfect repetition of elements in two dimensions can be translated into the CAM data that manufactures the same three-dimensional components for the built interior.

About this book

This book concentrates on describing why drawings are made, and the techniques and qualities that go into making good ones. Any drawing technique can only improve with sustained, self-critical practise but one also learns from others, not only about how they made successful drawings but also why they made them. The interior designer must be able to create a number of quite different types of drawing, each with its own conventions, which are the result of well-tried and tested experience. While the conventions should be respected it is possible to fine-tune them to personal taste. Much of the text deals, inevitably, with the nature of the design process. This is not to trespass into other territories but rather to recognize that the act of drawing – in two or three dimensions, by hand or computer – is so intimately a part of thinking about design that the two must be discussed as one.

Designers have individual ways of drawing and making, which are as distinct as their handwriting. These emerge from personal ability and individual preference but, broadly speaking, are personal variations on the universal battery of skills and techniques that have been proven in professional practice. Individual style tends to reflect aesthetic preferences. Those who make flamboyant gestures within their interiors tend to draw flamboyantly, avoiding technical precision as long as possible – often longer than is productive. Others will move quickly to a precise definition of their proposal, and may miss out on some of the unpredictable

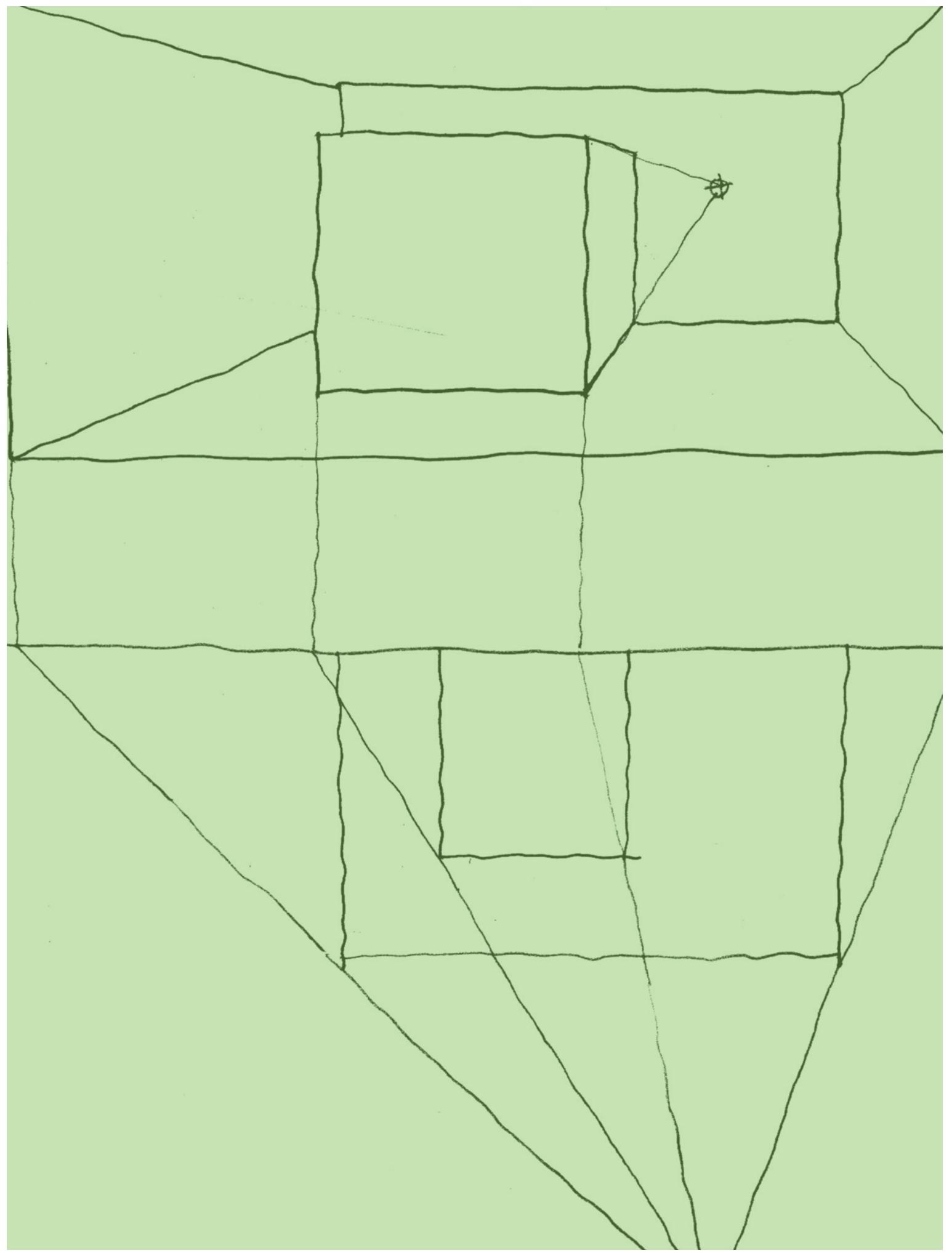
ideas that a less controlled exploration might reveal.

There appears to be a clear correlation between the success of designers' work and the rigour of their working methods. Natural talent can only be expressed if it is backed by intense hard work. It is not difficult to have an idea but it is very difficult to convert that intangible thought into a built reality and mastery of the range of drawing techniques underpins and refines the process. This book makes suggestions about how drawings can be most effectively made by hand, but does not attempt to explain how to use particular computer programs. These are in a constant state of development and refinement, and instruction is most effectively and comprehensively found for each in the relevant manual.

A good hand drawing can still prompt enthusiastic appreciation but an elegant or flamboyant digital image will stimulate the same response. The computer makes the production of drawings a little more egalitarian than hand-drafting in that one does not need the same degree of inherent manual dexterity. However, the ability to create a wonderful interior remains paramount, and perhaps there is a different pressure on the designer in that the quality of content, rather than the quality of the drawing, now falls under greater scrutiny and credit is no longer given for the successful grind of producing a decent handmade drawing. The computer gives each individual a battery of techniques, with an, almost, guaranteed successful outcome. Polishing of skills requires individual commitment, but this book and the analysis of the drawings it contains offers examples that point to a diversity of rewarding directions to explore.

The drawings used in this book have been made in the creation, presentation and realization of projects, some by practitioners and some by students. Many of the designers are familiar with each others' drawing style and some of the drawings included will demonstrate how collaboration can lead to productive cross-fertilization of ideas or, more importantly, how a shared idea is developed in a distinctly individual way by distinctly creative individuals.

It makes sense to look at the work of students, particularly for presentation drawings, because they have time to concentrate on the development of techniques and to push these to the limit in order to explain proposals that must, necessarily, remain on paper. Professionals make such drawings intermittently and are therefore less practised and less inclined to experiment, liable to fall back on familiar techniques and unable to devote time to exploring new directions. Students also tend to be more relaxed when working with computers and therefore more prone to experimentation. They have grown up with them as an integral part of their everyday lives.



CHAPTER 1 THE BASICS

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Measured surveys

It is important when designing an interior, particularly one that involves the complex subdivision of an existing space, to know the exact dimensions of that space because decisions about the location of new elements inevitably depend on the particularities of the original structure. While drawings of existing buildings may frequently be found and referred to, there are some for which no records exist, and others for which the drawings do not inspire confidence in their own accuracy. In such cases it becomes necessary to carry out a measured survey and to produce an accurate version of plans, sections and significant details. Even for recently constructed buildings it is worth checking the accuracy of dimensions on drawings because variations and discrepancies almost inevitably occur, and go unrecorded, during the building process. A very small discrepancy can often cause problems and embarrassment.

When no drawings exist it is normal to draw a plan on site, usually by hand, and good practice to record systematically all measurements because until design work begins it is impossible to forecast those which are likely to be crucial in the decision-making process. If the general outcome can already be anticipated with confidence, then it may be safe to take selective measurements, although, almost invariably, something will be overlooked, and only in the making of the measured drawing will this become clear.

Carrying out a survey

It is good practice to take 'running' dimensions rather than measuring and recording each element separately. Running dimensions are made by measuring sequentially all significant points on, for example, a wall from one clearly identifiable point, usually a corner. This prevents the accumulative error that is likely to occur when a collection of separate dimensions are aggregated on a drawing. The running dimension effectively offers the opportunity for correction with each individual reading. This is vital, particularly as the conditions on most sites are unlikely to support meticulous accuracy. Buildings in use are likely to be cluttered with inconveniently placed furniture. Unoccupied shells tend to be badly lit and possibly littered with building equipment.

There are circumstances in which it will be obvious that only a few isolated dimensions will be needed, and then it is enough to take a series of single measurements. This is also the easier method when working alone.

It is, however, better if two people collaborate to make a survey: one to hold the end of a long measuring tape and record, on the plan, the dimensions called out by the second, who will move along the length of the wall. Over a long distance the tape, if held in the air, will sag, increasing measurements. It is good practice,

when possible, to lay the tape along the floor. When this is impractical because of clutter, it may be sensible over a long distance to measure in two or more sections to reduce weight and sag. Hand-held laser measuring devices, which provide a perfectly straight line at any height and eliminate this problem, are increasingly replacing the traditional tape measuring tools and, with their inbuilt digital programming, they can also calculate areas and volumes. The most basic models can measure lengths up to 100 metres (328 feet) with an accuracy of plus or minus 1.5 mm ($\frac{1}{16}$ inch). Most have built-in spirit levels for horizontal alignment and project a light spot onto the surface defining precisely the length measured, which avoids readings being made to inappropriate obstructions and projections. The laser tool allows one person to carry out the survey, with no need of an assistant to hold the end of the tape and call out measurements.

It is always unwise to assume that corners are perfect right angles because, although most will appear so to the eye, this, particularly in older buildings, is almost never true. It is obviously important that angles are accurate and, to establish these, one should measure the diagonals of the space surveyed. A diagonal, together with the two walls it connects, represents the sides of a triangle, and when these are drawn to scale the angle of the intersection of the walls is established automatically and accurately.

It is easy to overlook diagonals, just as it is to forget about measuring heights. It is always necessary to have heights of ceilings, door and window heads, window sills, steps in floors and ceilings, the depth of beams and other dimensions particular to individual spaces. To distinguish these from horizontal dimensions on the drawing it is usual to draw a circle around them and, as far as possible, place them separately from horizontal dimensions.

There are usually places in any building where a lot of dimensions must be recorded and it is better to draw these areas separately to a larger scale so that the new drawing has enough space to accommodate the density of information legibly.

It is advisable to try to make the accurately scaled drawing based on the survey findings as quickly as possible, while the realities of the site are fresh in the memory. It is always sensible to take photographs of a space, and particularly of complex areas or details. Digital photography makes prolific record-making easy.

It is sensible to assume that a second surveying visit may be necessary to check discrepancies and correct omissions, and it is diplomatic to warn an occupant or owner of the building of this probability. It is better to make this sound like a regular procedure than to appear to be correcting oversights.

TIP MEASURING TOOLS

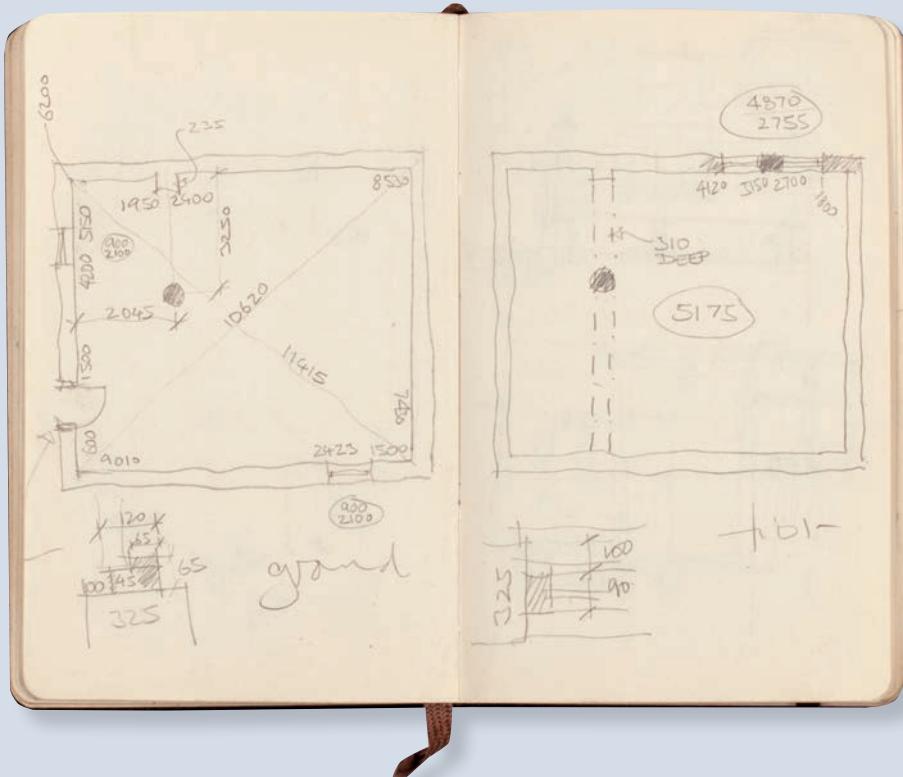
The bottom tape, typically made of canvas or flexible metal and 30 metres (100 feet) long, is used to take horizontal dimensions. The top tape, typically 3 metres (10 feet) long and more rigid, is used to measure small spaces and heights. The laser measure can also calculate areas and volumes.



Case study The measured survey

Right

A notebook with initial freehand survey drawings. The drawing on the left page records dimensions of walls and diagonal measurements. The drawing on the right page records dimensions relating to a column and brick pier on the ground floor of the space.



A freehand plan of the space is made in a small sketchbook. While it is good if this is proportionately accurate, it may be distorted to allow more space on the page where a number of dimensions need to be recorded in a small area. In this case, the drawing does not register the angles that emerge when it is redrawn to scale. Such discrepancies can be alarming when they first appear during scaled drawing in the studio and it may be necessary, for peace of mind, to return to the site for confirmation. If, however, the survey has been comprehensively done to allow cross-referencing dimensions one may be confident that the angles are accurate.

The 'running' dimensions for each wall are normally taken from the left-hand corner as one looks at the wall. When necessary, widths of individual elements along the wall may be calculated by subtracting the left-hand dimension from the right. The diagonals are measured. Heights are recorded in circles to distinguish them from horizontal dimensions. A few parts of the drawing are shaded for clarification, for example the windows on the top right and, for clear identification, the column in the middle of the floor.

The column position is established on the ground floor by the distance of its centre point, measured at right angles, from two walls. In this instance its diameter should be recorded and in the case of square or rectangular columns the length of sides. It is important to indicate that the measurement is made from the wall and not the face of the projecting brick pier. The depth of the pier's projection is not recorded. It may be that since it is a brick pier, and constructed in accordance with the module of brick sizes, it was assumed that the dimension would not need recording. It is, however, more likely to be an oversight needing to be checked later – particularly if the pier has a critical relationship to the proposed new construction.

The plan on the right records the location of high-level windows, overall dimensions of the walls having been determined by the data for the lower. The dotted-and-dashed line represents a beam overhead, and the note with it records its depth below the ceiling. A rigid wooden or metal calibrated measuring rod is the appropriate tool for making vertical measurements.

The two plans in the bottom left of each

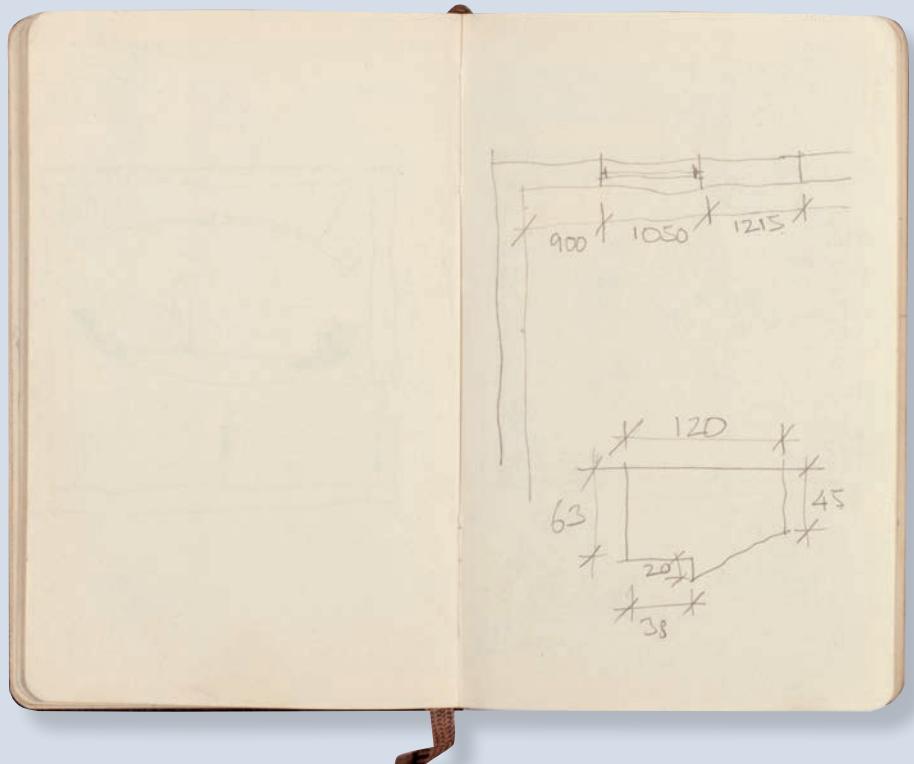
page record dimensions for the door and window openings. These elements are likely to be unaffected by the project work but their accurate depiction on the plans and sections will give credibility to later drawings and remind the designer about the depth of reveals, which may later play a part in decision-making about interior details.

There are projects, involving no new construction or where the location of new construction is already determined, for which the measurements may be anticipated accurately. In this example, on the right the few dimensions are enough to establish the position of an overhead beam towards the bottom of the drawing and the geometry of the window at the top.

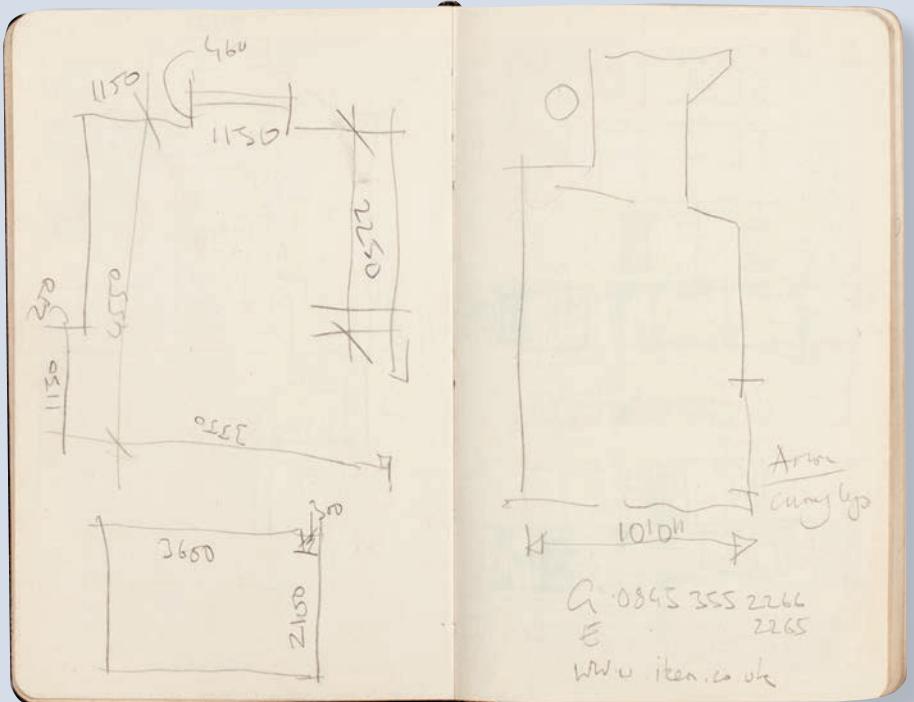
When it is necessary to return to a site for additional information it will be very clear what this is and a few isolated dimensions will be enough. A return visit may not always be to take additional measurements but could be to confirm that the plan drawn from the original notes is accurate. With complicated surveys there are often ambiguities and apparent discrepancies that demand to be checked.

Right

The lower sketch records dimensions for a door frame, and because it is safe to assume that right angles would be cut very accurately for such an element, the dimensions shown are enough to establish the angle.

**Right**

A simple measurement sketch for a space where no new construction is needed.



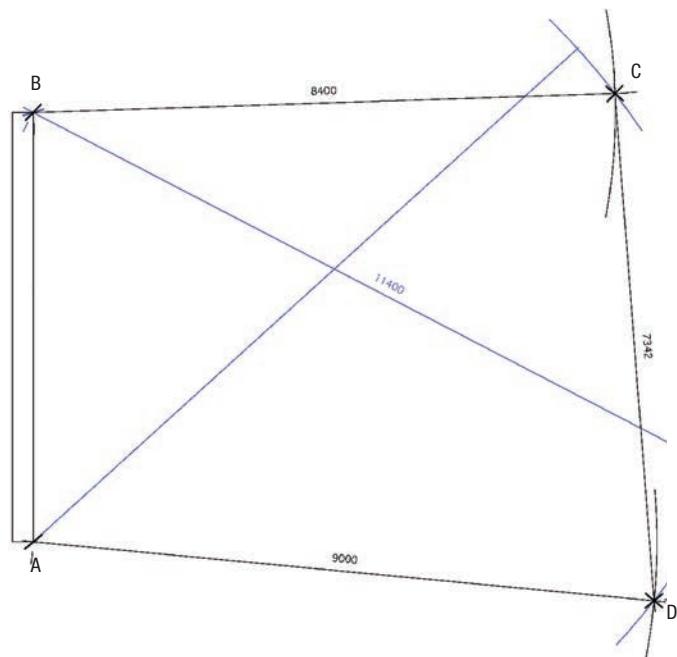
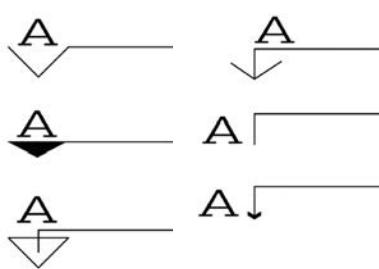
STEP BY STEP DRAWING A PLAN FROM SURVEY INFORMATION

When an accurate survey has been made of the existing building it is possible to begin the design process. The essential information about any project is communicated in a comprehensive set of plans. Plans are essentially horizontal slices nominally drawn at 1200mm (4 feet) above floor level, which means that they cut through most windows and therefore locate these crucial elements. A high-level window, with its sill above 1200mm, should be

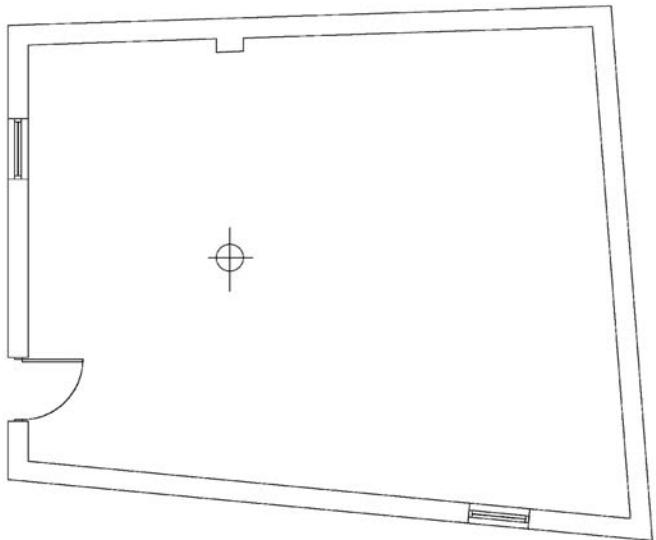
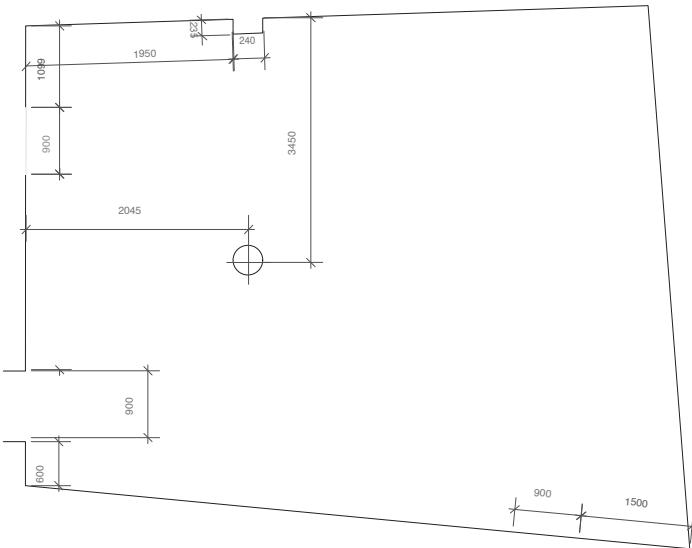
indicated with dotted and dashed lines, since its existence is likely to have a significant impact on design decisions. Dotted-and-dashed lines indicate the edges of high level elements. Dashed lines indicates the location of elements below floor level and therefore not visible. These should only be indicated when conveying information essential to understanding of the upper floor.

TIP SECTION LINES

The section line, which indicates the location of the cut, need not be drawn continuously across the plan because additional lines can complicate the reading of those representing built elements. It is sufficient to indicate its position on the edge of the plan, but arrows at each end of it must indicate the orientation of the section. These arrows are good examples of how personal taste may influence the graphic style of a drawing. They may take any form as long as they are unambiguous.

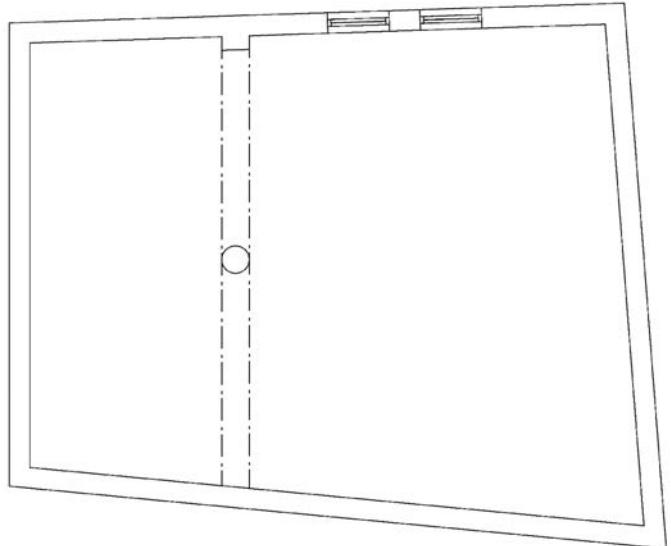
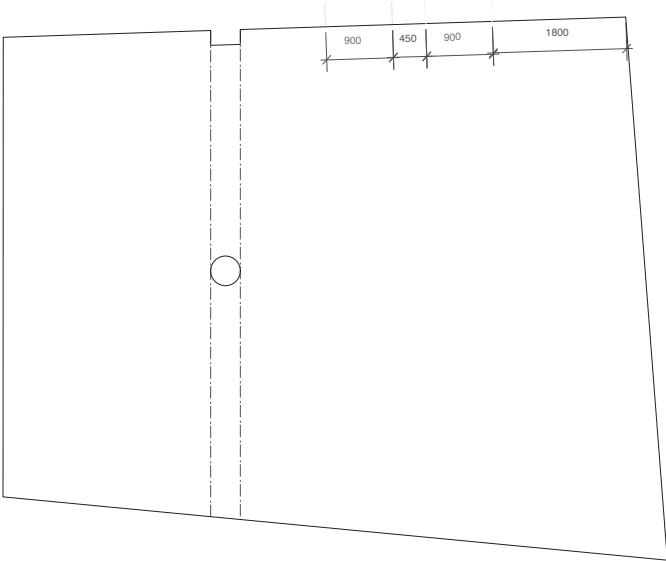


- 1 All lines are drawn to scale. The wall between corners A and B is drawn vertically, as an arbitrary starting point. The intersection of the arcs, which represent the length of the wall from B to C and the diagonal from A, locate corner C. The intersection of the arcs from C to D and A to D locate D. The whole may be checked by plotting the diagonal from B, which should intersect corner D. This is unlikely to be wholly precise, particularly if traditional hand-measuring techniques are used since the measuring process is subject to error and the computer will make a scrupulously accurate interpretation of the input data. Minor discrepancies are acceptable. Where precision is required, and this will become apparent when the design is developed, measurements may, and probably should, be checked on site.



2 Dimensions from the survey notes locate the door, windows and column.

3 The drawing uses established drawing conventions for doors and windows. Minor variations may be made to these as long as they broadly retain their recognized configurations. Too much variation and the drawing will fail to communicate effectively.



4 Surveyed dimensions locate high level windows. The position of the beam is determined by the pier that projects from the wall and the column.

5 The beam is indicated by a dotted and dashed line, which is the standard graphic convention for elements 1200mm (4 feet) above floor level, the height at which plans are conventionally drawn.

Graphic options

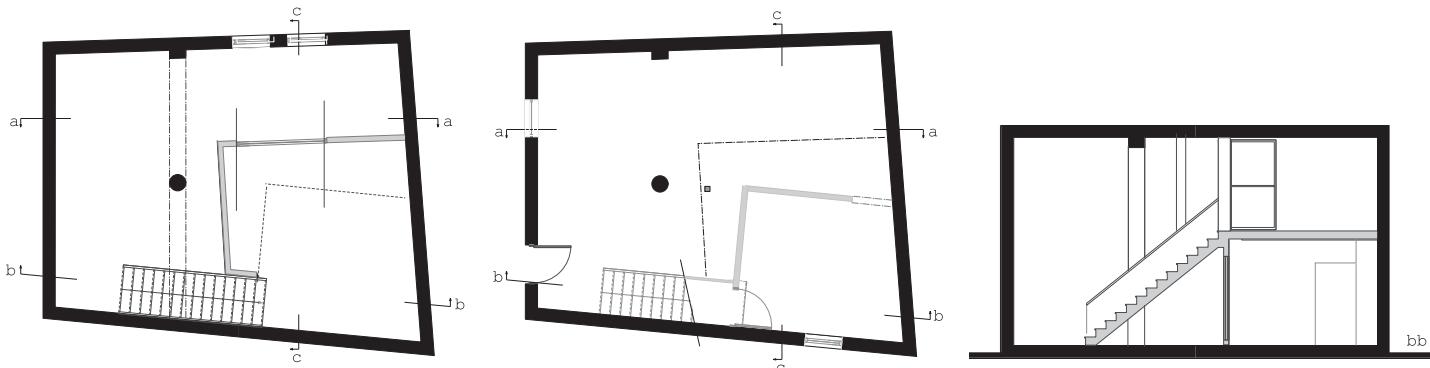
The essential information about any project is communicated in a comprehensive set of plans and sections. The number of plans is determined by the number of floors but the number of sections depends on the nature of the proposal. The section's function is to explain the interaction between levels, and so a decision must be made about the appropriate number and where each 'cut' may most effectively be made. The location of the cut determines how much useful information the drawing will yield, and it is important to indicate its position on plans with a 'section line'. The graphic interpretation of plans and sections is a matter of taste, and consideration should be given to their compatibility with the spirit of the project. Whatever that decision may be, when presenting new proposals, it

is always sensible to distinguish new construction from old, by tone or colour, because this allows clients to see immediately the extent of the work envisaged. If no differentiation is made it is difficult for them to identify the new work, and their cautious assumption tends to be that it constitutes more than it actually does – which in turn suggests greater cost and may cause alarm.

Essential conventions

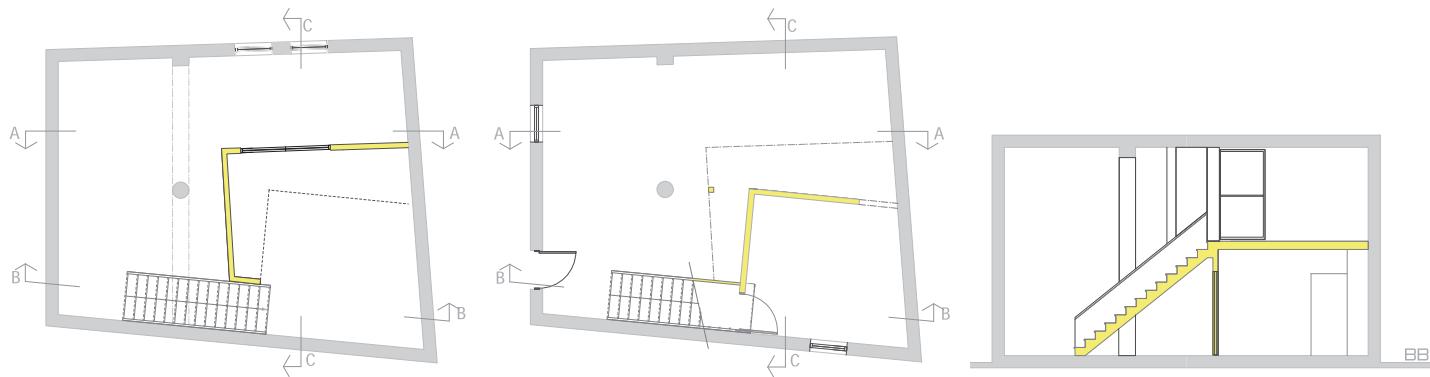
Plans are essentially horizontal sections nominally drawn at 1200mm (4 feet) above floor level, which means that they cut through most windows and therefore include these crucial elements. A high-level window should be indicated with dotted and dashed lines, since its existence is likely to have a significant impact on design decisions.

The drawings demonstrate standard conventions that



Above

In this sequence, two plans and a section use solid filled lines to indicate walls and existing elements, with new elements shown as lighter tones. The bottom section shows the standard way to draw stairs.



Above

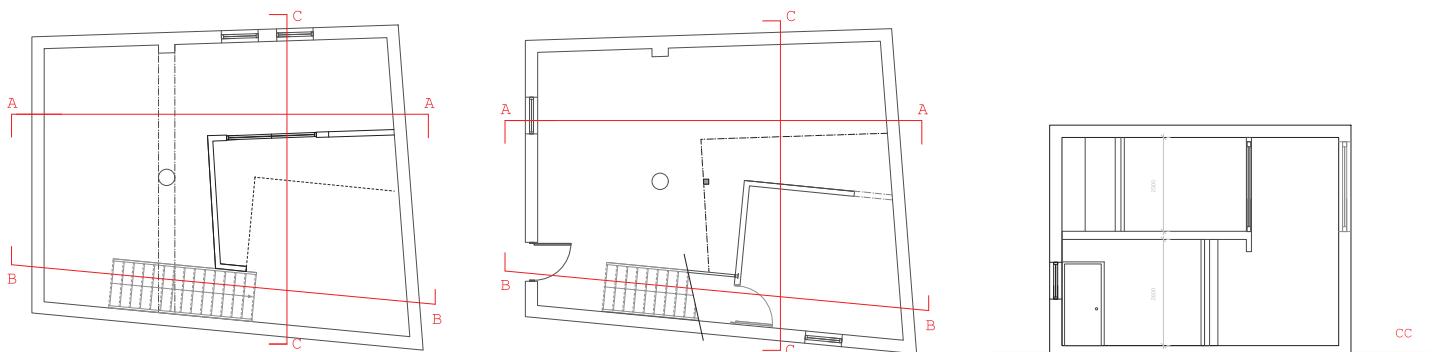
In this sequence, existing walls are shown as a paler shaded grey, to allow the new elements, in yellow, to stand out.

are so fundamental that significant variation from them is counterproductive but, as long as coding is clear and the drawing easily understood, modest reinterpretation is acceptable. Plans represent proposed upper floor and lower floors. Sections are cut as indicated by the section lines.

It is worth noting the standard practice for drawing stairs: a stair, unless it is leading to a change of level less than 1200mm (4 feet) above the main floor, is inevitably cut through. The convention is that it be shown cut off, at an angle, approximately 1200mm (4 feet) above floor level. This allows some indication to be made of the construction below it. In the examples below, this shows a store entered from within the room in the lower right-hand corner. An arrow always points towards the top of stairs. On upper floors (on the left of each sequence) the entire stair is

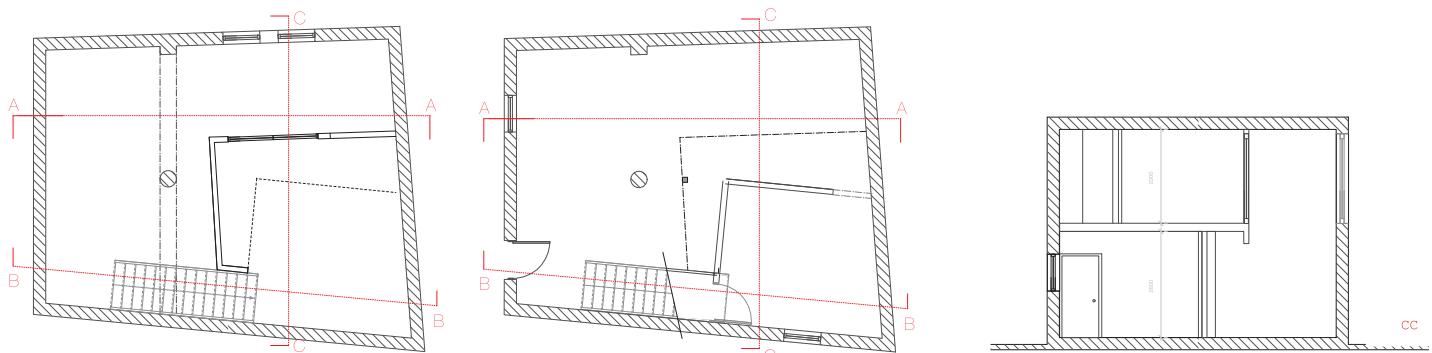
visible because it is below the level of the plan 'cut'.

Dotted-and-dashed lines indicate the edges of elements above the floor level. Dashed lines indicates the location of elements below a floor level and therefore not visible – these should only be indicated when conveying information essential to understanding of the upper floor.



Above

The distinction between existing and new elements has been lessened in this sequence.



Above

In this sequence, existing elements are indicated by hatching.

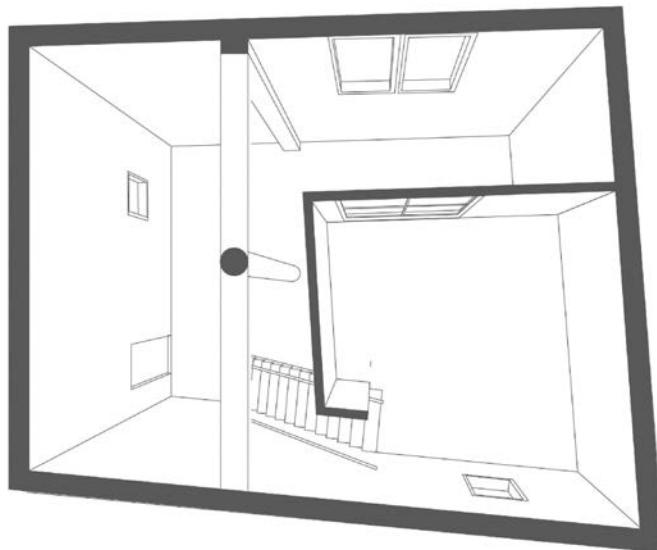
STEP BY STEP MOVING TO THE THIRD DIMENSION

Once the plan and sectional information has been fed into the computer, it is simple to generate convincing three-dimensional views that can, in turn, provide a basic form to which colours, textures and lighting may be added.

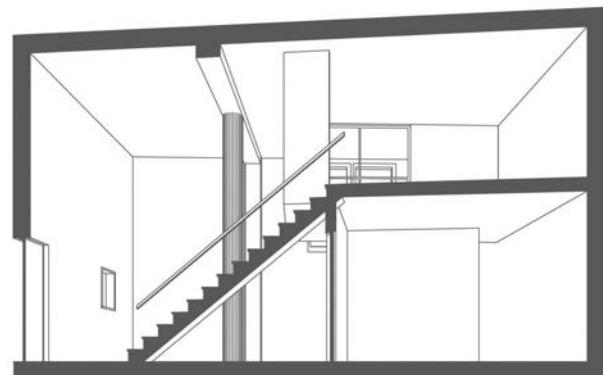
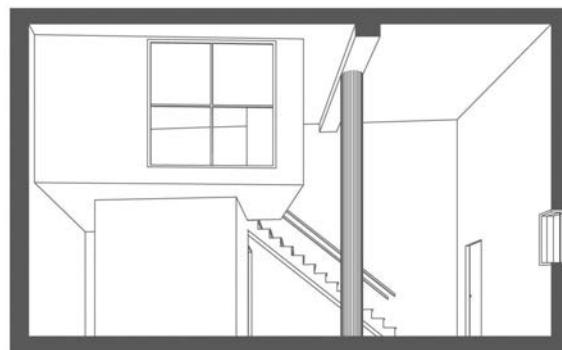
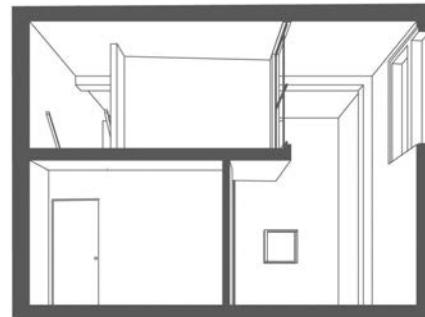
There are a range of standard three-dimensional projections, all of which the computer produces with equal ease.

While it is still possible to conform to traditional axonometric and isometric forms, the computer offers

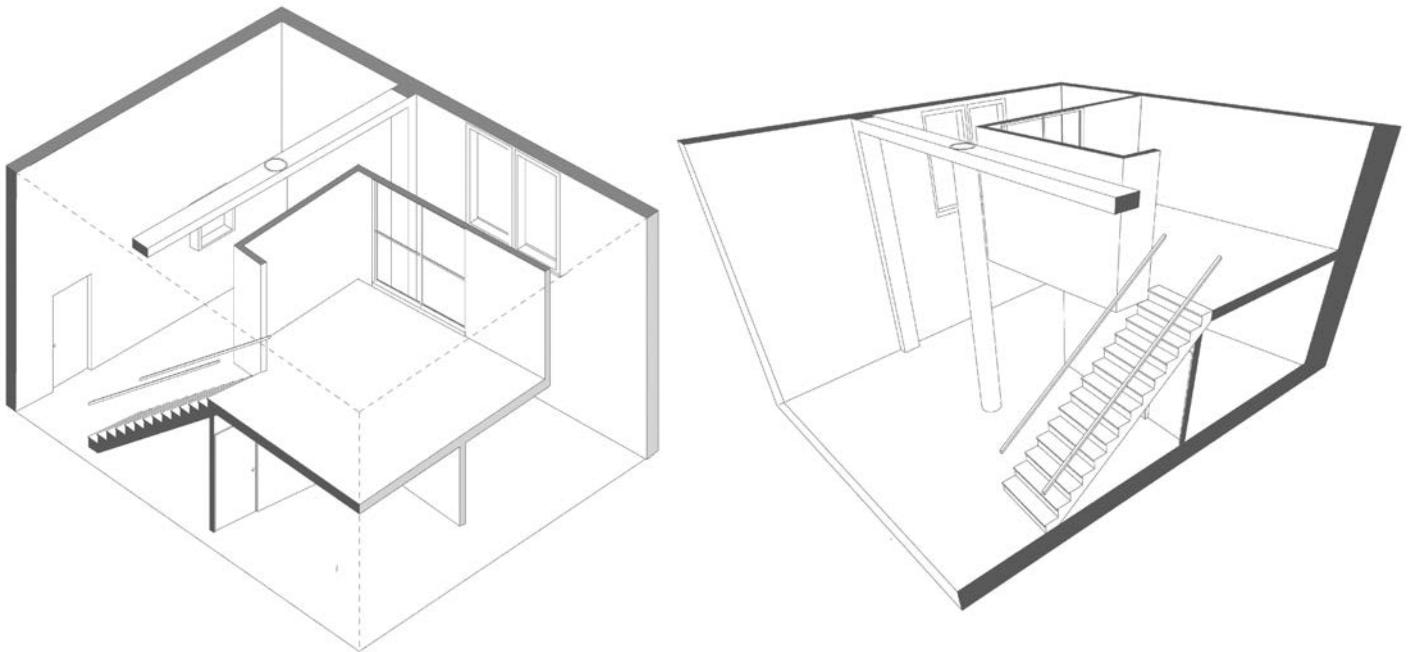
a greater range of options and consequently invites experimentation, particularly with perspective. This facility with perspective produces images that are closer to reality and therefore easier for nonprofessionals to understand. There is, however, a danger that the temptation to distort perspective to produce a more dramatic image may confuse rather than clarify. The purpose of every drawing is to convey information clearly and not to be an end in itself.



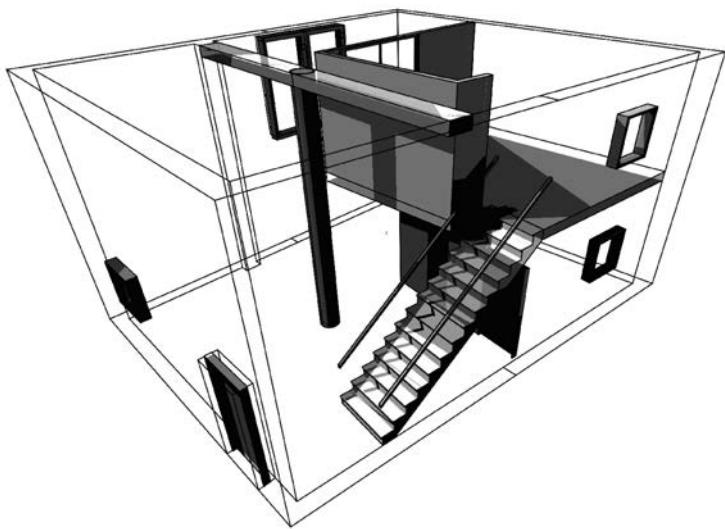
1 Plans may be projected upward in perspective, and this can make them more comprehensible. It is probably most effective for an interior on one level, in which all walls are visible.



2 With more than one floor level the conventional section, projected back in perspective, can sometimes explain the context of the section 'cut'.



3 It is a matter of deciding which three-dimensional option works best for the project, and the computer allows options to be generated quickly and rotated on screen for consideration.



4 Further clarification of the three-dimensional may be achieved with the addition of tones and shadows, and the manner in which this is done again depends on the nature of the project.

Drawing by hand

Handmade drawings are normally made with either pen or pencil. The pen tends to be favoured when a more precise line is required, and this was particularly important in the days when dye-line printing, which produced a line that was soft and greyer than the original, was the most common method of reproducing drawings. The computer has now superseded the pen as the most effective means of making and reproducing precise drawings, in particular those providing technical information for building contractors. It is the more effective tool but, if drawings are any longer to be made by hand, it is perhaps logical that they should now be made in pencil because these have a quality that the computer cannot (yet) match and the significantly improved quality of photocopying equipment delivers a better line, which can also be adjusted in the copying process.

Hand-drawing tools

While there is no doubt that the computer has become the tool of choice and a necessity for large and small practices, there is no reason why hand drawing should not survive as an alternative, perhaps most viable for the slightly eccentric individual practitioner working on small-scale projects.

Freehand sketching provides an effective and immediate way to visualize concepts in the earliest stages of the design process, but to develop ideas it quickly becomes essential to work accurately to scale, to understand how plans and sections should be organized and to refine the interaction and relative proportions of new and existing elements. The tools and instruments illustrated on these pages, together with a drawing board with a T-square or parallel motion arm, ensure the necessary level of accuracy.



Above left

The wooden pencil remains viable but needs constant sharpening. More sophisticated, mechanical pencils offer consistent line width. Some, like that on the right, provide a thick heavy line for sketching. Others, like that on the left, offer precisely controlled line width and a choice of lead types.

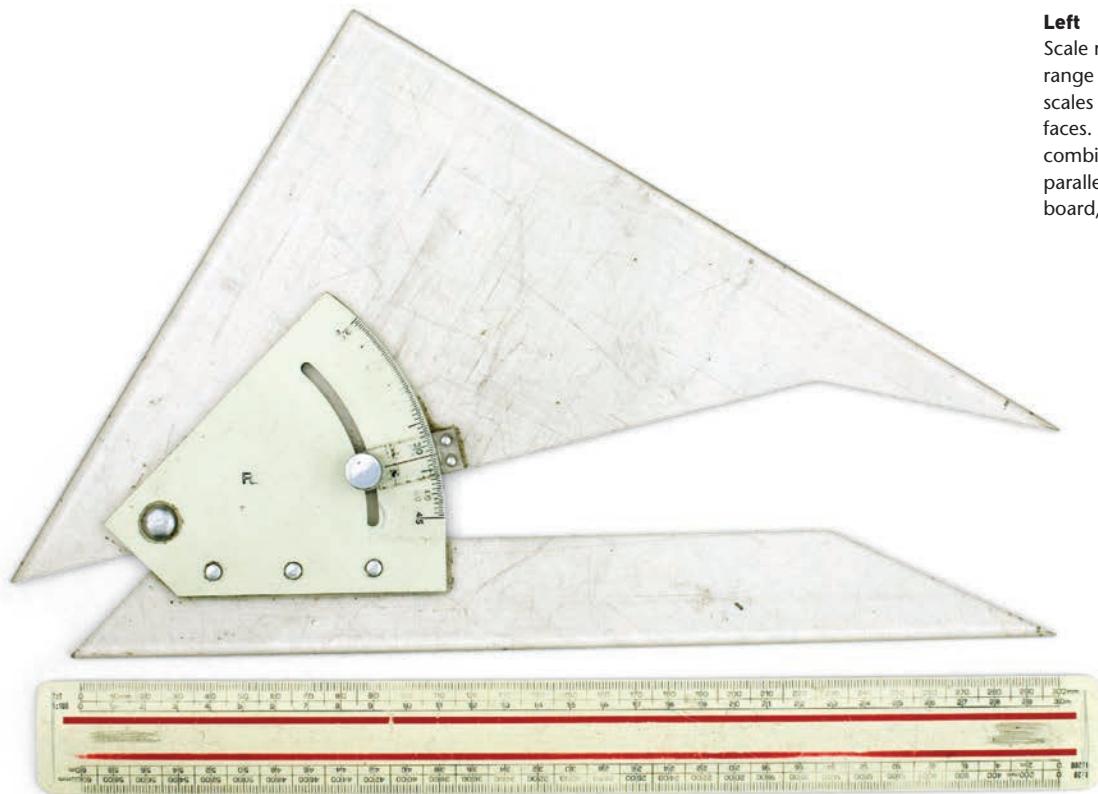
Above right

Pens like that on the left use cartridges of dense, usually black, drawing ink and offer a choice of exact line thicknesses, which are useful in the articulation of drawing content. The thinnest nibs (0.1 and 0.13 mm) are vulnerable and expensive. Felt-tipped pens, like that on the right, come in a variety of line thicknesses but do not offer the same degree of precision, and, although cheaper, do not last long.



Above and right

Compasses make circles or set up angles (see page 28). They can be adapted, as on the right, to take mechanical pencils and drawing pens.

**Left**

Scale rulers have the necessary range of standard drawing scales arranged over both faces. An adjustable set square, combined with a T-square or parallel motion arm on a drawing board, creates accurate angles.

Below

Circle templates come with a comprehensive range of radii options and 'French curves' define more complex shapes. Stencils, for both pen and pencil, make clear lettering but are time-consuming.



The first sketches



Above

A freehand 'perspective' can concentrate attention on its shortcomings rather than its content. It is better to make no pretense to perspectival accuracy and focus attention on content. If the parameters of the drawing are not formally established it is still possible to get a convincing

approximation to perspective if all lines broadly conform to the principle of convergence to a shared vanishing point. A first drawing may be made and refined in a series of tracings, which if made quickly will retain a sense of spontaneity.

Handmade drawings may have been superseded by computer-generated images as the principle presentation tool but they retain their role as a first means of delineating and communicating ideas. Making such drawings does not require elaborate or sophisticated technique. In fact, too much reverence for the finished piece may result in time wasted in the refining of an image that has no value beyond the moment it delivers the information that is revealed in its making. However – since designers tend, by nature, to worry about the aesthetic merit of everything they do – it is difficult not to tinker with a drawing once it seems that it might have some merit in its own right, even though the act of refining it can divert the mind from consideration of its content. It is always difficult to know exactly when a drawing is completed and has no more insights to yield. Perhaps it is only when it appears to be complete as an artefact that it becomes clear that there is nothing to be gained from pursuing it further.

There is always a danger that if a drawing turns out particularly well it may cloud judgment about the quality of the idea it illustrates. It is difficult not to feel some loyalty towards something that embodies style and skill, but it is worth bearing in mind that any drawings made in the development of a project are liable to, and generally should, end in the waste-paper bin.

It is not surprising that it is difficult to find examples of simple, utilitarian developmental drawings. Those that are available are untypical, simply because they had particular significance or because they were particularly well made and their maker could not quite find the resolve to throw them away.

TIP HAND DRAWN LINES

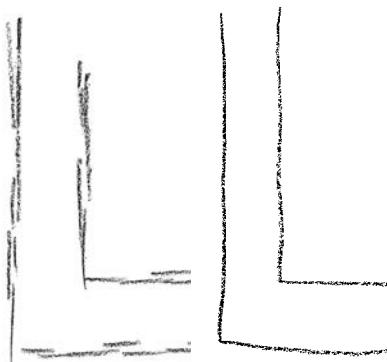
Avoid broken 'artistic' lines. Isolated and inadvertent line variation, as on the left, will appear as a drafting error. Controlled variation, as on the right, will absorb errors in a more deliberate 'freehand' effect.

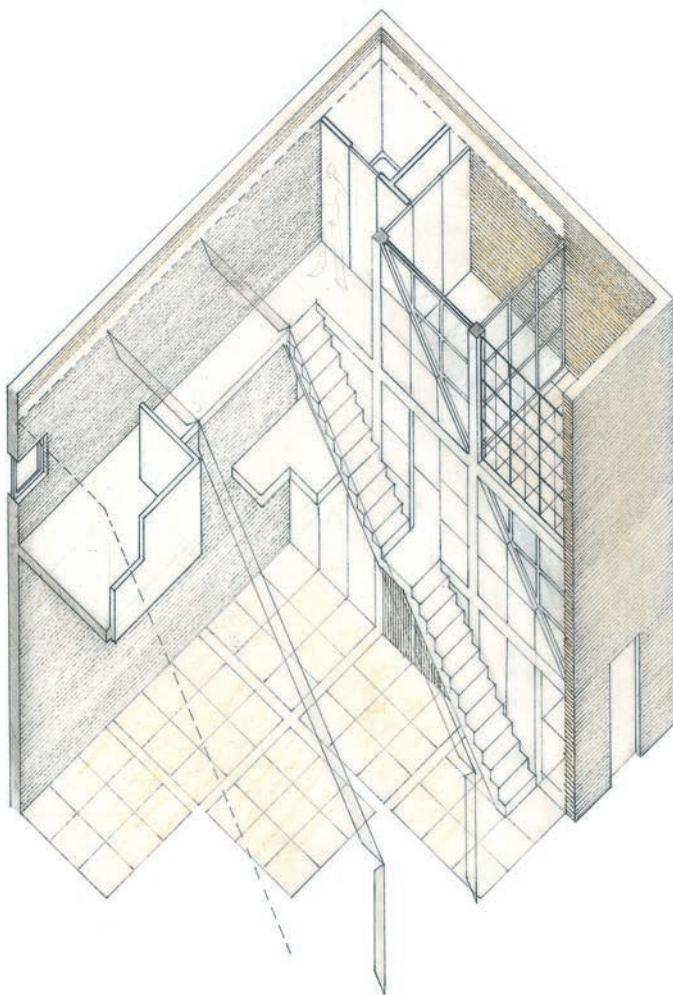
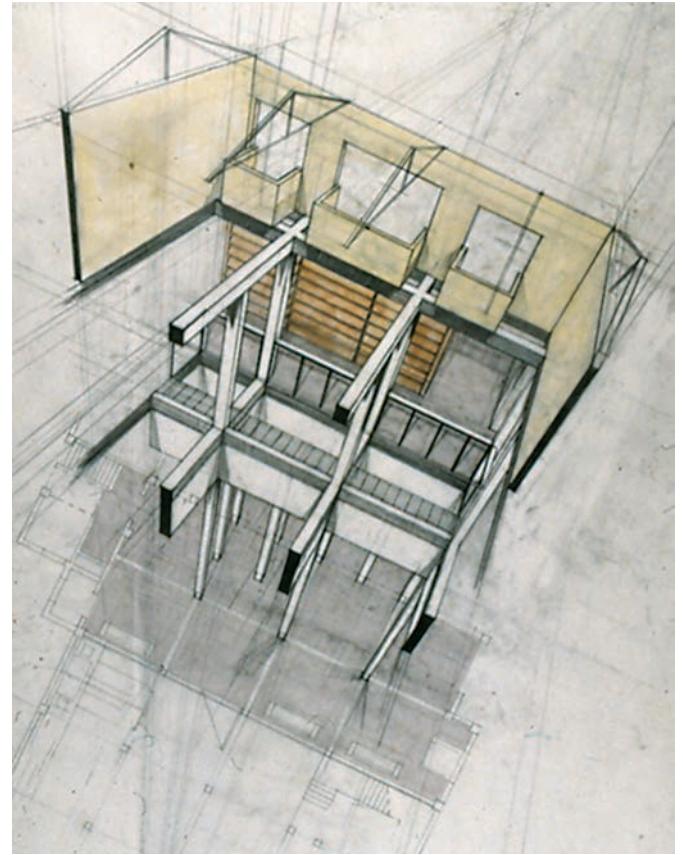
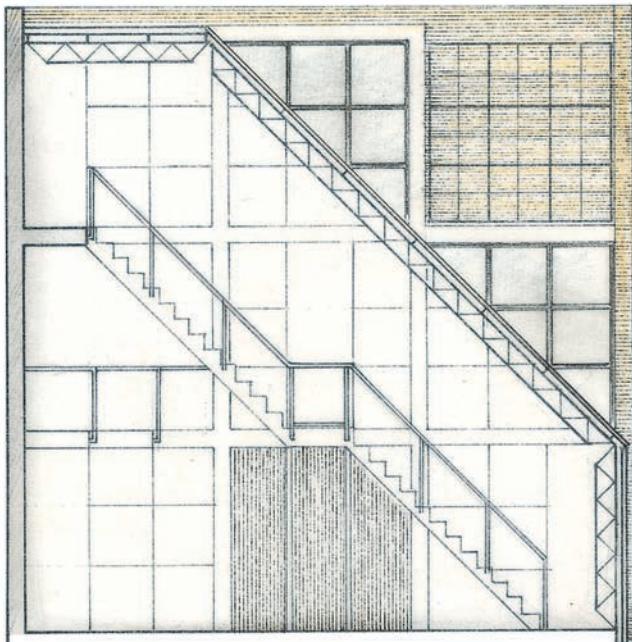
The concentration needed to control the variation will help keep the line straight.

It is important to be able to draw a convincing freehand approximation to a right angle. This is not difficult with some practice, and it is easy to make a credible approximation to 45 and 30 degrees by subdivision of the 90. Where accuracy is

particularly important, or where the shapes to be defined are complex, lines and angles may be drawn first, lightly and precisely, with technical instruments and then overdrawn freehand.

Accurate proportions can be guaranteed by accurate measurements, and a measured drawing does not have to be technically constructed. The same rules used to construct a technical drawing may be followed to make a freehand version, and a freehand line can be drawn to scale.



**Above left and left**

These pen drawings use varying thicknesses of line, hatching and adhesive tone for additional articulation. Lines have the constant density of ink.

Above

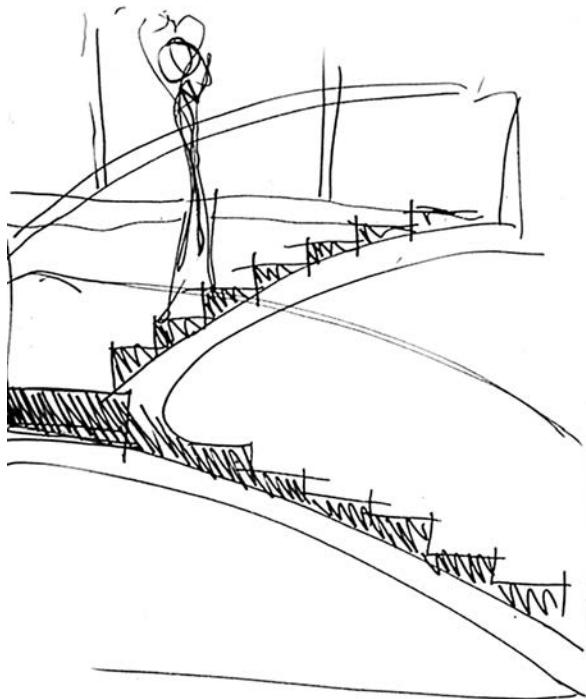
The pencil drawing has a richer patina. The plan and the construction lines used to set up the section and perspective have been retained, and the smudging that is inevitable in a complex pencil drawing contributes to the background texture. Weight applied to the pencil point provides variation in line quality and articulation of content.

The best way to make good drawings by hand is simply to make a lot of them, spontaneously, quickly, until it becomes something done almost without thinking. The intention is not to create a perfect set piece or a scrupulous observation of an existing object. There are no subtleties of light and shade to be captured. The thing to be drawn exists only in the imagination, and it is the serial act of trying to draw it that helps define its nature with ever increasing clarity.

The first drawings are likely to be crude, diagrammatic plans showing the subdivision of area and furniture layouts or simple perspective views with little indication of detail. These will become more detailed and precise as the design process progresses and as the designer gets increasingly clear insights into possibilities and limitations. It is important in every project that two- and three-dimensional drawings complement each other throughout development. The plans and sections allow the feasibility of the ideas expressed in the perspective views to be checked. Ultimately, the viability of any proposal depends on its relationship to the shell of the existing building in which it is to be located. In most cases the designer's ability to manipulate intricately the dimensions dictated by function in the context of the existing plan is key to success.

If a drawing is to be effective, its content should be credible but not necessarily precise. There are essential fundamentals and these should be aspired to and, if met, should ensure a convincing outcome.

Proportions and perspective should be accurate and plausible. Representation of light and shade should be kept

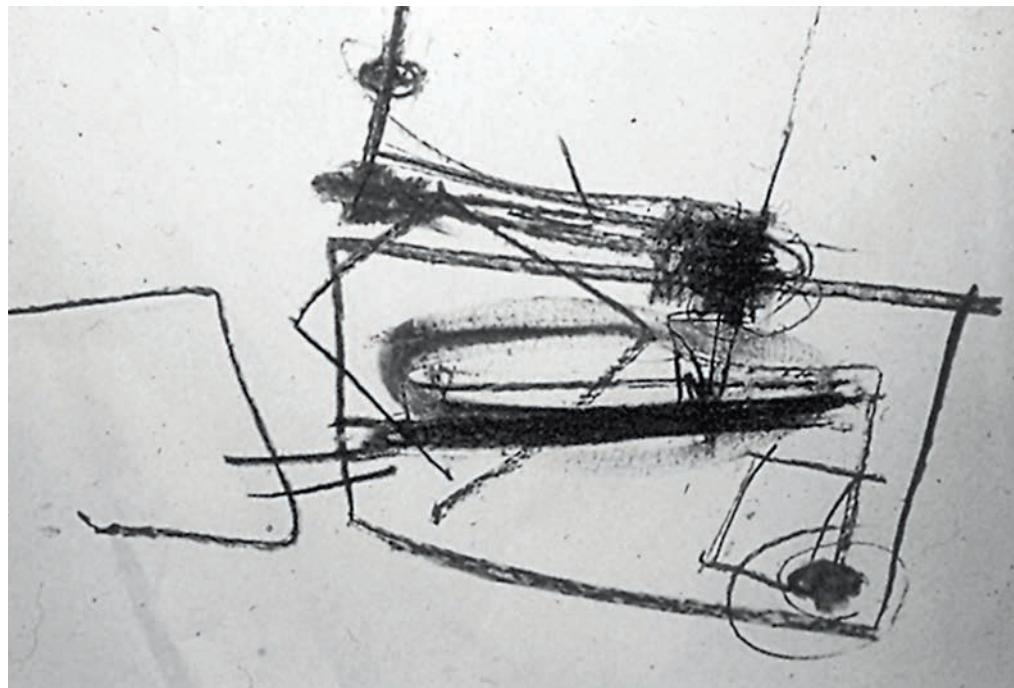


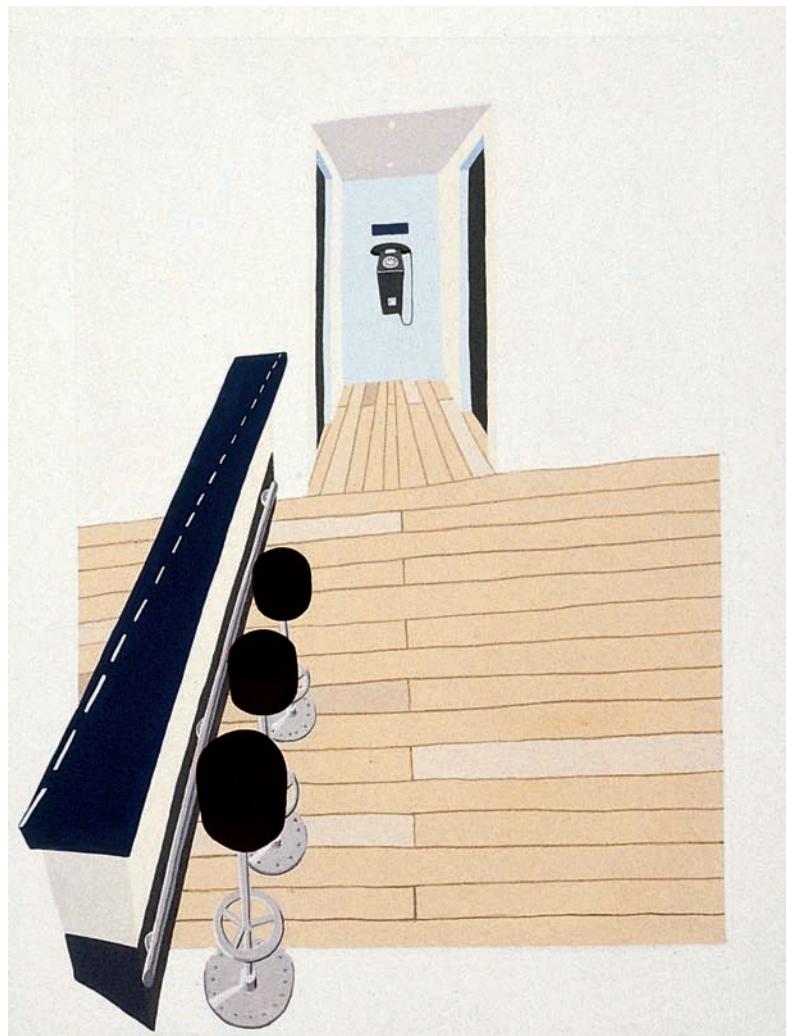
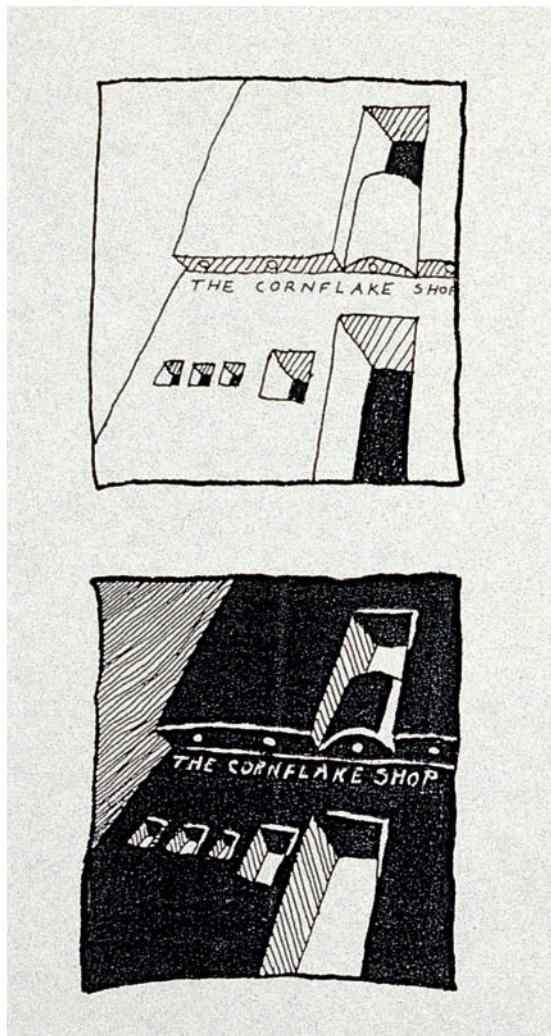
Above

This concise description of the curves that soften the lines of a stair is convincing because, although rudimentary, it has been made by someone who understands the mechanics of the stair, the proportional relationship of tread to riser and the essential structure. It does not solve the problems generated by those practicalities, but sets out aesthetic priorities.

Right

A very early, nearly abstract, exploratory drawing that holds meaning only for its maker.





simple, used to define volumes with clarity. Wall tone will differ on either side of a corner because each will receive a different light, but the tone on each will be spread evenly – not in impressionistic textured blotches. The edges of shadows should be sharp. Each drawing should have one consistent light source so that the convention used to articulate form is easily understood. If the play of light and shade becomes too complicated the point of the drawing is likely to be lost in an incoherence of graphic effects.

There are two ways to make a freehand perspective look convincing. The first is to make the perspective so 'wrong' that it may be assumed to have no pretensions to follow the rules but this must be done with enough panache to confirm that it is deliberate. Alternatively, it should be near enough to being accurate to have credibility, and for this the proportions of the space drawn need to be accurate.

Above left

The same internal elevation by day and by night conveys information effectively because it is simple and precise.

Above

This very carefully composed image pays enough attention to perspective to be credible, but is more concerned to represent the detail of the simple elements that make up the interior.

STEP BY STEP MAKING A SIMPLE FREEHAND PERSPECTIVE

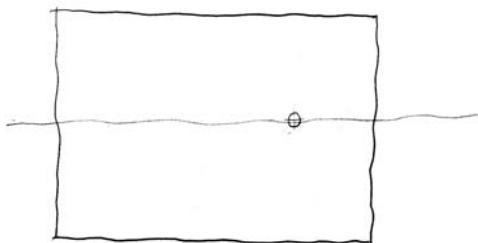
Establishing correct proportions is relatively easy. If the back wall of the space is drawn in elevation then, even when freehand, it can be made to scale for accurate proportions, and the image established using the principles of single-point perspective.

In perspectives drawn without measuring the tendency will be to overestimate the length of side walls, and this may be acceptable when the perspective is distorted to allow clearer representation of elements within the space. There comes a point when it is preferable to move away from a credible perspective to something more diagrammatic. In 'true' perspective, elements tend to be superimposed one on the other and the information may be communicated more clearly if they are separated out. If the 'distortion'

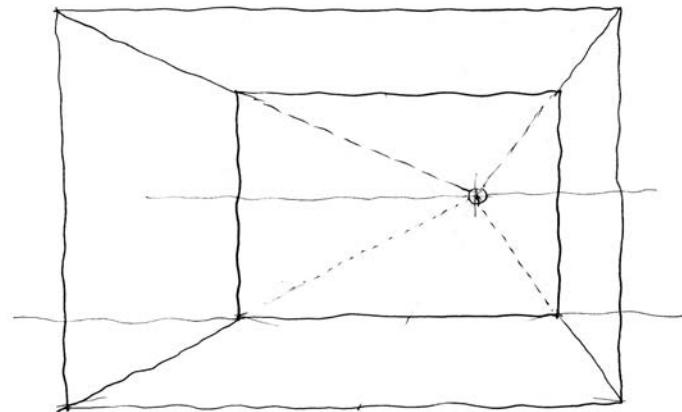
is handled positively, and clearly makes no attempt to suggest a true perspective, it will appear acceptable.

The same principles will convincingly set up volumes within the space and may be applied to the location of every element. However, there will come a point when there is no need for this degree of precision and further drawing may be made relative to the reference points provided by the first plotted locations. In fact, it is probably undesirable if too much deliberation is employed because the drawing will lose the charm of the freehand sketch. The same construction principles apply if technical drawing equipment is used for extra precision and straight lines.

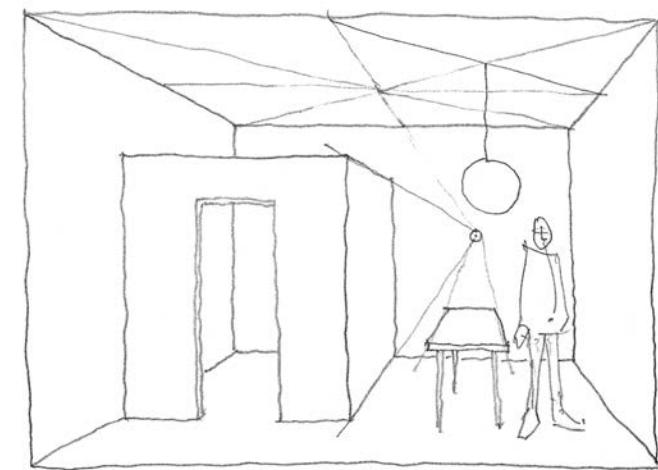
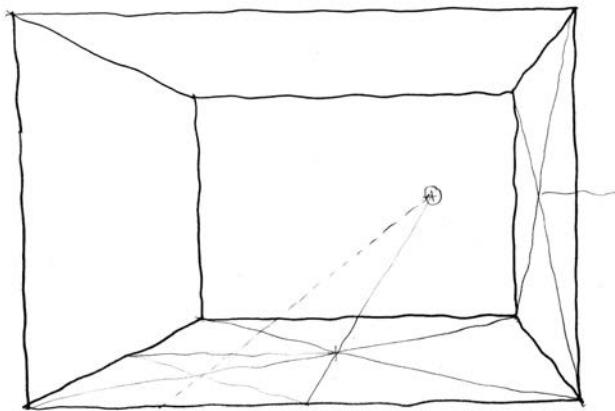
Estimating the lengths of side walls



- 1 The back wall of the view is drawn freehand but to scale. A 'vanishing point' is established on the wall, generally at a height of 1500mm (5 feet) which corresponds to an average standing eye level. The height can be varied to dramatise or clarify the view.

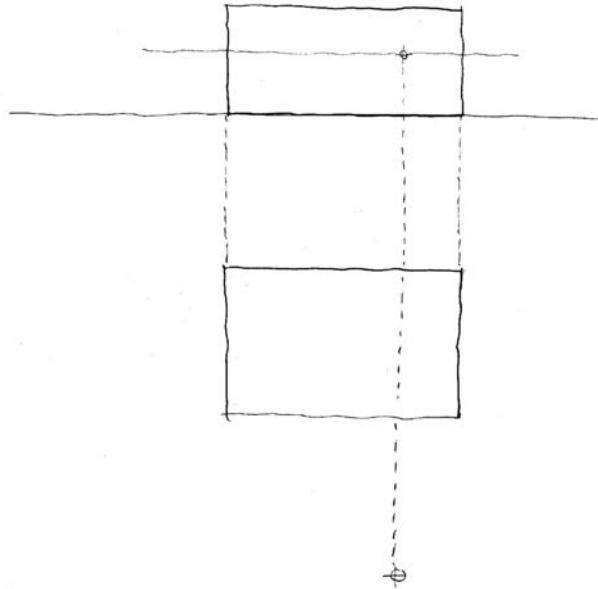


- 2 Side walls are drawn, from the vanishing point through the corners of the back wall (all lines share a vanishing point). The length of side walls is determined by intelligent guess work. The tendency is to overestimate their length.

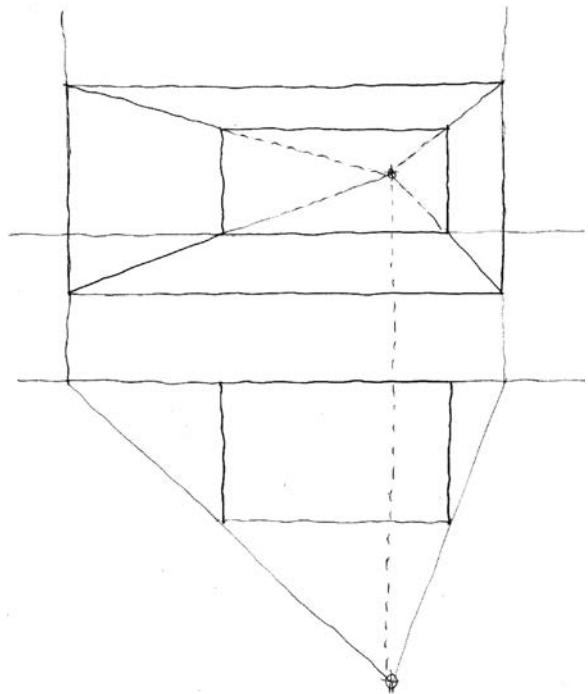


- 3 The centre point of walls, floor and ceiling will be at the crossing point of their diagonals. Further diagonal subdivision of the resulting quadrants, and if necessary further diagonal subdivision will give accurate positions for corners of walls and locations of other elements.
- 4 All vertical elements are vertical in perspective and heights can be drawn accurately by scaling the height on the back wall and projecting from the vanishing point.

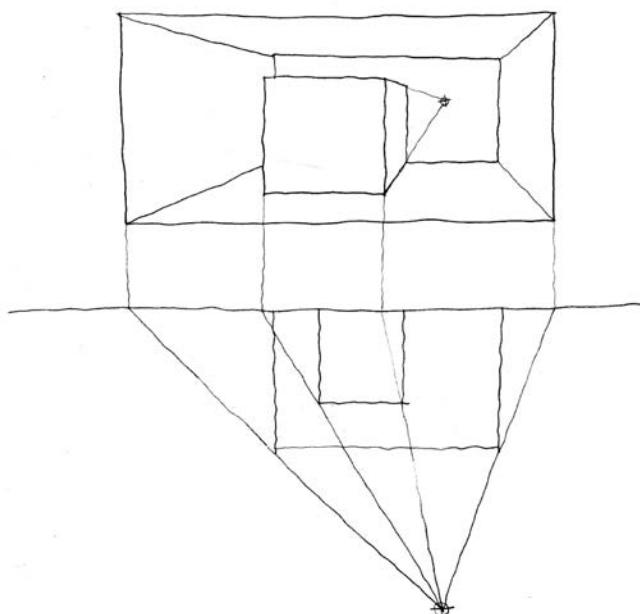
Plotting the lengths of side walls



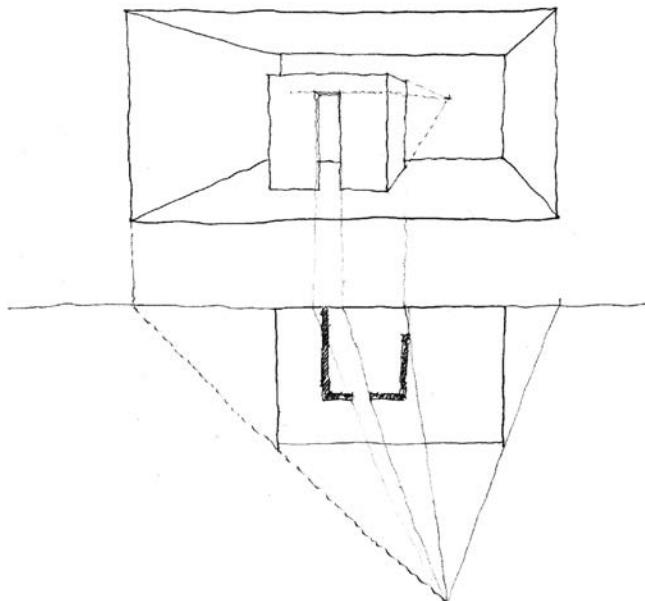
1 The plan and elevation of the back wall are drawn, to the same scale. A vanishing point is established on the elevation and a 'view point' on plan. Again preliminary experiment will establish the most productive position for both.



2 Drawing a line from the view point through the front corners of the plan until they intersect with the projection of the line of the back wall, which is called the 'picture plane', will set up the front edges of the walls.



3 A solid within the room can be sized and located using the principles set out in the previous step. Its height can be established by plotting it, to scale, on the back wall and projecting a line from the vanishing point to intersect the verticals.



4 Elements, like openings and distance of the object from the rear wall can be established using the principles set out in the previous step.

Axonometric and isometric projections

While perspective drawings rely on lines converging to a shared vanishing point axonometric and isometric drawings rely on parallel lines and are therefore easier to set up without, or without instruments. An axonometric or isometric drawing, which relies on parallel lines, avoids this and is extremely easy to draw with or without instruments. Both are in effect formalized views of an interior from above, without roof or ceiling and have the advantage over a conventional perspective view of revealing at least a portion of all spaces within a compartmentalized interior.

The principles for constructing both projections are simple. Plans are drawn at angles, the axonometric at 45 degrees to the horizontal, as a true plan. An isometric is made with the two walls nearest to the viewer at 30 degrees to the horizontal, which results in distortion of the plan but opens the spaces up more in the final drawing. In both projections, vertical lines are drawn to the same scale as the plan. While neither method creates a true perspective, both give a convincing sense of three dimensions. The shallower angles of the isometric are considered to give a more realistic image. The results may be treated as diagrams or rendered to give a more realistic impression of finishes and lighting. The axonometric is easier to draw by hand because the plan remains a true rectangle and circular forms on plan remain perfect circles although circles in elevation become elliptical. The simple geometry and the consequential simplicity of drawing it make it useful as structure for making quick three-dimensional drawings, whether for one's own enlightenment or for making spontaneous sketches for clients, contractors or consultants. In isometrics circular forms become elliptical in both plan and elevation.

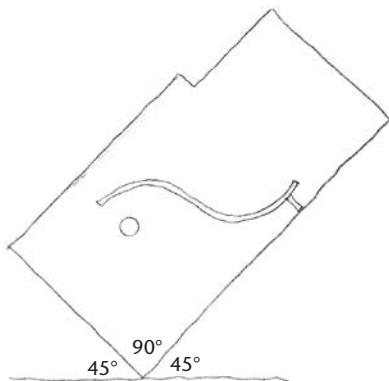
The computer deals equally easily with both but most users prefer to use the isometric because of its more realistic image or, since the computer is as comfortable making perspectives as it is with axonometrics or isometrics users also set up overhead views in perspective. When making a freehand axonometric or isometric it is important to concentrate on establishing one corner that conforms credibly to the fundamental principle, of the angle of the front corner between plan and the horizontal.. After those few lines are established, it is easy to follow the same rules to complete the whole. It is not difficult to judge angles and relative dimensions by eye if one concentrates and critically assesses the drawing as it takes shape. If an area is unsatisfactory it is easy to retrace over the flawed original and correct its shortcomings.

TIP DRAWING CIRCLES

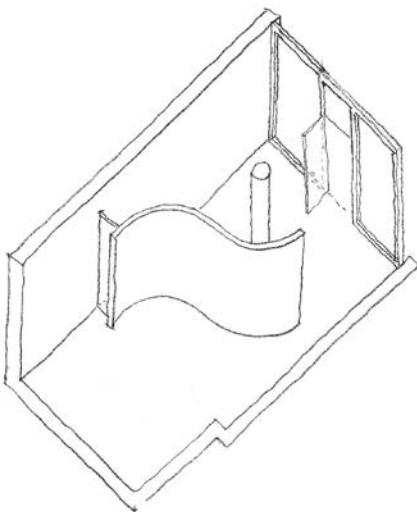
Both axonometric and isometric circles are constructed by drawing a circle or ellipse, as appropriate, so that the line touches the mid point of the sides of the circle or parallelogram that would contain it.

In axonometric the circle on plan sits within a square.

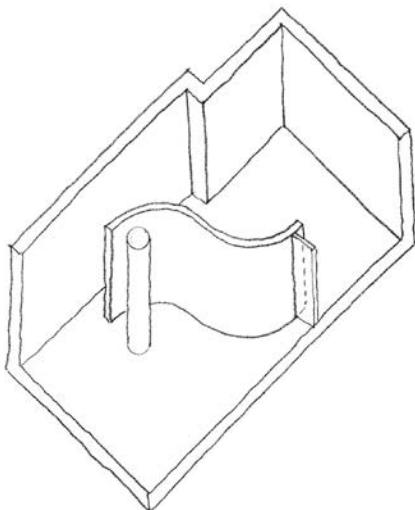
In axonometric, elevation and, in isometric, plan and elevation, the circle sits within a parallelogram.

Axonometric

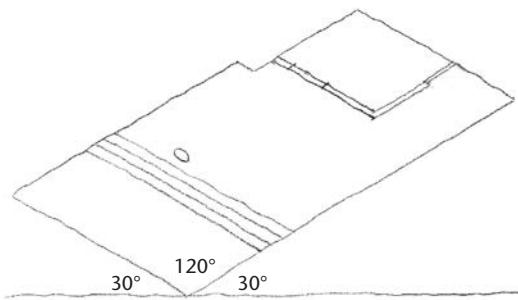
1 The plan is drawn at 45 degrees to the horizontal. Vertical and horizontal lengths should be drawn to the same scale if measured and, if freehand, as close as possible to a shared scale.



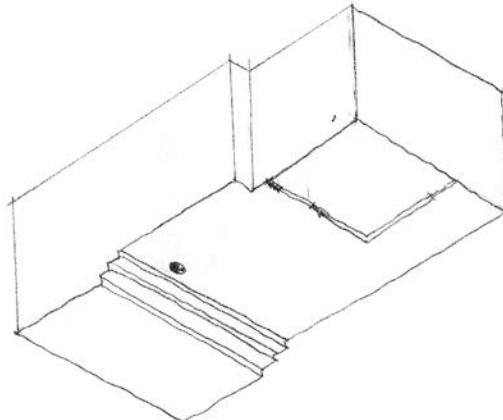
2 Walls are projected vertically and thicknesses may be added. If working freehand it is useful to set up a faint technically drawn floor grid, which may later be erased.



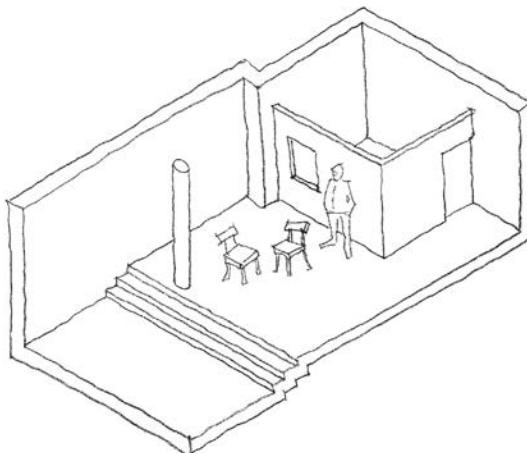
3 Since the plan is not distorted wall positions match those on the true plan and need only be projected vertically to their true-to-scale height.

Isometric

1 The near walls of the plan are drawn at 30 degrees to the horizontal. Vertical and horizontal lengths are drawn to the same scale if measured and, if freehand, judged as close as possible to a shared scale.



2 Walls are projected vertically and thicknesses added. If working freehand it is useful to set up a faint technically drawn floor grid, which may later be erased.



3 Since the plan is distorted wall positions need to be reconfigured to suit the splayed plan, vertical lines need only be projected to their true-to-scale height.

Overlays

When making design drawings by hand, a tracing of the existing building shell is particularly useful, precisely setting out the constraints within which the new interior must work. New elements drawn freehand will, given the restraints and guidelines set out the original drawing, be accurate enough, and significant measurements for new elements, such as the dimensions of rooms, width of doors and sizes of furniture can be checked with a scale rule. Such elements, which have a broadly standardized and recognizable size, give insight into the reality and feasibility of the proposed spaces. If measurements are not checked, there is a counter-productive tendency to be optimistic about sizes and lose track of the realities of restricted spaces.

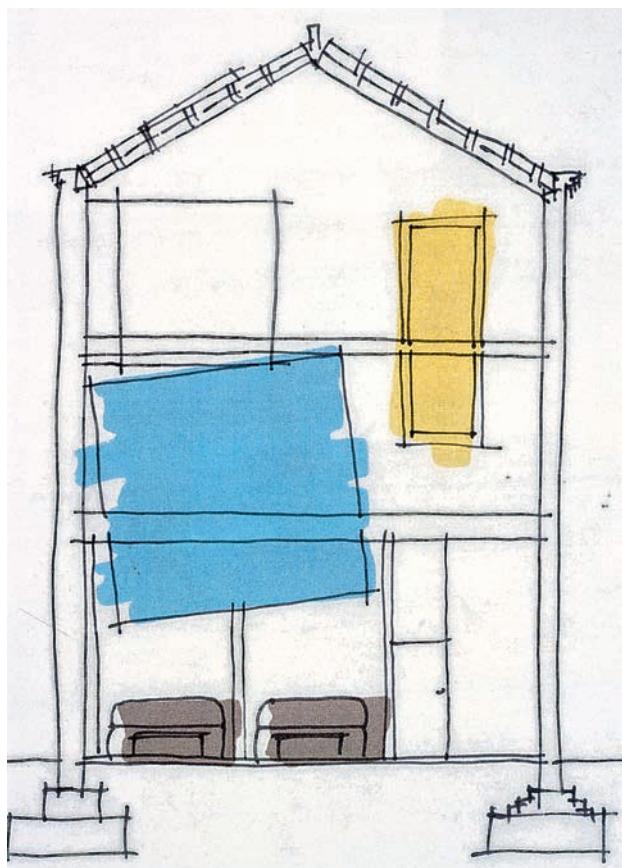
Frequently, when an early proposal is drawn to scale, whether by hand or computer, shortcomings become obvious and rethinking is necessary, the rejected scaled drawing can be used as the underlay for a return to freehand sketching. Fresh exploratory drawings can be made quickly, and thinking once again expressed with a spontaneity that allows new ideas to flow and build momentum. The slower pace of making accurate mechanical drawings creates time for attention and the imagination to wander.

Whether considering a project for the first time or trying to reorientate thinking to solve an emerging problem, there is some virtue in repeatedly redrawing wall thicknesses and the locations of windows and doors for each new sketch because each reiteration reinforces awareness of the nature of the existing building. An interior contained within thick stone walls will suggest different interventions from one within less substantial construction.

When making overlays, tracing paper offers complete transparency. Detailing paper, which is thin and white, offers something which is less transparent, but through which the dark lines of an underlay will show. The semi-transparency of detail paper makes it easier to colour. Choice of material is, as always, a personal matter, but to reject a degree of transparency in favour of the more familiar texture of cartridge or another wholly opaque paper necessitates making a fresh, scaled drawing of the existing building shell for each new drawing. The grids of graph paper, available in different sizes representing different scales, offer an alternative measuring system, which is particularly useful when considering an element in isolation, when the context of the whole building shell is superfluous.

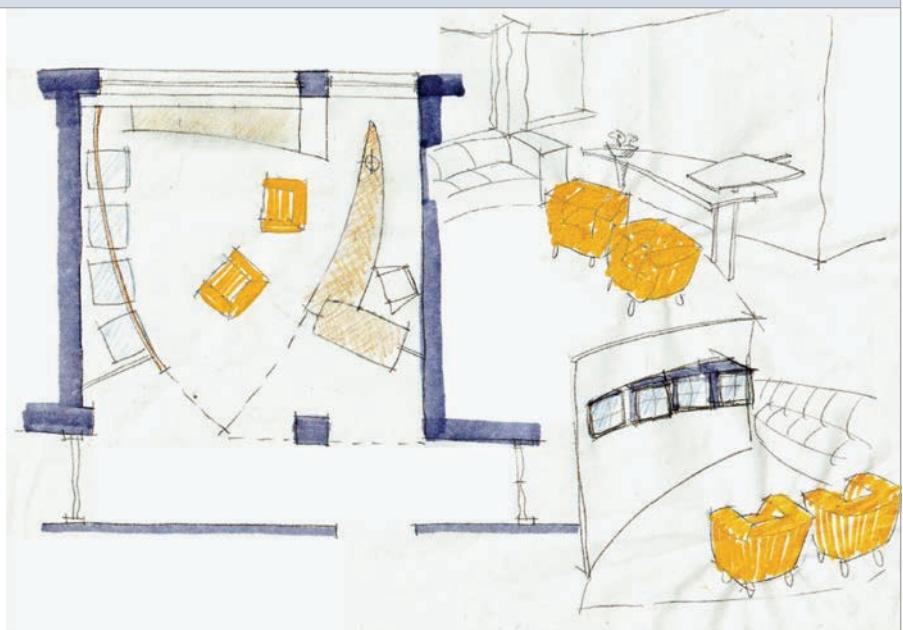
Below

A quickly traced section, in which new elements are identified by coloured felt tip pens.



TIP DIMENSIONS IN FREEHAND DRAWINGS

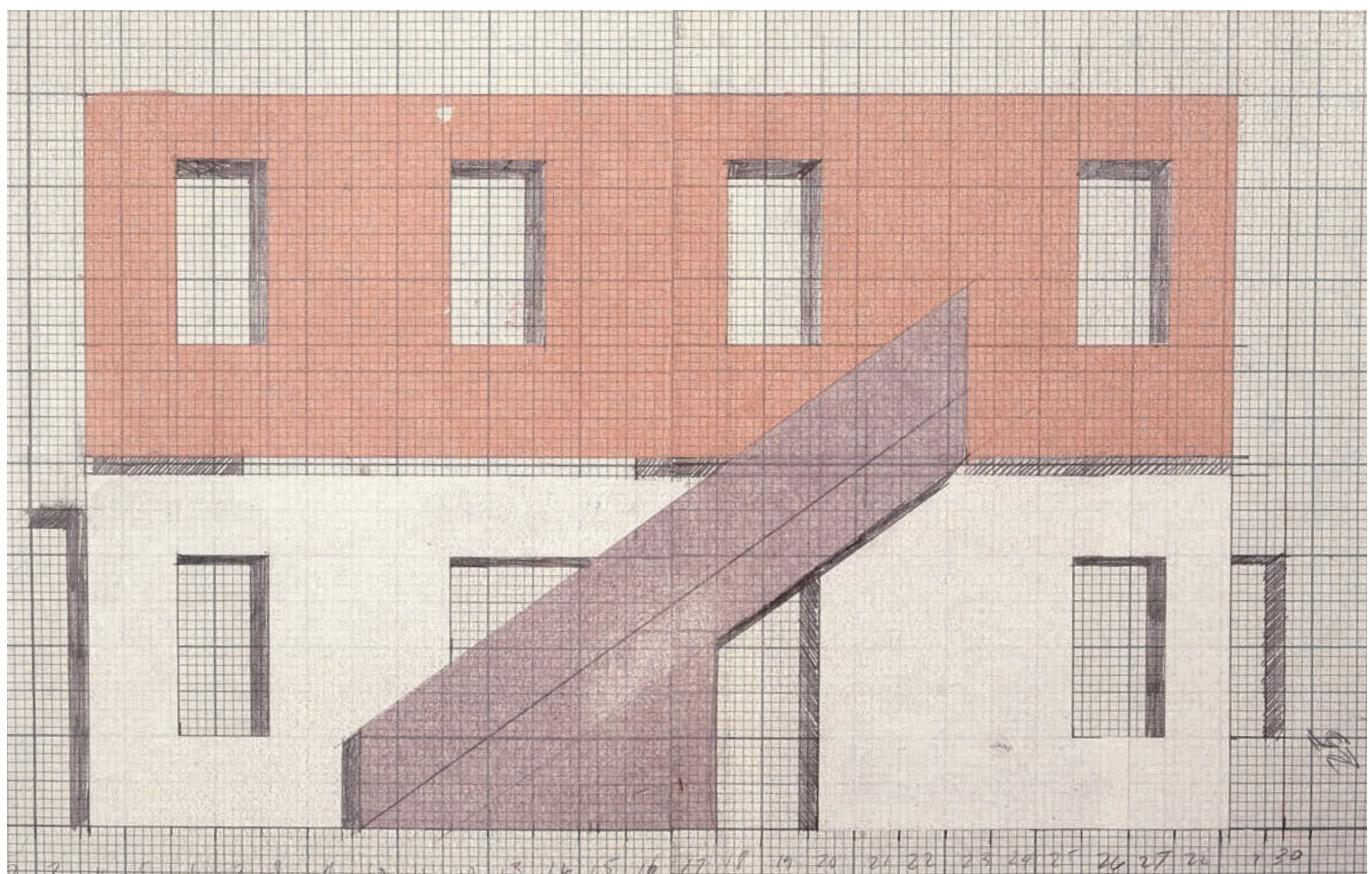
A facility for mental arithmetic is useful when making freehand drawings. When the dimensions of rooms and wall thicknesses are known it is reassuring to check practicalities, such as circulation spaces, mathematically, even though the drawing itself may not be precise. A working knowledge of standard furniture dimensions provides useful visual indicators of relative scale. In this example circulation around and behind the curved desk looks restricted and suggests that the seat below the window should be flipped horizontally to create space.



Below

This very ordered internal elevation may have been prompted by the decision to draw on graph paper – or may have influenced the same decision after the nature

of the solution had emerged. Whatever the sequence, the grid makes the location and sizing of elements simpler.



Freehand drawing for presentation

Freehand drawings can be useful for initial presentations, particularly during early discussions when it is more important to get insight into a client's preferences than to secure definitive approvals.

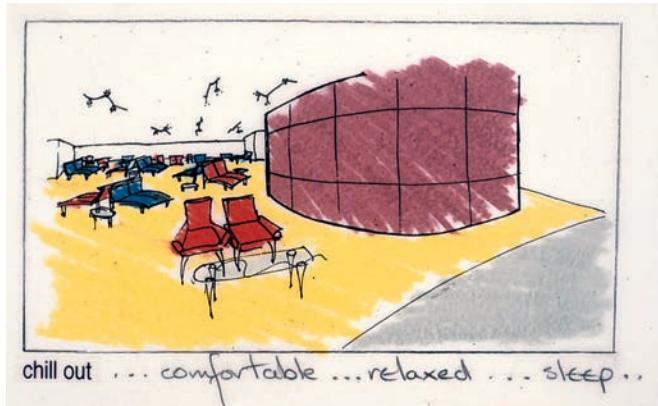
It is, however, seldom a good idea to confront a client with a collection of crude diagrams on scraps of paper, and it is unlikely that any preliminary sketches will stand scrutiny as serious presentation material. The inevitable weaker sections will undermine strong areas of drawing. By contrast, the computer may be initially slower but it tends to guarantee an acceptable outcome and, when essential dimensional information has been fed in, will quickly produce a battery of appropriate two- and three dimensional images.

While more polished versions of early drawings are preferable for presentation purposes, it is also desirable that the final version retains some of the flourishes and energy of the developmental sketches. Unsatisfactory freehand images, typically the result of deficiencies in perspective and proportion, may be corrected by

tracing again over the last version of the drawing and eliminating weaknesses. Areas that work may be retained. However, to sustain graphic consistency it is a good idea to retrace all the lines quickly to achieve a vigorous line that suggests creativity and to avoid an image that appears to aspire to precision and might have been made more effectively with technical instruments.

The photocopier and the computer scanner also allow the size of an image to be adjusted. Changes in size frequently seem to improve the quality of a freehand image and are also a useful way to suggest that a number of disparate sketches, when printed to a similar size, comprise a set. A reduction in size gives a density of drawing that may be missing in the original, and inflating the size reveals line textures, particularly when the original is made with a soft pencil, that will not necessarily be apparent in the original.

It is not usually good practice to draw large in the first instance. A large drawing will generally invite or require more detail and inevitably take, and therefore waste, more

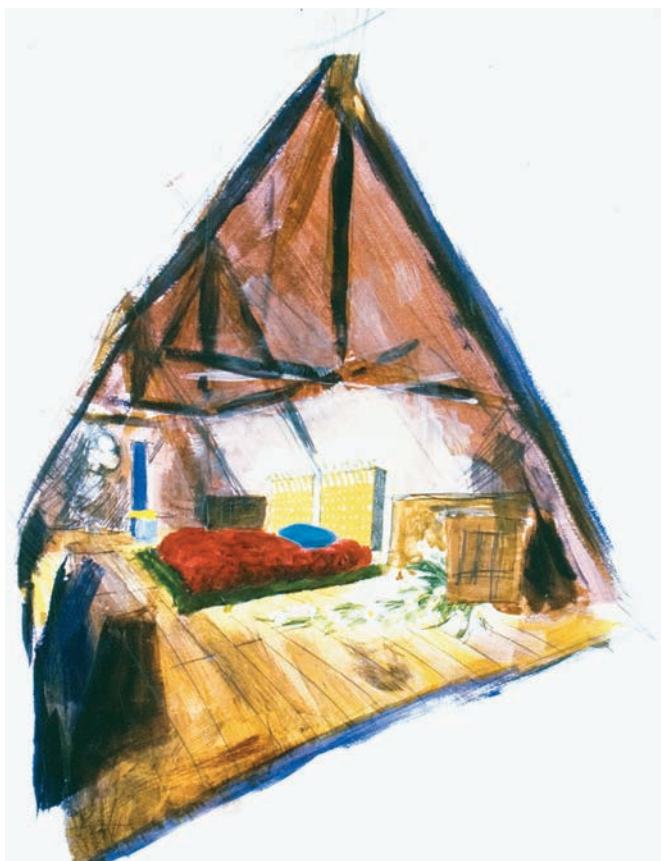


Above

This apparently simple drawing nevertheless convinces because it is made vigorously – and the perspective is credible. The delineation of the seating makes it obvious that the designer has specific examples in mind. The representation of the glass table's transparency is particularly effective. The suggestion of panel joints on the curved form indicates that thinking is being shaped by an awareness of construction.

Right

A few of the pencil lines that initially set up this gouache sketch remain visible, but most are lost under the vigorously applied paint. The concern is more with describing atmosphere than detail, which is only hinted at in representations of furniture. The energy of the image was enough to persuade a sceptical client to commit to the project.

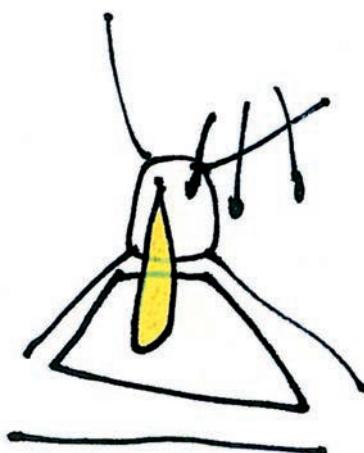


time. Credible perspective in particular is much more difficult to sustain in a large drawing. For most designers it is more physically comfortable to draw at a small scale, perhaps within the confines of an A5 or A6 page, but individual preference should determine sizes and media.

There is one category of drawing at which the hand excels, and that is the diagram. Interior design projects are very frequently complex and it is good practice to introduce clients to them in a series of steps, which make the salient points clearly and sequentially. These can be made using computer-generated views, but a too-simple computer image tends to be less effective. Like every other drawing tool it is most effective when its strengths are exploited, and the computer's strength is the generation of complex form and subtle rendering. Complex images do not necessarily make good diagrams. The handmade diagram that deals only with a single, crucial idea can exactly explain principles and intentions.

TIP PRESENTING SKETCHES

Presentation sheets are usually composites of a number of different drawings and, particularly with freehand drawing, it is difficult to place individual drawings together on a single sheet and next to impossible to sustain a compatible quality across the group. It is seldom satisfactory to present scraps of tracing paper to a client, and mounting them on card is a rather grandiose way to present modest scribbles. It is better to photocopy them, adjusting size as appropriate and to present them singly as, say, A4 sheets. This retains an appropriate informality. If it is considered worth presenting a number together, to make a sequential explanation, individual drawings may be arranged and copied on to a single sheet. Computer scanning is superior to photocopying in that it reproduces more accurately the quality of line, tone and texture.

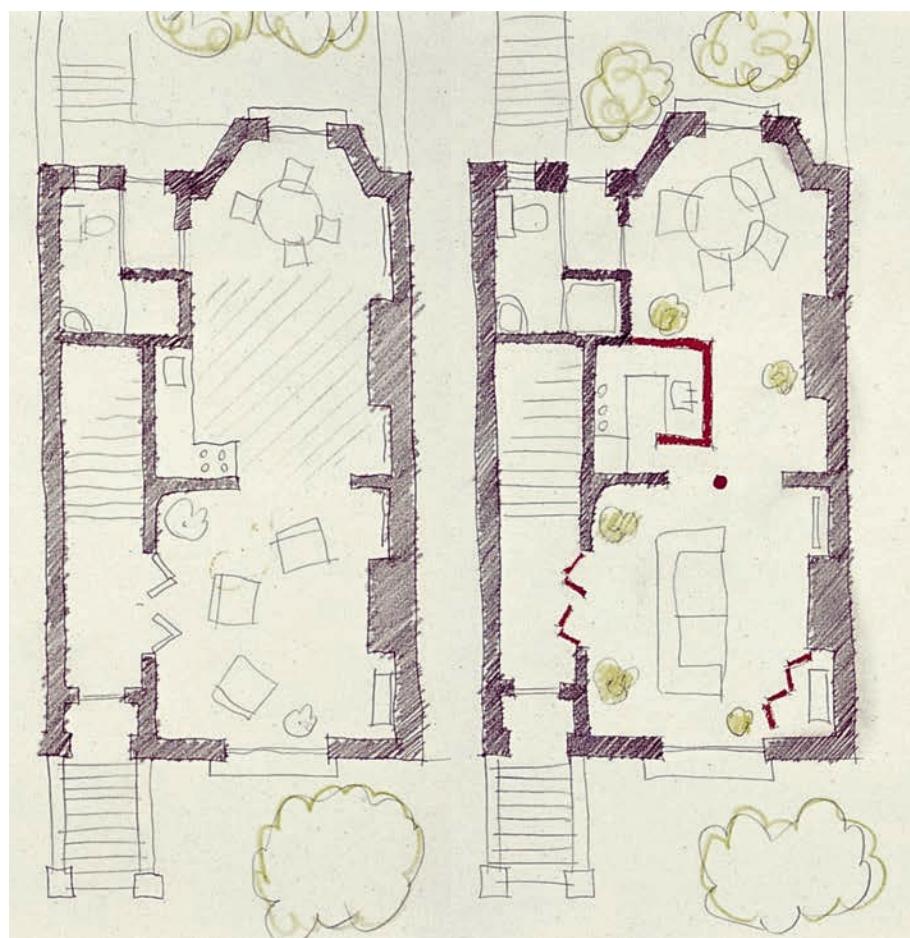


Above

An elemental diagram identifies crucial components in the strategy for the redesign of a space.

Right

Traced plans, in which the problem area is identified on the left by the hatched lines, and the proposed solution is shown in red on the right.



Collage

The majority of interior projects do not require elaborate manipulation of floor levels and walls, and while those that do may be superficially more spectacular, they are not necessarily more successful than those relying on the comparatively modest devices of carefully selected materials, colours and lighting effects. All these are notoriously difficult and time-consuming to represent by hand, and, early in the design process collage offers an alternative to the computer. Those who favour the technique build a stock of colours and textures, usually clipped from magazines that have been identified as reliable sources. Such images, however roughly pasted together, can, if confidently assembled, take on some of the characteristics and authority of the well-crafted object. Source materials may be scanned by computer

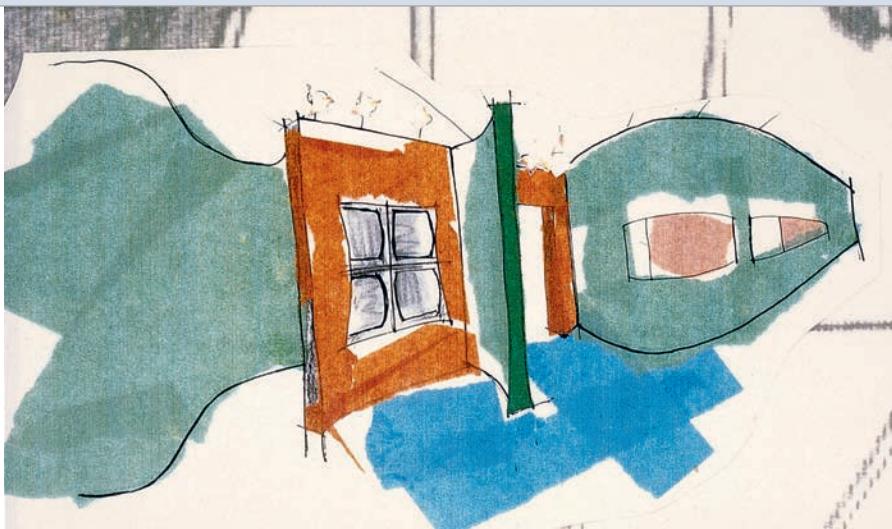


Far left and left

While a line drawing defines planes, it does not easily convey three-dimensional form. Collaged papers in different colours and tones, roughly cut to the shape of the proposed element, give a sense of solidity. The monochromatic version on the far right, created on computer, concentrates on form.

TIP COLOURED TISSUE

It is always difficult to represent flat masses of colour in any hand made drawing. Tissue papers provide blocks of colour, albeit limited in range, that indicate different wall and floor finishes. The tissues are applied to the back of the tracing paper, which filters the intensity of their colours. They are cut or torn roughly to shape and lightly sprayed with fixative in order to position them no more permanently than is required to survive the copying process. Since they have a degree of transparency it is possible, once they are fixed, to cut them with a scalpel to match exactly the outlines of planes.



and manipulated to take greater account of perspective and scale. With their deliberate lack of dimensional and perspectival precision, it will be clear that they intend to offer only an impression of the proposed interior.

Obviously, in collage-work the representation of colours is dictated by the limited range of papers and images available. However, if a handmade drawing is scanned on computer, then blocks of colour and texture may be matched accurately and further refinements – like representation of transparency, reflectivity and light – may also be added. Increasingly, it makes sense to resort to the computer, which copies and pastes more efficiently.

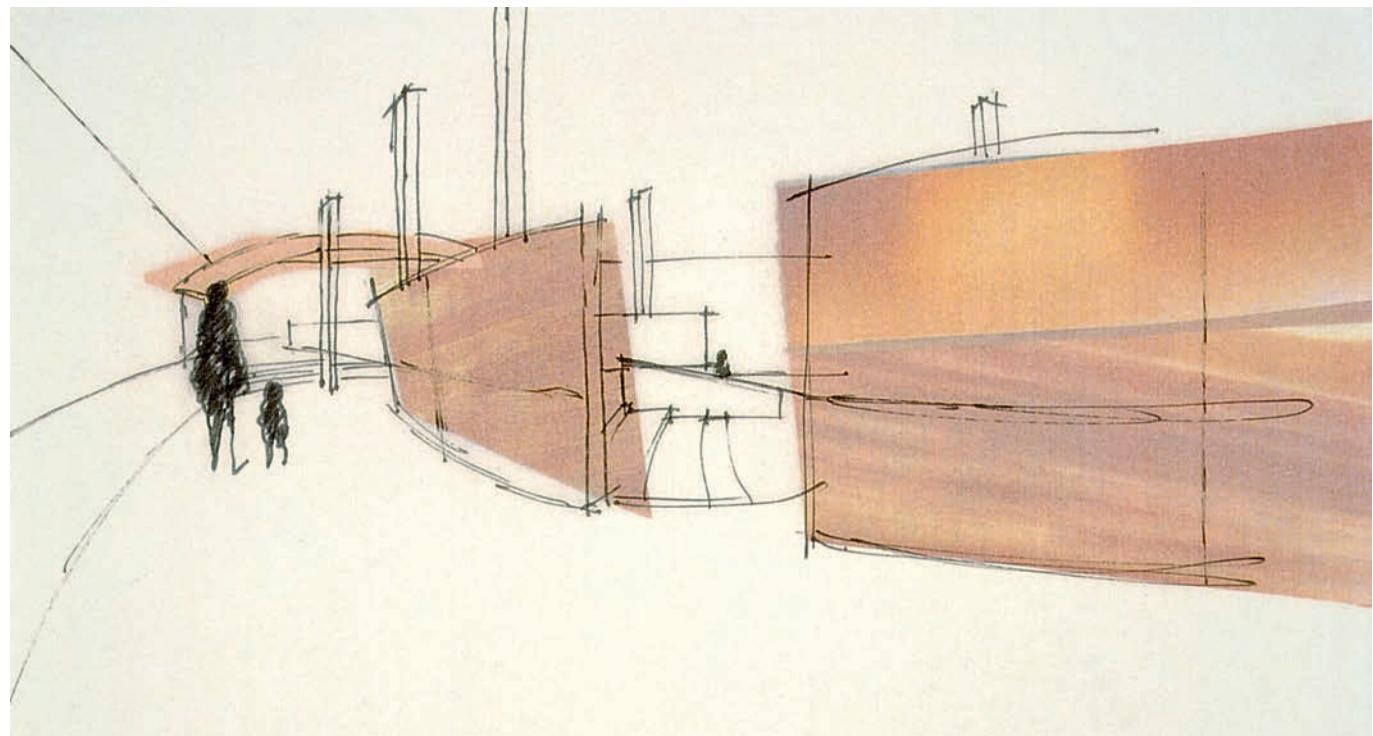
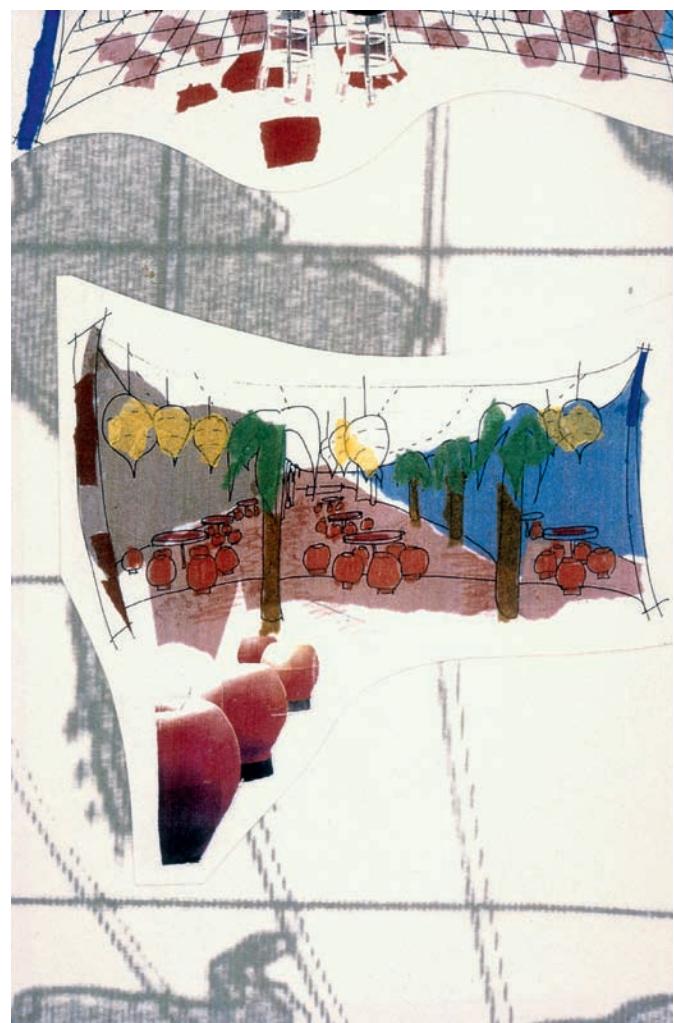
Collages, once cut and pasted, can be improved if photocopied to make a flat, integrated image. Digital scanning offers superior copying quality and the image created can be manipulated further on the computer.

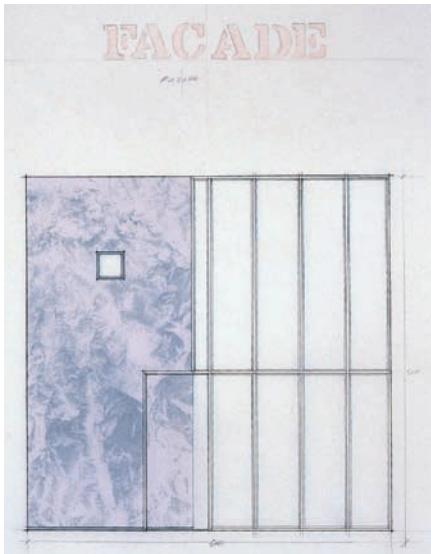
Below

A quick line drawing on tracing paper is given solidity by collaged blocks of textured colour. The freehand drawing works particularly well because of the convincing perspective of both sets of curved steps.

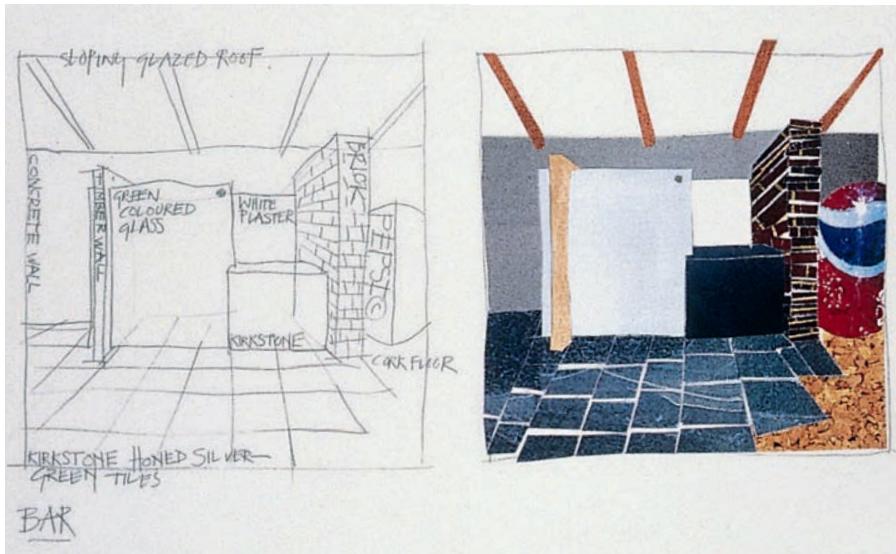
Right

In this drawing on tracing paper, a black ink line roughly defines the space. The collaged photographs of pink stools give credibility to the more roughly presented elements. The sketched stools are finished with coloured pencils on the front of the tracing paper, which avoids damaging the tissue papers that provide the background colours of walls and floor.

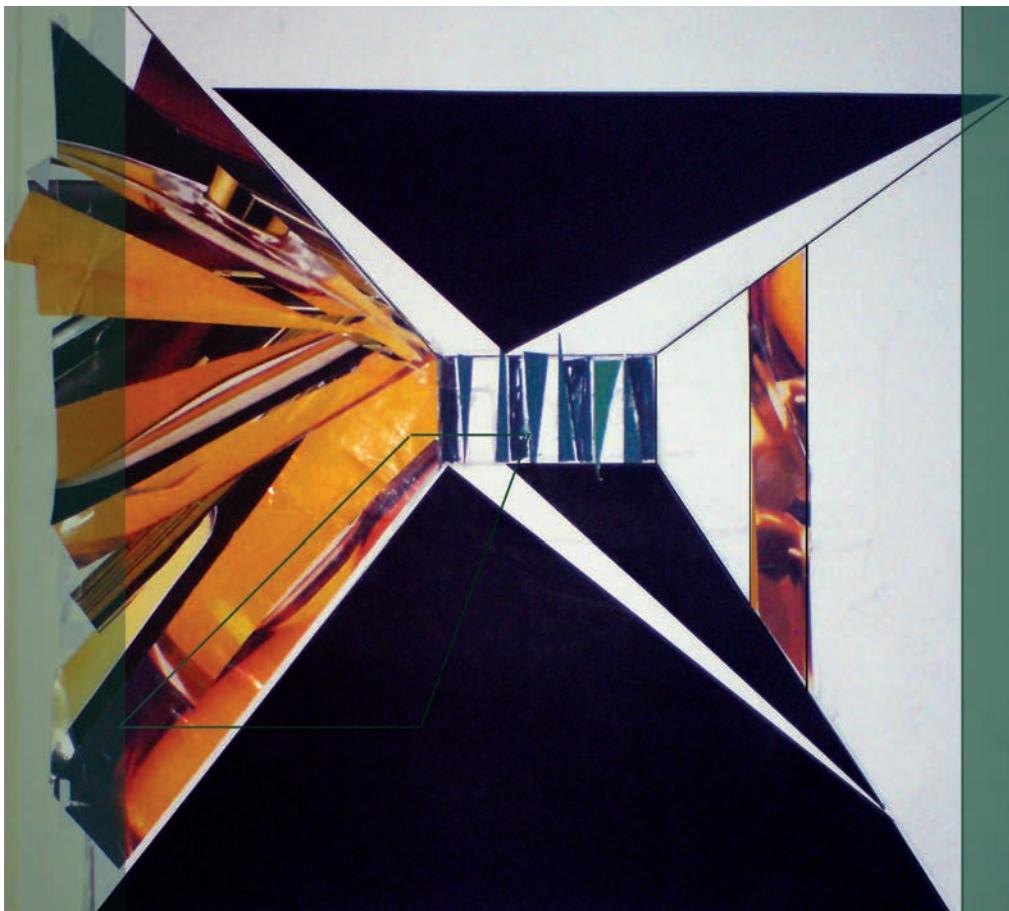


**Above**

A photocopy of crumpled white paper provides a random pattern that suggests marble.

**Above**

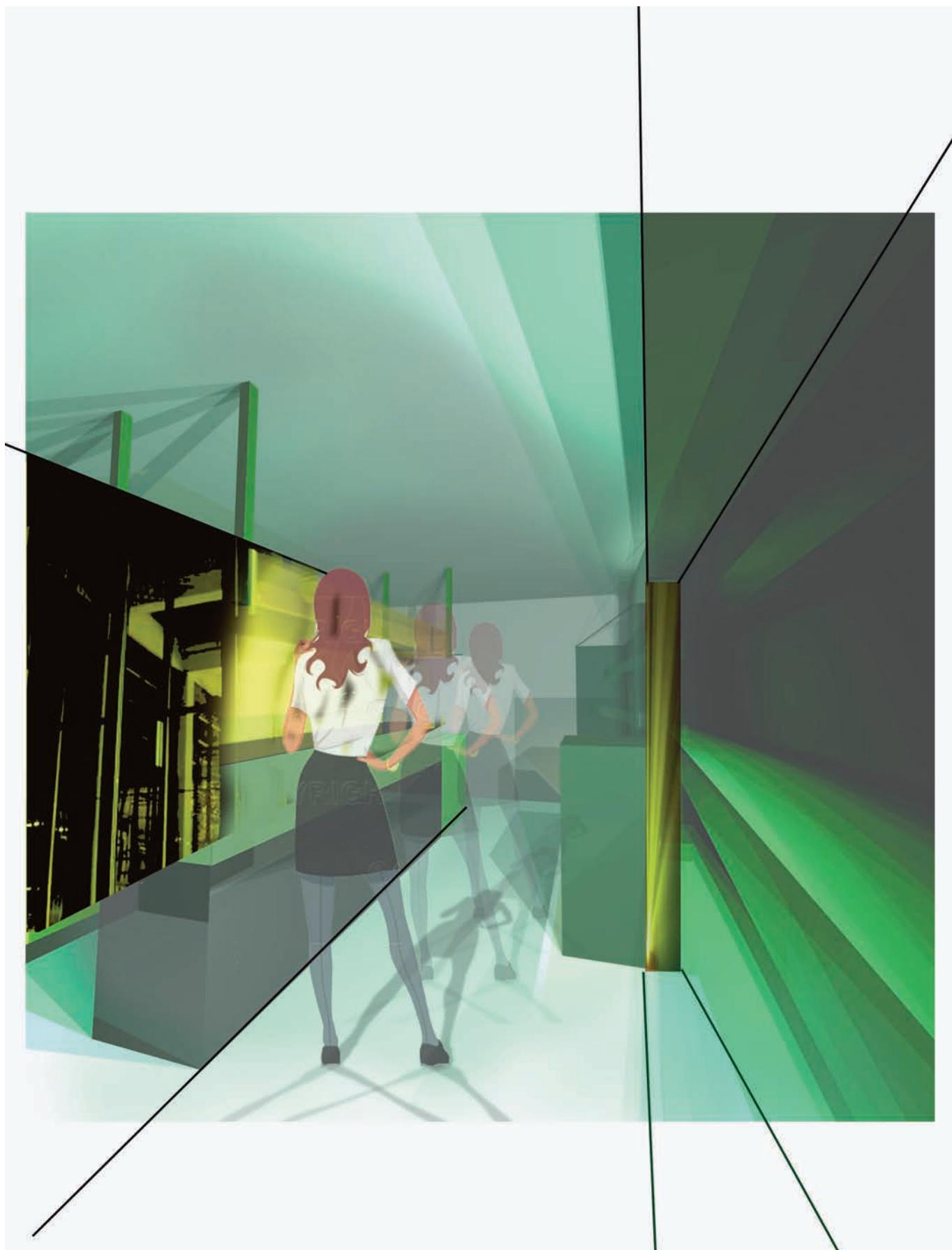
While precision in a collage may be difficult, ambiguities can be eliminated if the collaged image is paired with a line drawing that also provides a key to the materials proposed.

**Left**

A traditional cut-and-pasted collage was scanned and the colour tones were adjusted in the computer to get closer to the designer's intentions.

Opposite

This image uses the principles of collage but was achieved solely with scanner and computer. The green and grey receding planes were created purely as a computer image, but the yellow-and-black image on the left and the column on the right were scanned and digitally pasted. The figures were downloaded from an image website and pasted – or collaged – in, but adjusted for varying degrees of transparency.



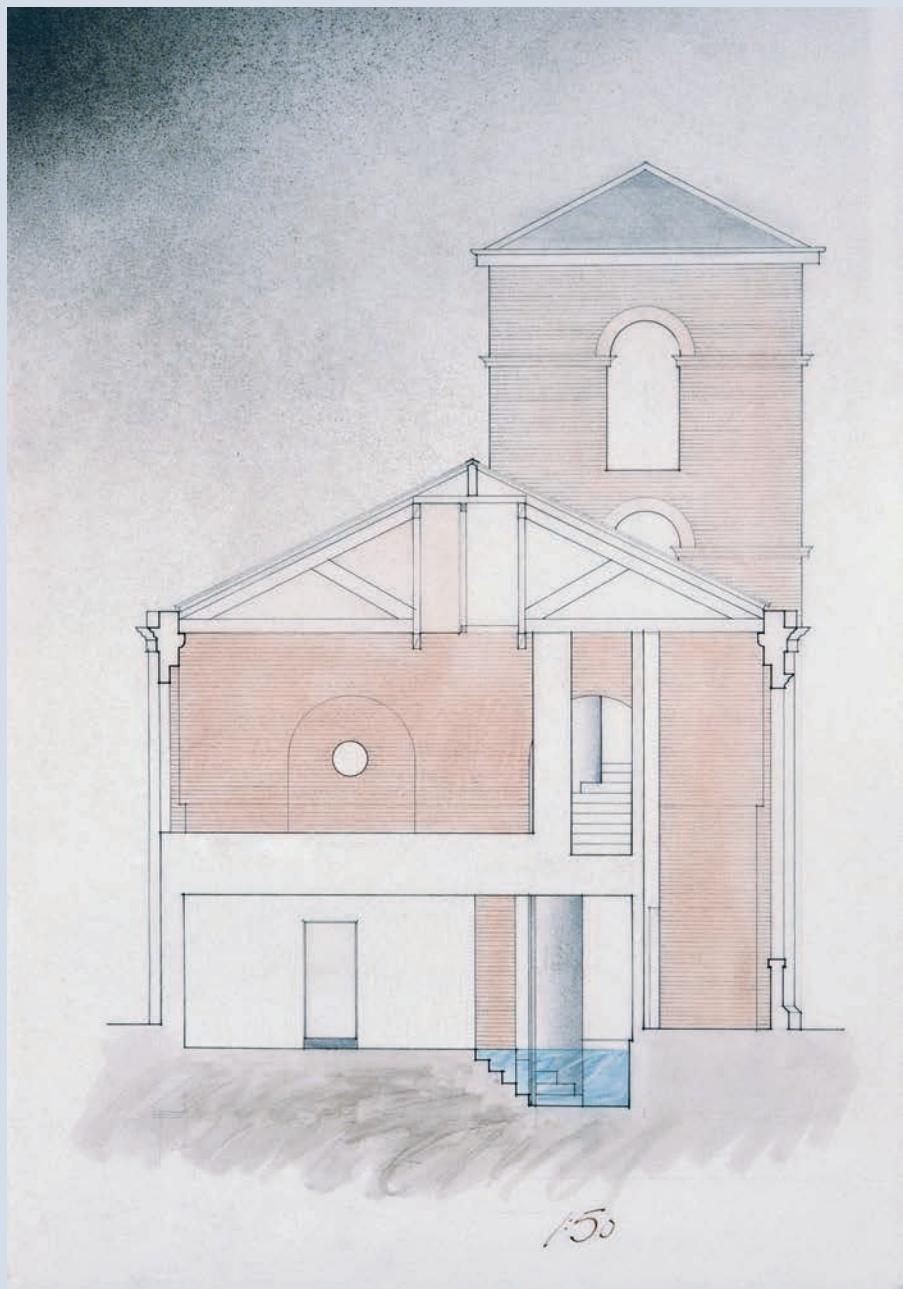
Case study Hand drawn presentations

Below

Hand drawn sketches, such as this section, allow a degree of graphic flamboyance.

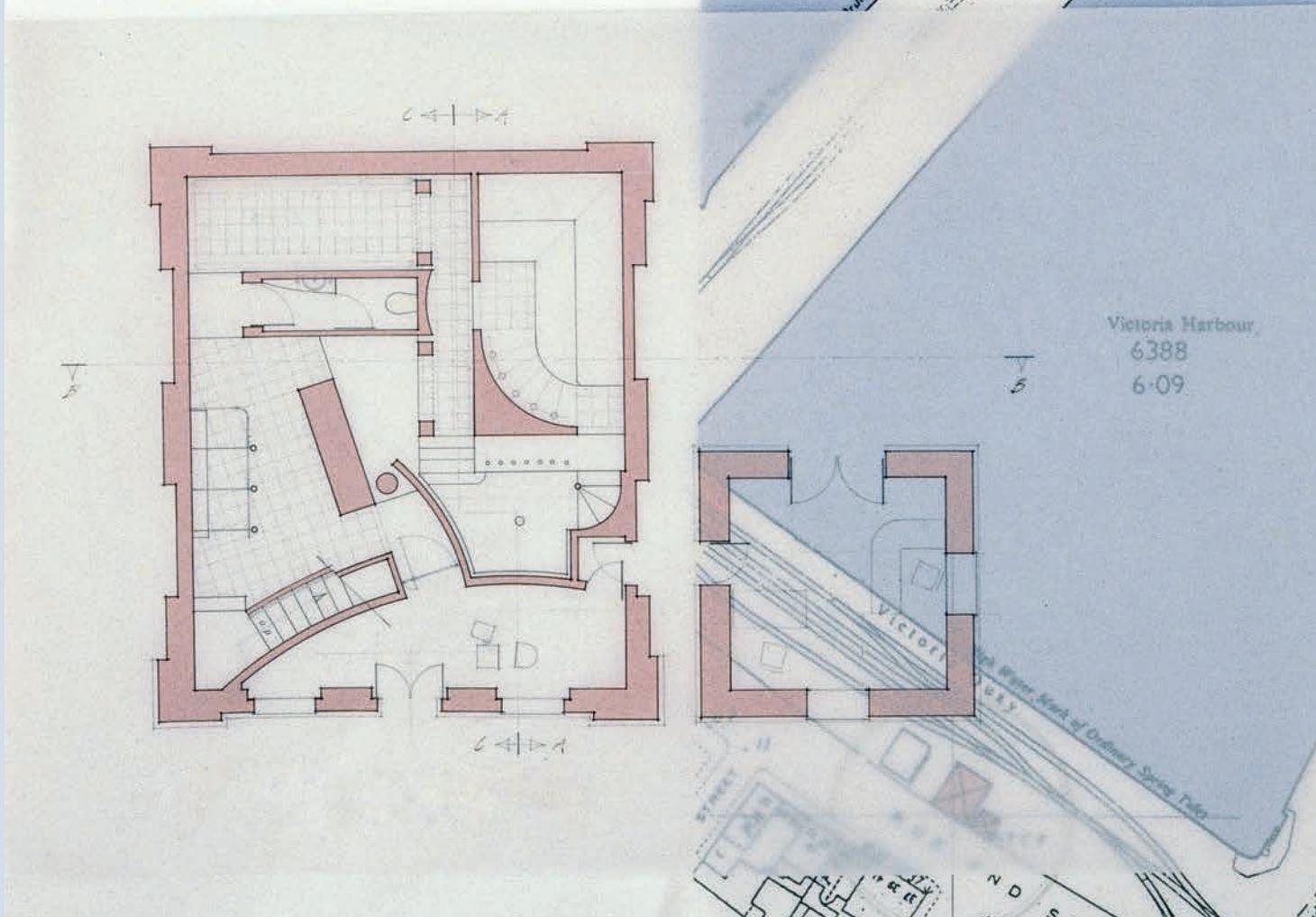
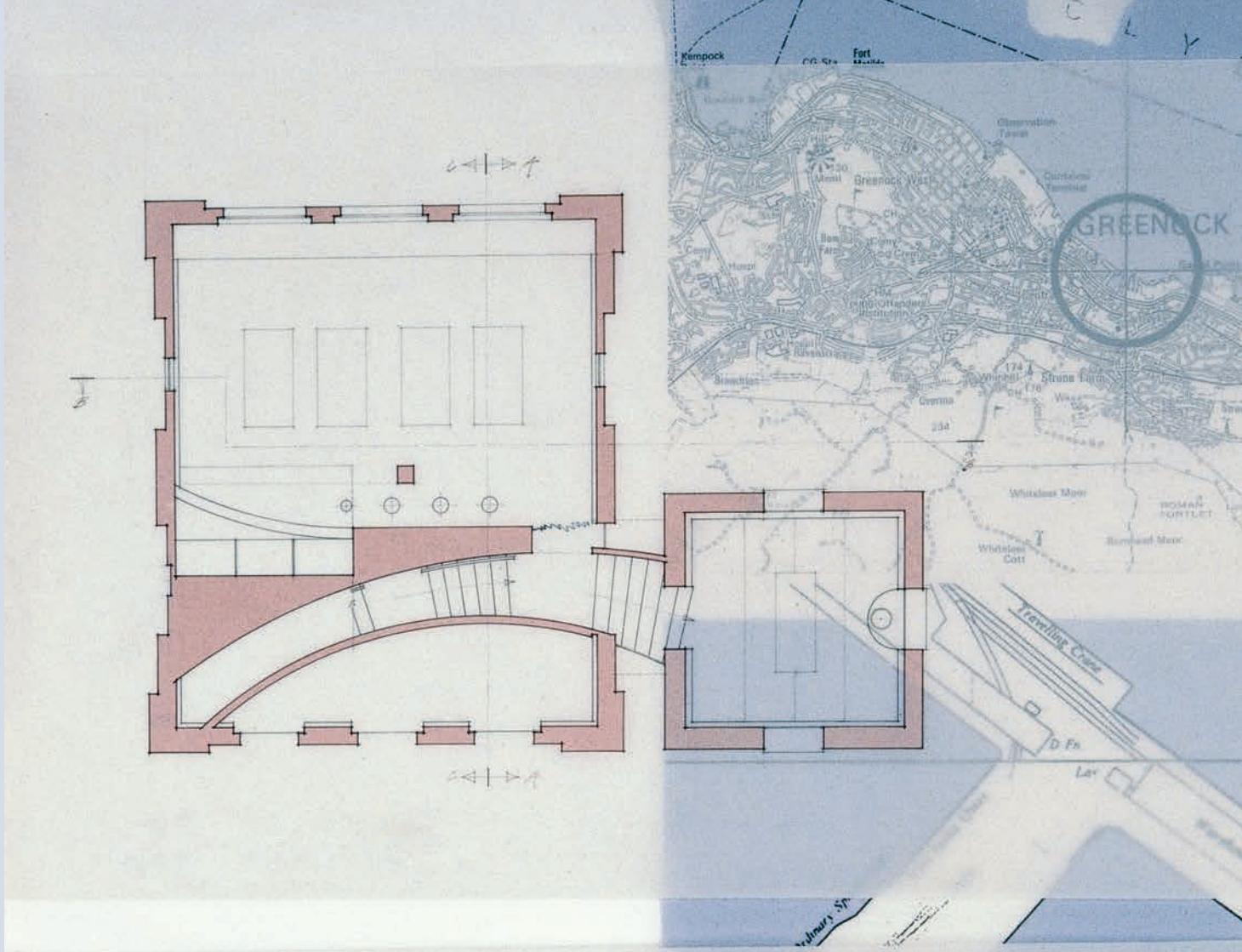
Opposite

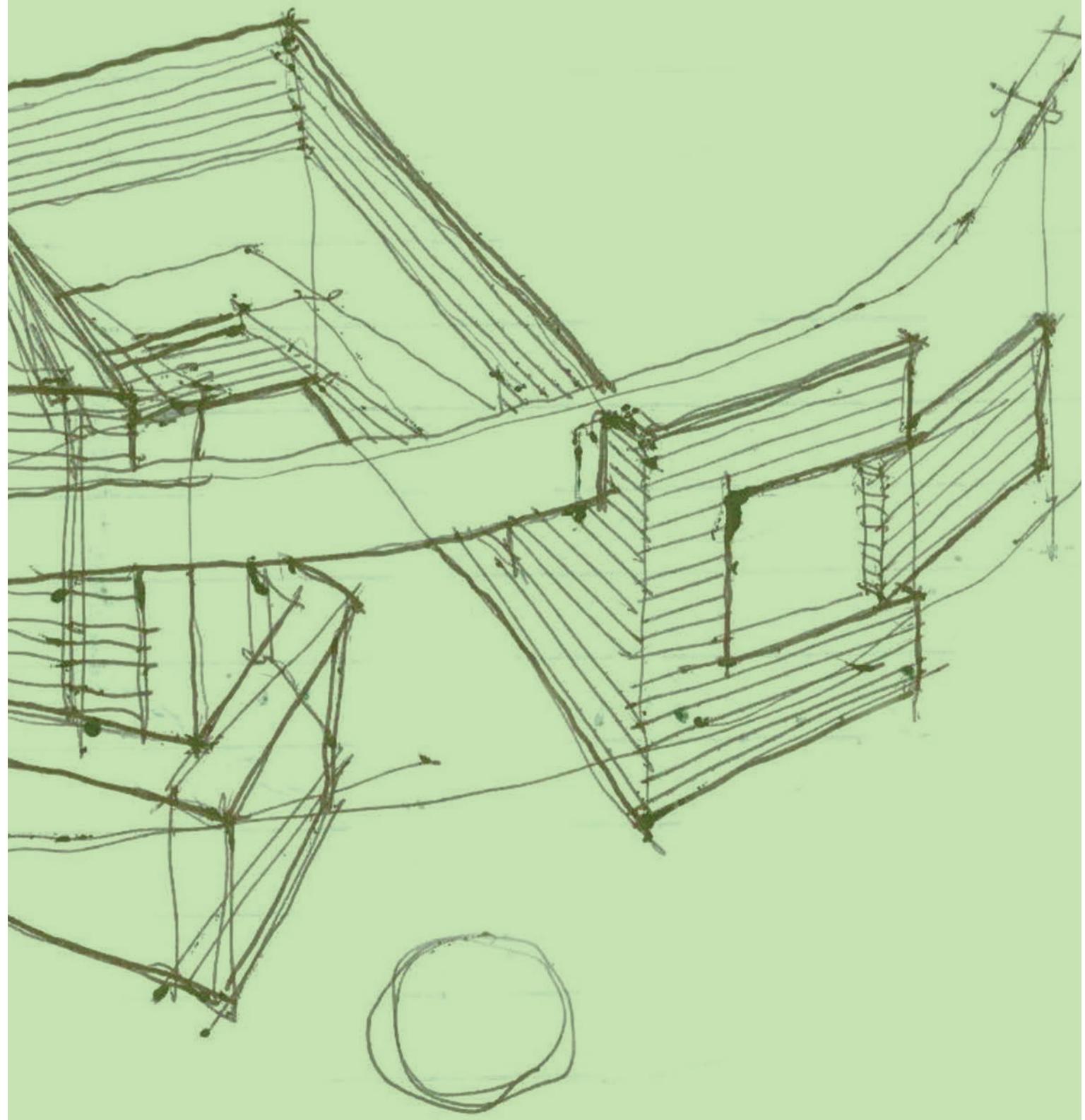
In this composite drawing a plan is drawn on tracing paper. Underneath this layer red tissue paper indicates solid walls, and blue tissue paper indicates water on a location plan.



Technical drawings made by hand, particularly using a pencil, are comparable in accuracy to those made on a computer but they have a very different patina. Hand drawn lines are softer and will be slightly blurred as T-squares and set squares slide across them as the drawing progresses. In the section on the left the sky is achieved by rubbing pastel dust into the reverse side of tracing paper using a soft cloth or tissue paper. The ground is made with felt tip pen and the red of the brick with pastel. Colours and tone are varied in intensity to suggest changing light and textures. Denser colours, like the blue water, are made with coloured pencils, crosshatched and rubbed with a finger to eliminate directional lines. The finished product has character but is a one-off and, unlike a computer-made alternative, cannot be adapted or easily amended.

Some adjustment and development is possible during the making, however. Working with tracing paper allows drawings to be built up in layers and individual elements to be combined for a more complex presentation. In the plans on the right, a strip of blue paper, first fixed to a white base sheet, represents the sea and highlights the edge of the coastal site, represented by a fragment of map. The tracing paper with the red-walled building, drawn to one side, is fixed over the other layers. The whole may be shown within a transparent sleeve or photocopied to produce a single sheet. There will be some blurring – of the bottom image in particular – because of varying thicknesses within the composite sheet but if this is conveying less detailed information, the distortion is acceptable.





CHAPTER 2 CONCEPTION

58 EXPLORATORY DRAWINGS

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64 THE SECTION

72 DETAILED THINKING

76 SKETCHING BY COMPUTER

77 COMPOSITES

Exploratory drawings

Every project begins with an idea, which must be defined and refined. That first idea is little more than an informed presumption, made with limited understanding of either the precise requirements of the brief or the quirks of the building shell, and is unlikely to survive intact to the end of the development process. The more ambitious the concept, the more difficult it will be to resolve – and the more time resolution will take.

The first drawings for any project may be no more than thoughts about a strategy for organizing the given space to accommodate its new function: a suggestion of where new walls might be located, or how furniture could be arranged. Alternatively, they might attempt to describe an atmosphere, perhaps in words or in a collage of evocative found images. First drawings should, in fact, be whatever they have to be to do their job: to record ideas, to examine them and to communicate them to others. They are likely to be very simple, perhaps no more than diagrams. They may well be – and perhaps are liable to be – quick, handmade scribbles, although, as computer software becomes easier and quicker to use and as designers emerge who are more adept at employing it, first images may increasingly emerge from the computer.

Such exploratory drawings tend to be esoteric because they are for the designer's own information

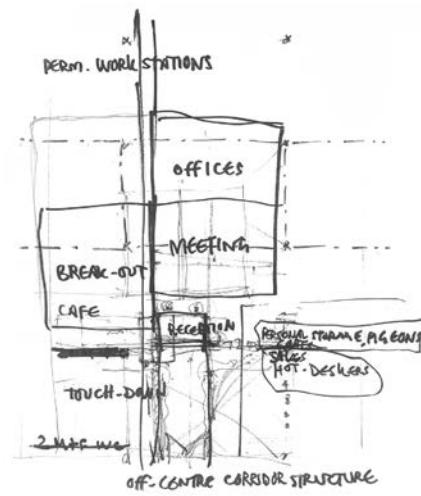
and are made without too much concern for their aesthetic merit. Nevertheless, they provide the reference point that will orientate and reorientate thinking throughout detailed development, and are therefore particularly important when a team of designers is collaborating on a project. Most members of such a team will not be involved in the project's conception, and all will have not only different responsibilities but also different degrees of responsibility and will need to understand and share a common objective – which can be encapsulated in those early drawings.

While the first drawing may be the significant reference point, the intention it represents will develop as understanding of the project evolves. In fact, however clear and powerful a first idea may appear to be it ought to evolve. The longer one works on a project the more closely one becomes aware of the complexities of the interaction between requirements of the brief and the realities of the existing building shell. Early diagrams will, and indeed should, change. In fact, it should be a matter of concern if no changes suggest themselves. Every designer must be aware of the dangers of complacency or, as is more often the case, a stubborn commitment to sustaining a seductive first idea at the expense of practical priorities.



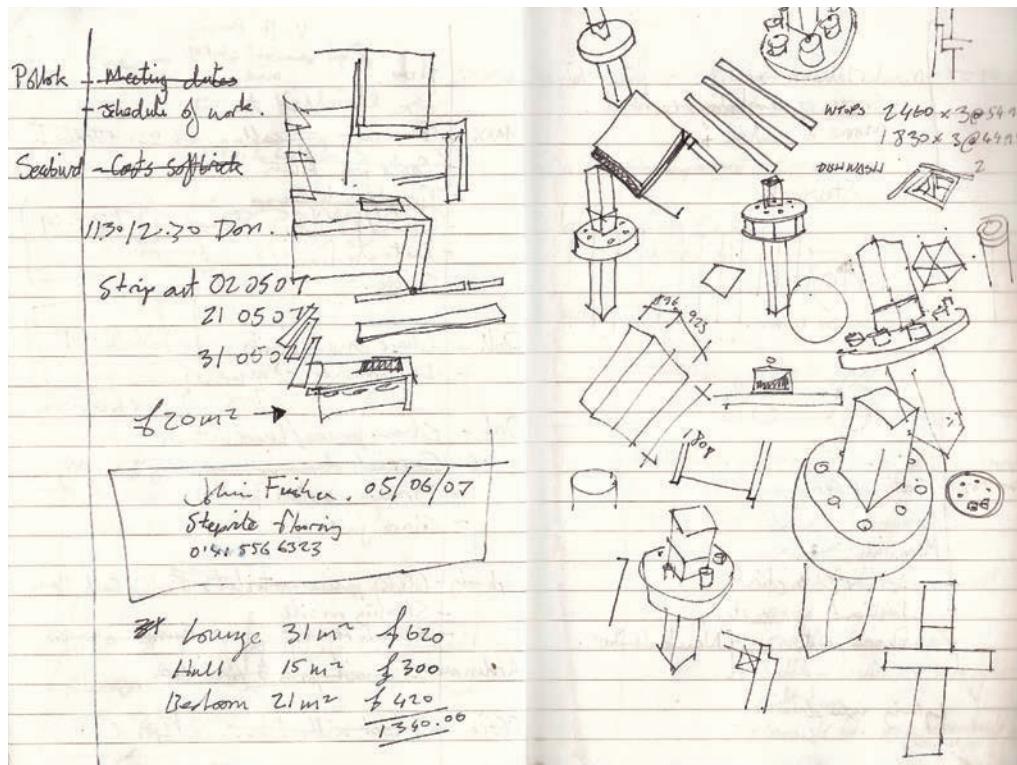
Left

A very early sketch, made with coloured felt-tip pens in a lined note pad, captures the essence of an idea to be refined and tuned to the specifics of the brief. The 'foot' motif is obviously the starting point and subsequent detail – the shape of the light fittings and foreground chairs – is sympathetic to it. Other elements – the curve on the ceiling, the parallel lines on the floor – indicate that ideas about massing and finishes are already taking shape. The recess that contains the desk and the projecting section of wall beside the door indicate awareness of the physical realities of the space.

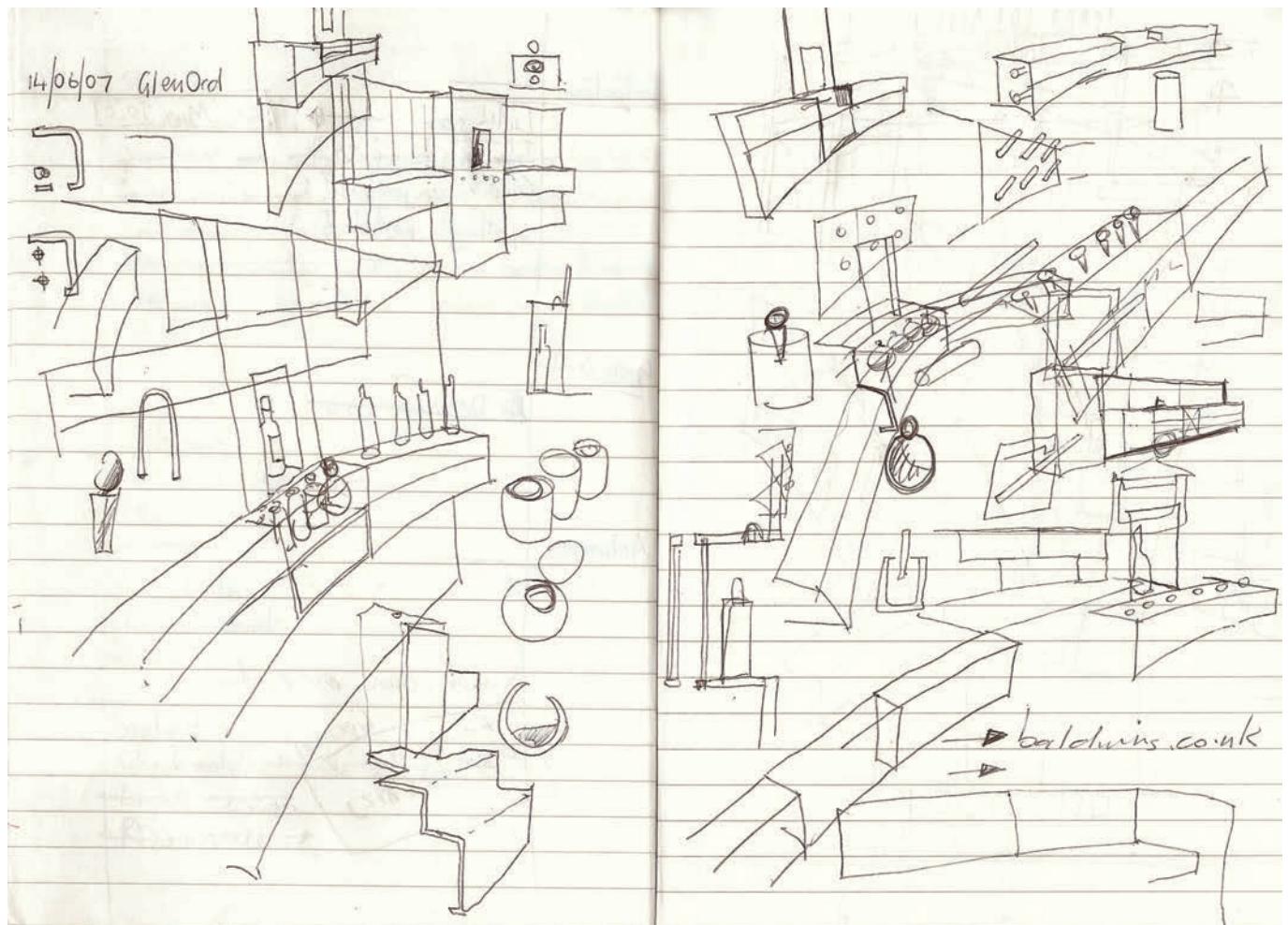


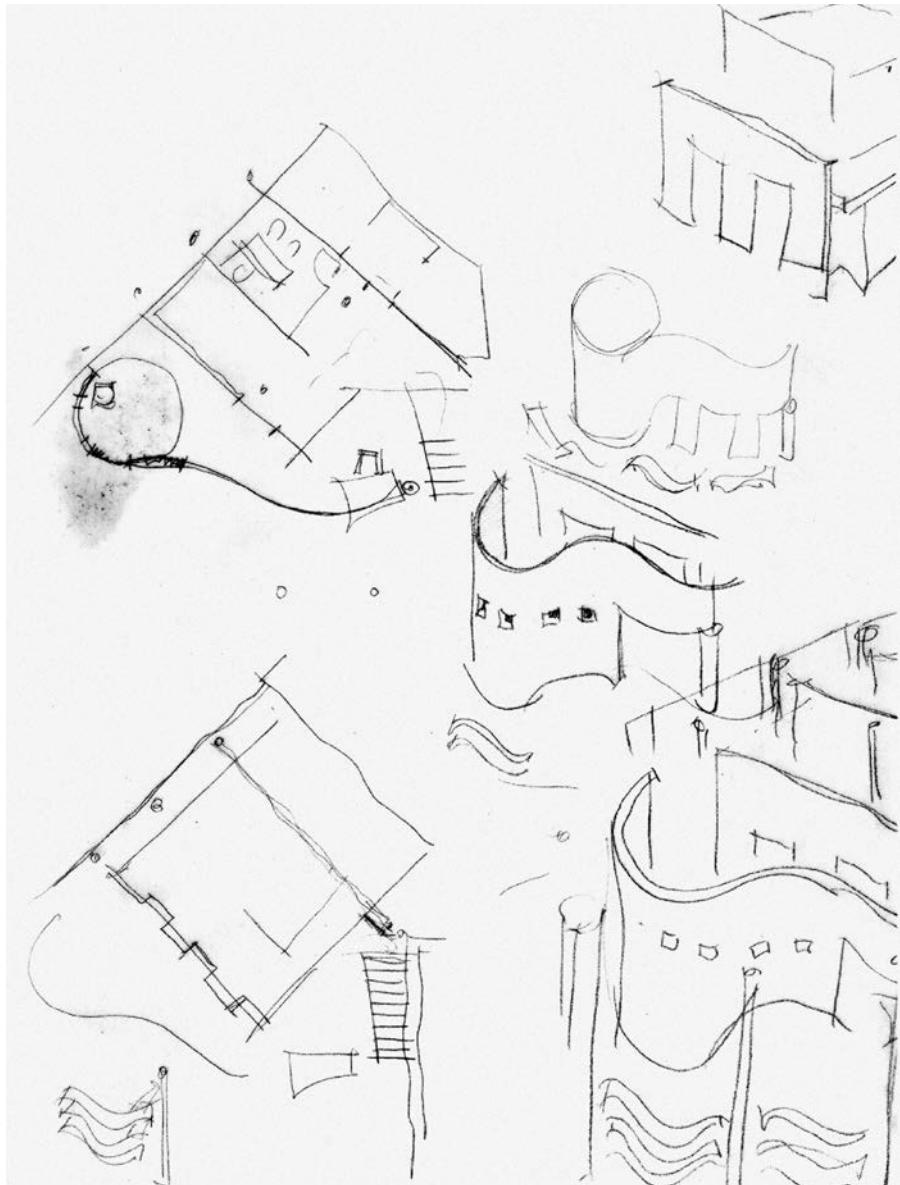
Above right

An early attempt to define strategic planning: the dotted and dashed lines indicate the structural grid and column locations showing awareness even at this stage of practical imperatives.

**This page**

Pages from a notebook illustrate how ideas persist and are explored obsessively throughout the design process.



**Above**

The ground- and first-floor plans on the left were made as overlays on the existing plan but the only evidence of the original building is in the circular columns that determine practical locations for new walls. The sketches on the right speculate about the extrusion of the plan. They are drawn from above to emphasize the relationship between plans and elevations.

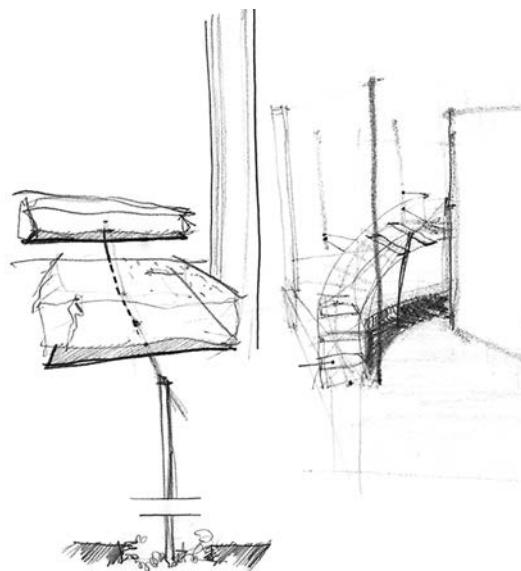
Right

This sketchbook drawing records early speculation about how new elements might interact with the existing building. The bottom of the sketch explains how the footprint of the stair will be excavated from the existing concrete floor, and the drawing makes clear that the concrete treads will be supported on a delicate metal structure and that the 'excavation' will remain exposed.

TIP WORKING TO SCALE

Every successful interior evolves in a search for a satisfactory balance of intuition and objectivity.

First ideas spring from consideration of a brief and its context and even when they are little more than an intuitive hunch, a designer will want to make them tangible and first expressions of this starting point and initial investigations of its viability are usually quick freehand sketches which begin to establish the physical shape that the untested proposition may take. As they sketch designers also begin to understand better, not only what they should do but what they can do. A good designer does not force an inappropriate concept but rather identifies how the requirements of the brief and the nature of the existing building can be reconciled so that each enhances the other. This understanding can only be properly achieved when details of both are dealt with precisely and, inevitably, this requires more controlled, scaled drawings, using conventions that allow the interaction of new and existing elements to be accurately plotted in two dimensions. While these drawings may deal with prosaic practicalities, they also allow fine-tuning of proportions. They may be made traditionally, by hand on a drawing board, or, as is now the norm, on computer. The latter also eases the conversion of data accumulated in plan and section to a rendered three-dimensional form.

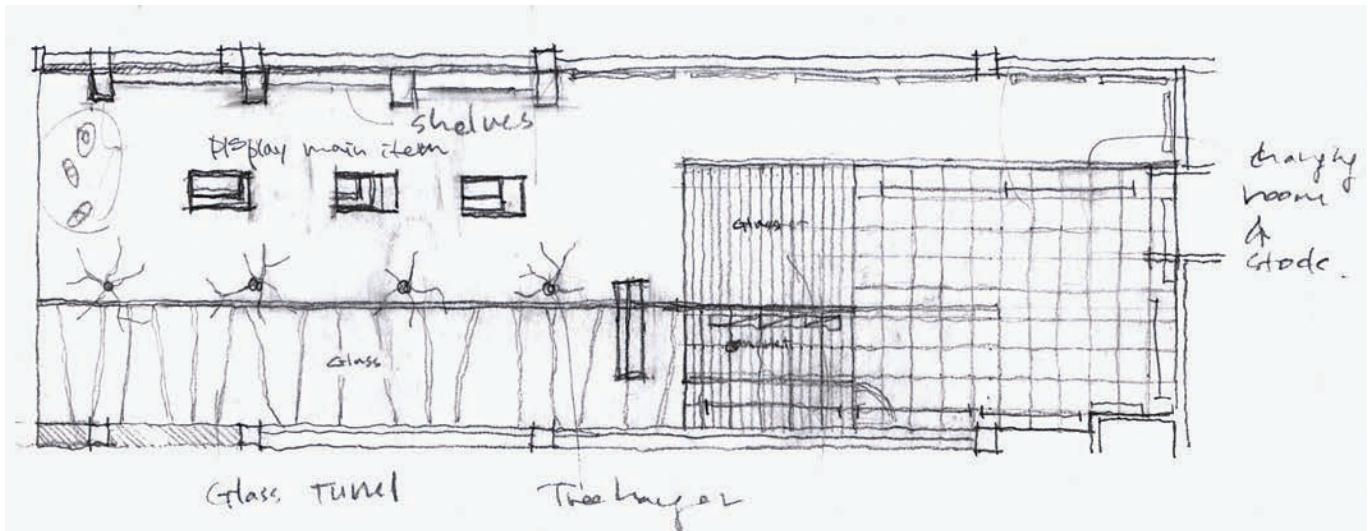
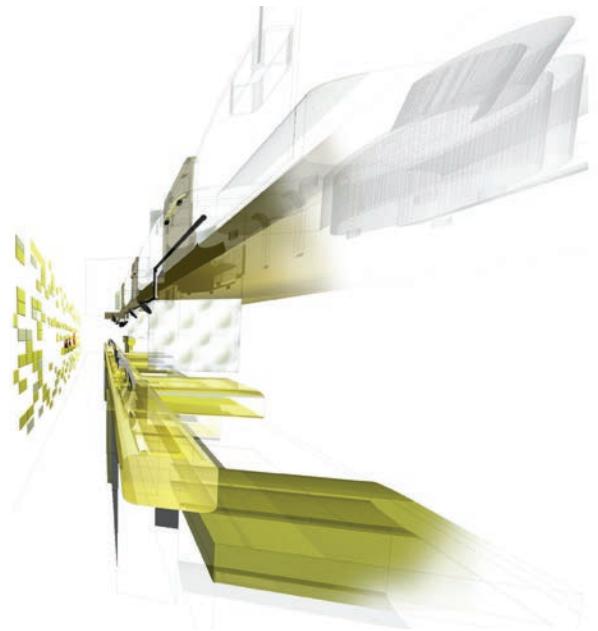


**Left**

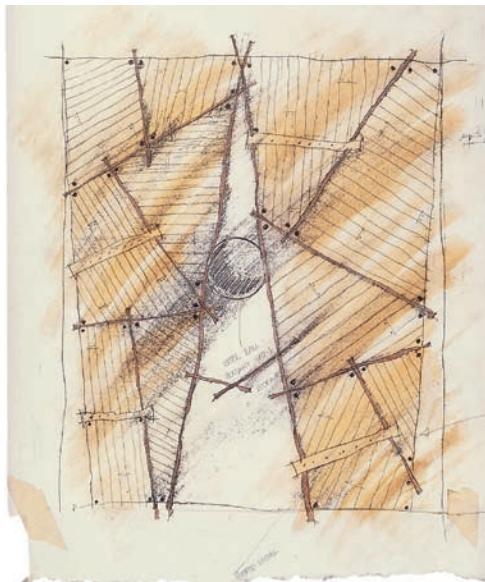
Another quick sketch, made with pastels on white paper, showing clear thinking about how the elements – steps, small recesses and spotlights – will work together. Colour used in the drawing is determined by available pastels, so can only suggest the final hue.

Right

This computer-generated image remains quite abstract, and was made to distil the designer's ideas about form and materials but not intended to communicate very much to anyone else.

**Above**

One of a series of overlays of an existing plan of the building shell, made with pencil on tracing paper. The significant elements in the existing structure, particularly the columns projecting from the side walls, are indicated so that decisions about the location of new elements are made in response to them. Floor pattern identifies the mezzanine area, but while the whole is drawn comprehensively there is little attempt to make it comprehensible for anyone other than the designer. Notes are scribbled and meant to serve as aides-mémoires rather than sources of information. The drawing is not refined and might be enough to serve for preliminary discussions but is more likely to end up in the wastebasket.

**Left**

This drawing – pencil and pastels on tracing paper – describes clearly the timber and glass panels that will be used to make a façade and hints at the methods by which they may be assembled (nails and bolts). It suggests obvious questions about structural stability and the mechanics of the door, and in so doing points to the next step in the development of the project.

The plan

A designer will normally begin to develop a concept by sketching and refining the plan. The images, on the opposite page, made by hand on sheets of A4 tracing paper give some idea of the progression of thoughts and the drawings which prompt and record them. Even when making the most rudimentary initial sketches, the dimensions and proportions of the building shell must be acknowledged.

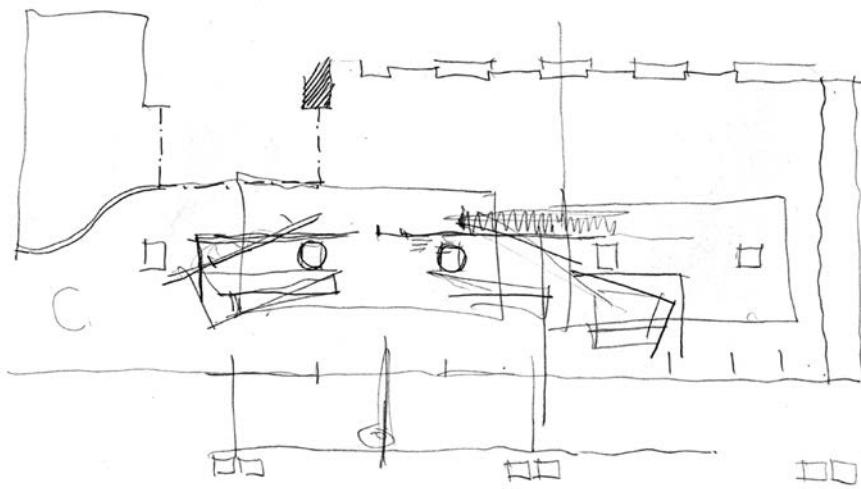
Dimensions and proportions

Design drawing is really observational drawing but the subject exists only in the designer's imagination and it is easy for it to become unrealistic and for impossible ambitions to take over. Objective understanding of the realities of the existing space will give direction and discipline to decision making. Almost all interior-design projects require the insertion of the maximum possible accommodation into a space that was originally designed to contain some other function, and unstructured drawing can encourage counterproductive optimism. A solution conceived for a space assumed to be higher, wider and longer, or lower, thinner and shorter than it is in reality will not adapt readily or without debilitating compromise.

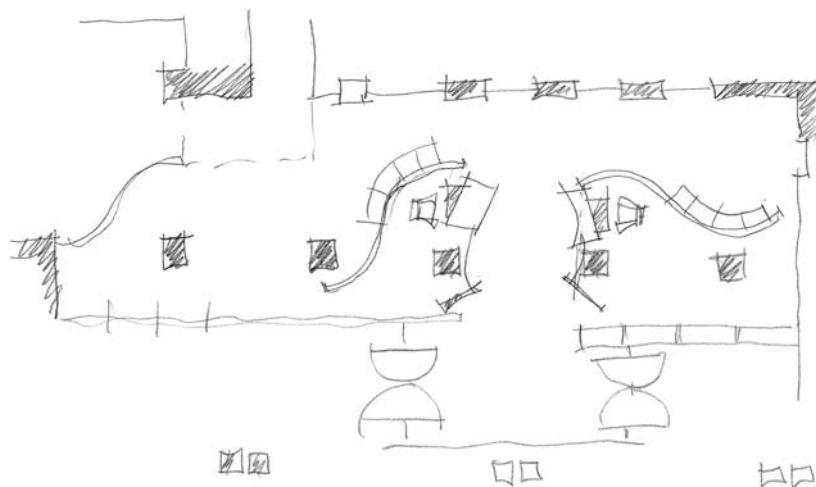
Getting the proportions of freehand sketches, whether two or three dimensional, correct requires no more than self-critical concentration. Freehand drawings may be used late in designing plans if they are (roughly) scaled and, if existing elements are located (fairly) accurately, they will provide constant reference points for the positioning of new features.

The earliest conceptual sketches are likely to be three-dimensional images, but once a strategy has been defined its development must be resolved in the two dimensions of plan and section. Ideas about form, materiality and atmosphere need to be precisely plotted, and that requires precisely scaled drawings.

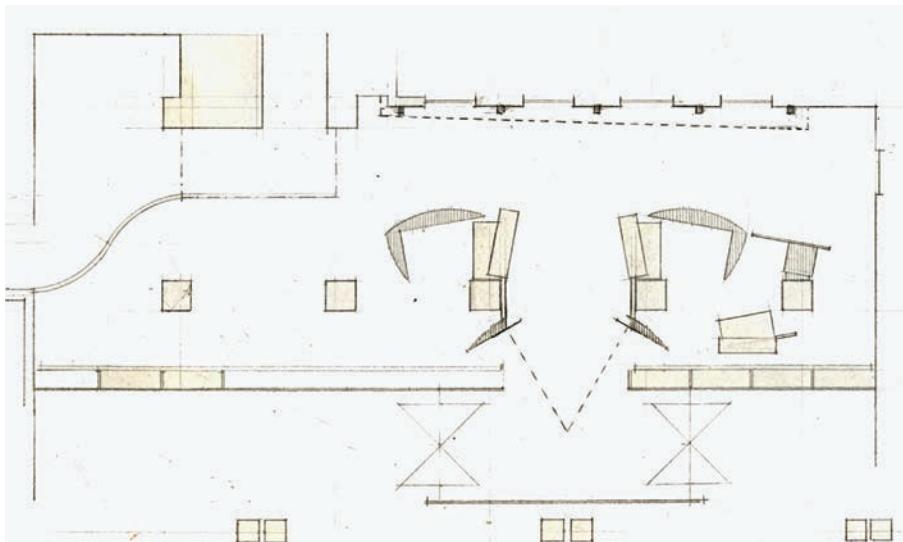
The mind needs to be focused on the job of designing and it is good to allow momentum to build, so that one drawing follows the other with a minimum of interruption – no longer than it takes to place another sheet of transparent paper over the base drawing – so that thoughts flow effortlessly to and from each other. When an idea is being hotly pursued, drawings will flow spontaneously one from the other. However, sometimes it is important to slow the tempo to make time in which to marshal thoughts. Then it may be productive to draw the plan of the existing building again to refocus attention on its particularities, its wall thicknesses, its window sizes and door positions – and to test the relationship of new elements to the old.

**Left**

In this overlay of the plan of an existing foyer space, the columns and walls are minimally indicated because the detail of the original plan was visible through the tracing paper. The existing balcony above is indicated using the established convention of a dotted-and-dashed line, and its supporting structures – the curved and the shaded walls – are drawn with a little more detail because they were initially considered crucial to the development of the project. Indication of the new elements is perfunctory because there is, as yet, no clear idea of their form.

**Middle left**

The drawing remains rough and loose but the addition of furniture, and the more precise thinking about how new curved walls will relate to it, indicate more detailed thinking.

**Left**

In this later drawing, the existing building shell is traced accurately and the new elements placed precisely within it, to test their relationship one to the other. The drawing is made by hand, using drawing board, parallel motion and set square.

The section

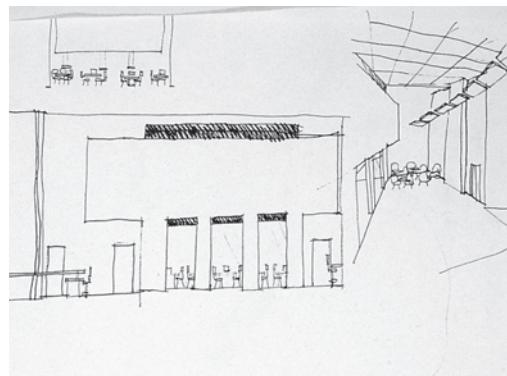
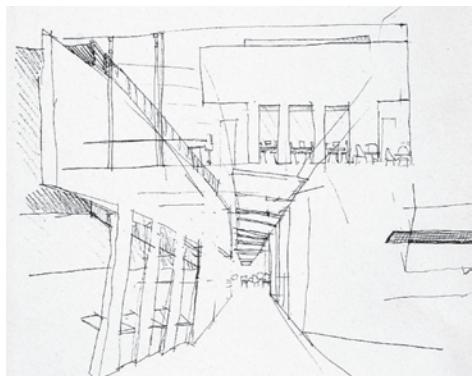
The hand drawn section

The switch from loose freehand to precise scaled drawings is as vital for the development of a section as it is for a plan. As for a plan, drawings, however perfunctory, will record decisions made in the progression of a project, enable retrospective analysis and provide material for an examination of where momentum or direction has been lost.

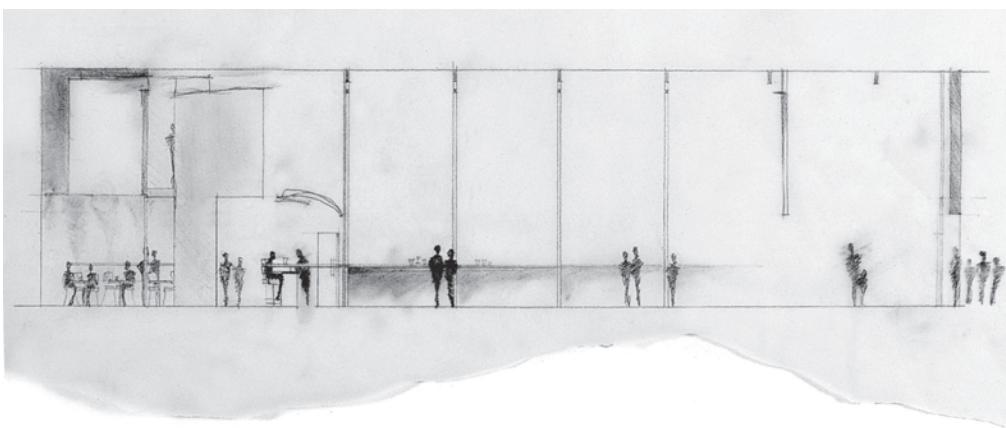
While the ambiguity of the freehand drawing leaves room for creative interpretation, the precision of computer-generated images can also prompt fresh thinking. The hard facts of the first computer-generated plans and sections may be converted spontaneously into rudimentary three-dimensional expressions of the anticipated space, and these, in turn, may be explored

further by rotating them in the virtual space of the monitor screen so that unanticipated possibilities may be glimpsed in the previously unexplored detail of the proposal, which the designer may consider with a degree of objectivity that is often lost to those drawing by hand who tend to have more emotional involvement with the drawing and are necessarily less self-critical about an idea that has already been anticipated and understood in their imagination.

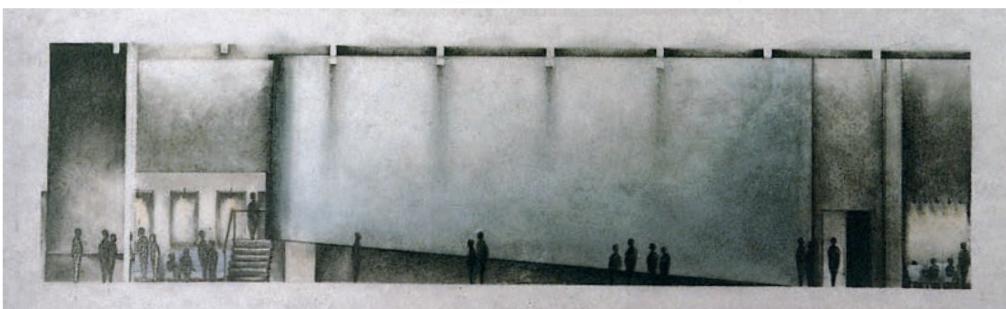
The hand made drawings on this page show the development of the internal elevations for a cinema project and were created with pencil, pastels and coloured pencils on tracing paper.



Left
Two- and three-dimensional considerations of how internal walls may elevate, and how areas may be physically and visually connected.



Left
The first (roughly) measured elevation of an internal wall. Ancillary or, as yet, unresolved elements are drawn freehand and figures are added for scale.



Left
As the designer's vision of the project becomes more detailed the drawing becomes more evocative of the possible end result. Ideas about lighting and materials are beginning to crystallize. Definitive decisions may be made.

The computer generated section

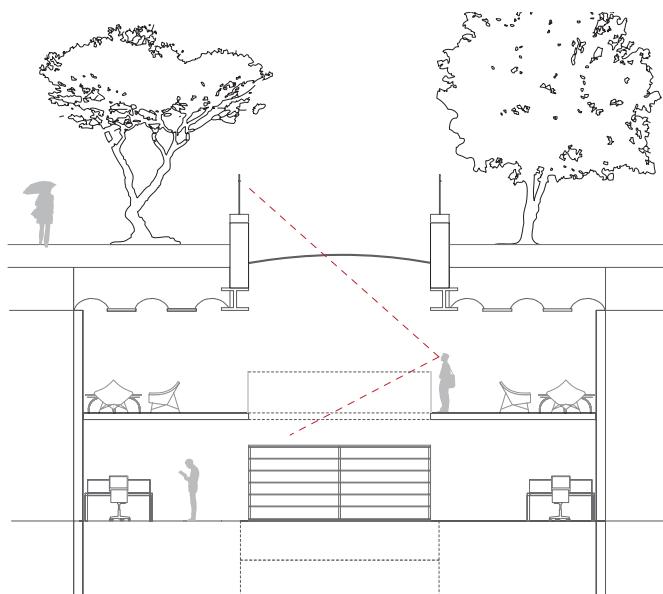
The digitally generated section, as an exploratory and decision making device, tends to be more definitive at all stages of project development than the hand drawn equivalent, because drawing by computer requires the input of more precise information in the first instance and produces, from that data, a primarily linear description of the proposal, which is factual rather than atmospheric.

The image on screen evolves as ideas evolve. The first delineation of planes can progress, with amendments and additions, into a final render, heavy with detail and unless the designer makes a decision to save or print it at a particular time in its evolution, there will be no evidence of the stages, critical or inconsequential, of its progression.

Once working with computer a designer's impulse will also tend towards converting the information

accumulated in section and plan to produce, a three dimensional version of the proposal at a much earlier stage of the development process than with hand drawing, because what was hitherto a time consuming manual activity requires no more than a keyboard command.

One may argue that the protracted labour involved in making hand drawings leaves time for reflection and reconsideration or one may argue that the capacity of the computer to describe ideas in three dimensions necessarily offers more opportunities for appraisal. There is merit in both points of view but both require a designer to remain objective and see beyond the seductive image.

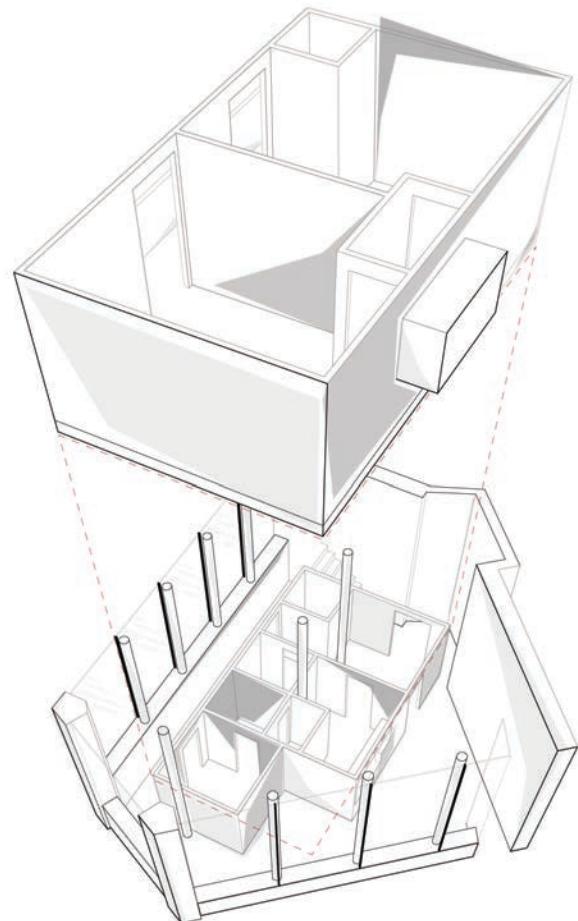


Above

A section sets out with restrained precision the visual connections between different levels and the rooflight. The figures, here selected and pasted from the designer's own reserve, give scale, as did those hand drawn in the previous example.

Right

It is simple to convert a plan and section into three dimensions and, in this example, consider the relationship between levels of the new elements and their relationship to the existing building shell.



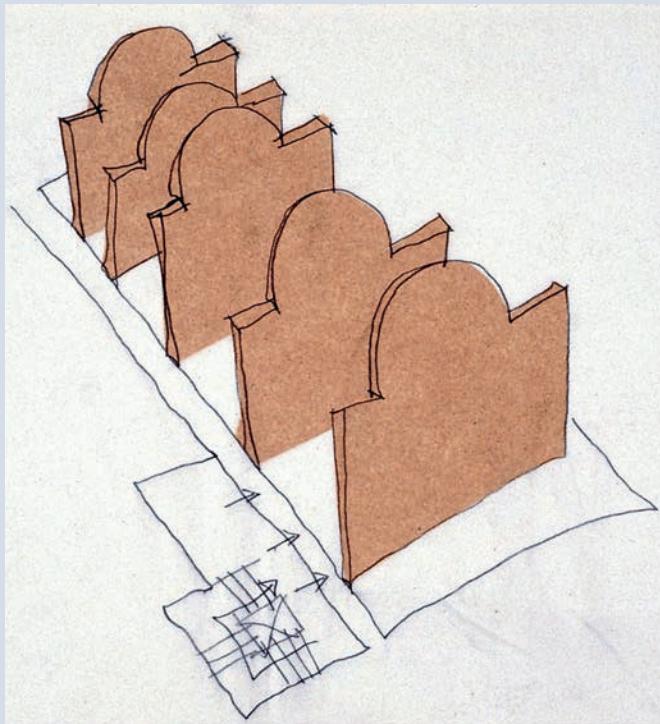
Case study Evolving the idea by hand

Right

Information is edited to the minimum to concentrate attention on the essential subdivision of the existing building shell. Dimensional accuracy is not as important as clarity of information.

Below right

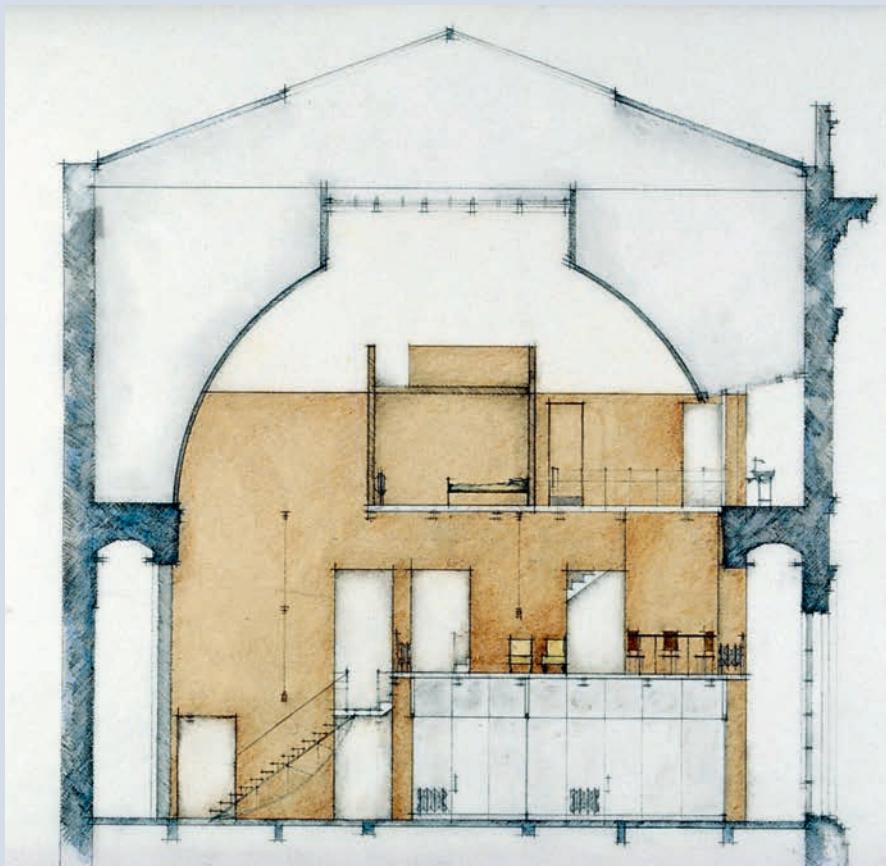
The precise relationship between the new and existing elements can only be effectively established with a drawing made to scale. Traditional instruments will produce an acceptable level of accurate detail.

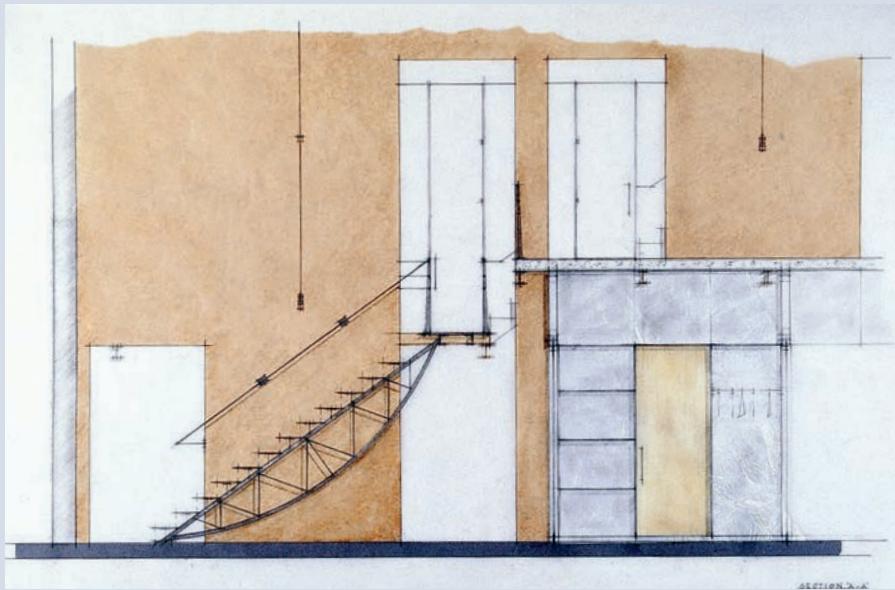


Often the significant development of projects is initiated and resolved through handmade drawings. While the transition to computer for final presentation and production drawing is now almost inevitable, the point at which the transition is made depends largely on personal preference. In this example the designer, trained in conventional techniques and with a particularly strong drafting style, chose to exploit those strengths for an initial client presentation.

To develop the idea she had to work precisely, to understand the potential, and limitations, of the existing building, in particular the problem of how to relate the new multi-levelled structure to the vaulted ceiling and the rooflight within it. While a plan will determine the size of rooms and the circulation between them, it is the section that most effectively explores the potential of a dramatic volume – and identifies the peripheral and residual spaces where more utilitarian activities such as bathrooms and storage may be accommodated. Brown tissue paper fixed to the reverse side of the transparent tracing paper is used to define significant planes.

It is common practice to draw all or parts of a project to increasingly larger scales, to allow

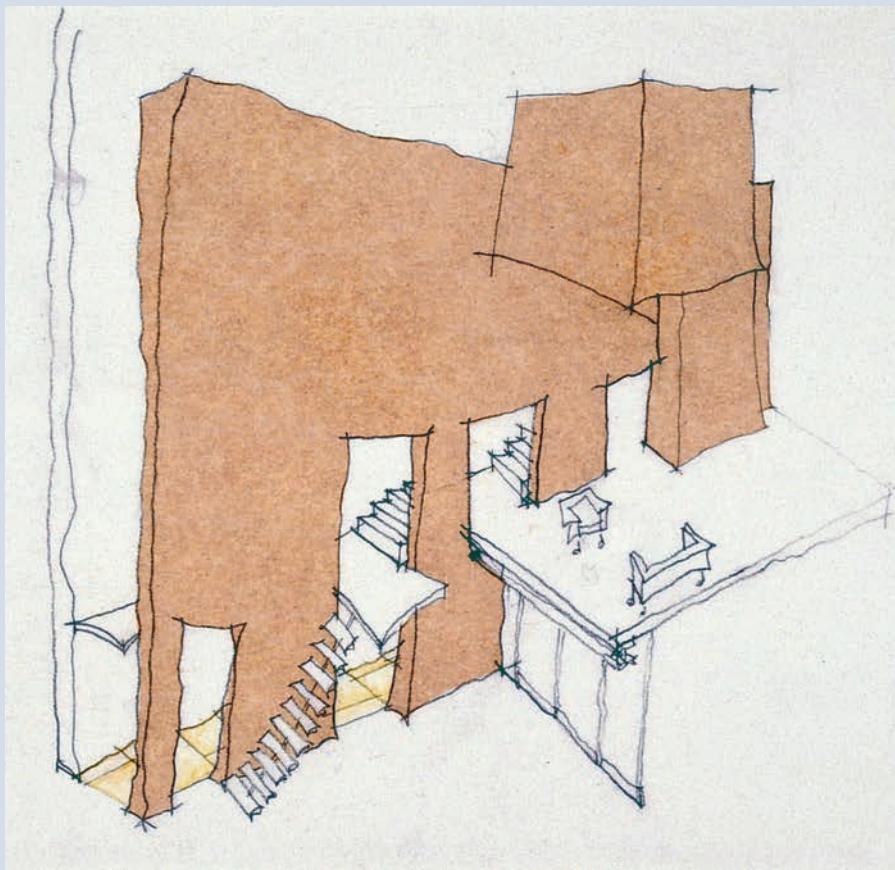


**Above**

This larger, scaled area of the elevation allows more detailed examination of the smaller elements: light fittings, handrail fixings, even door handles.

Below

Another three-dimensional diagrammatic sketch helps clarify the relationship of the three levels and the stairs that connect them. It is again simplified for clarity.



closer scrutiny of aspects of the design and to identify the areas where thought must be given to construction techniques. Often, as in this case, there will be few substantial changes, but drawing to a larger scale can point to areas that are potentially awkward to resolve visually and allow speculation about detail. Even if such larger scale drawing were not to result in any changes, which is unlikely, drawing and re-drawing would still be an important part of the design process because the repetitive act obliges a designer to reflect again on ideas evolved at the smaller scale.

While designers working on a project may understand very clearly the three-dimensional implications of their own plans and sections, it is less apparent to clients, and frequently to other designers. It therefore makes sense to produce freehand three-dimensional sketches that clarify the interrelationships. It is important to make sure, particularly in a domestic project, that clients understand exactly what is being discussed and its implications. Generally, as in the first diagram in this sequence, simplification of image is important for clarity.

It should also be acknowledged that making looser drawings, like the three-dimensional images, has a productively therapeutic effect on the designer. They offer relief from making detailed technical images that demand the simultaneous consideration and reconciliation of aesthetic and practical priorities, and a more disciplined and labour intensive drawing technique. They may also occasionally identify potential physical clashes between elements that were previously unsuspected in two dimensions. Most designers will quickly scribble three-dimensional views, for their own enlightenment, in the course of making plans and sections and these may, occasionally, be upgraded for presentation purpose. This habitual introspective scribbling is a useful way of maintaining a freehand drawing skill that can be useful when it is necessary to produce spontaneously an explanatory sketch in response to a client's question. Such ad hoc drawing may be the last hand drawing activity to be superseded by the computer and, if it is done well, it will always impress a client – or a colleague.

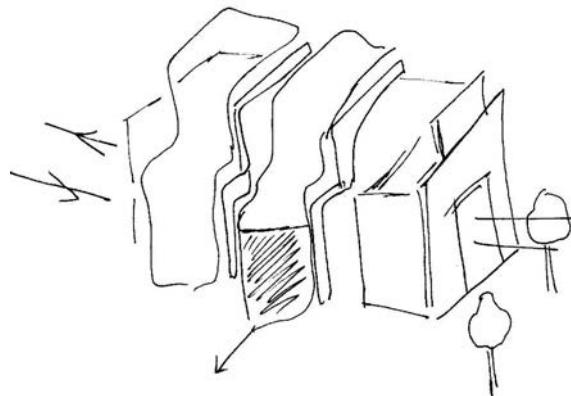
STEP BY STEP EVOLVING THE IDEA BY HAND/COMPUTER

When creating an interior within a conventional rectangular plan, it is often feasible to work on computer from the outset. However, if the proposal is three-dimensionally complex then it is more usual to record first moves in rough sketches that will establish viable starting points for the production of more complex and precise computer images.

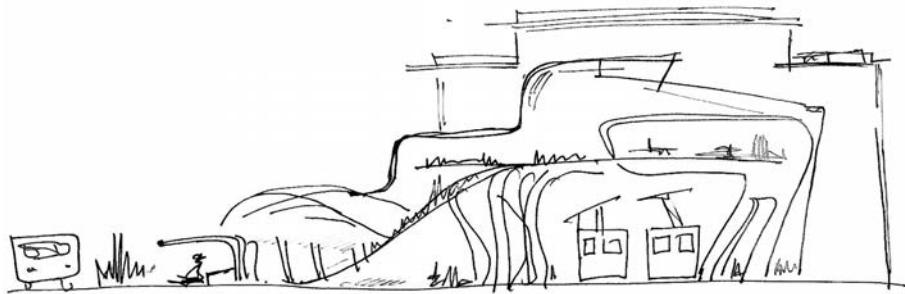
This project is for the insertion of a complex multi-level interior, to sit within the shell of an existing building and to break through its roof. First a perfunctory diagram is created, which has no need to represent the existing plan and section in any detail. The second sketch, overlaid on a section of the original building, investigates the relationship of new levels to the existing

section and, from that, a definitive section and its interaction with the original is established on computer. The computer's capacity to deal with curved lines is particularly useful for establishing a precise form. With the information contained in section, and plan, it is easy to generate the two three-dimensional images, one showing the new structure in isolation and one showing its relationship to the existing building. Both remain diagrammatic to an extent, with heightened shadows and the glazed cladding shown without indication of support or fixing, but the fundamental problems have been identified and solved. More detailed resolution can follow.

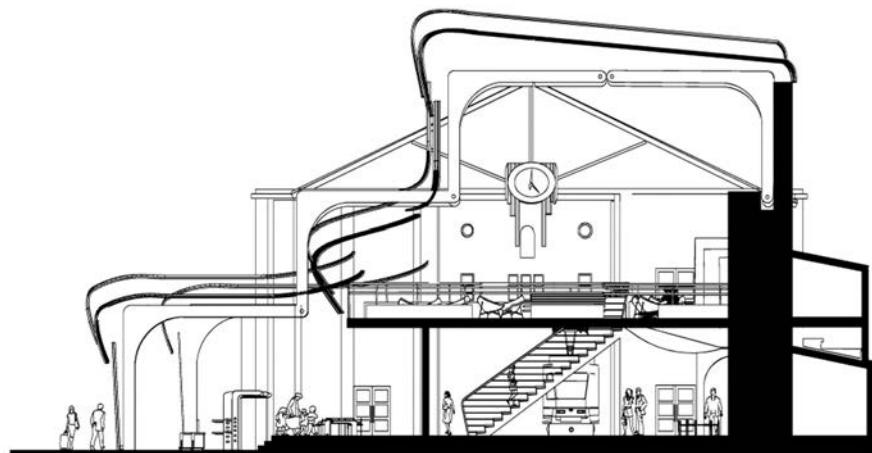
- 1** A spontaneous expression of the first idea, showing the cascading form set between the end elevations of the existing building but with no indication of its materiality. Arrows draw attention to a revised circulation strategy.

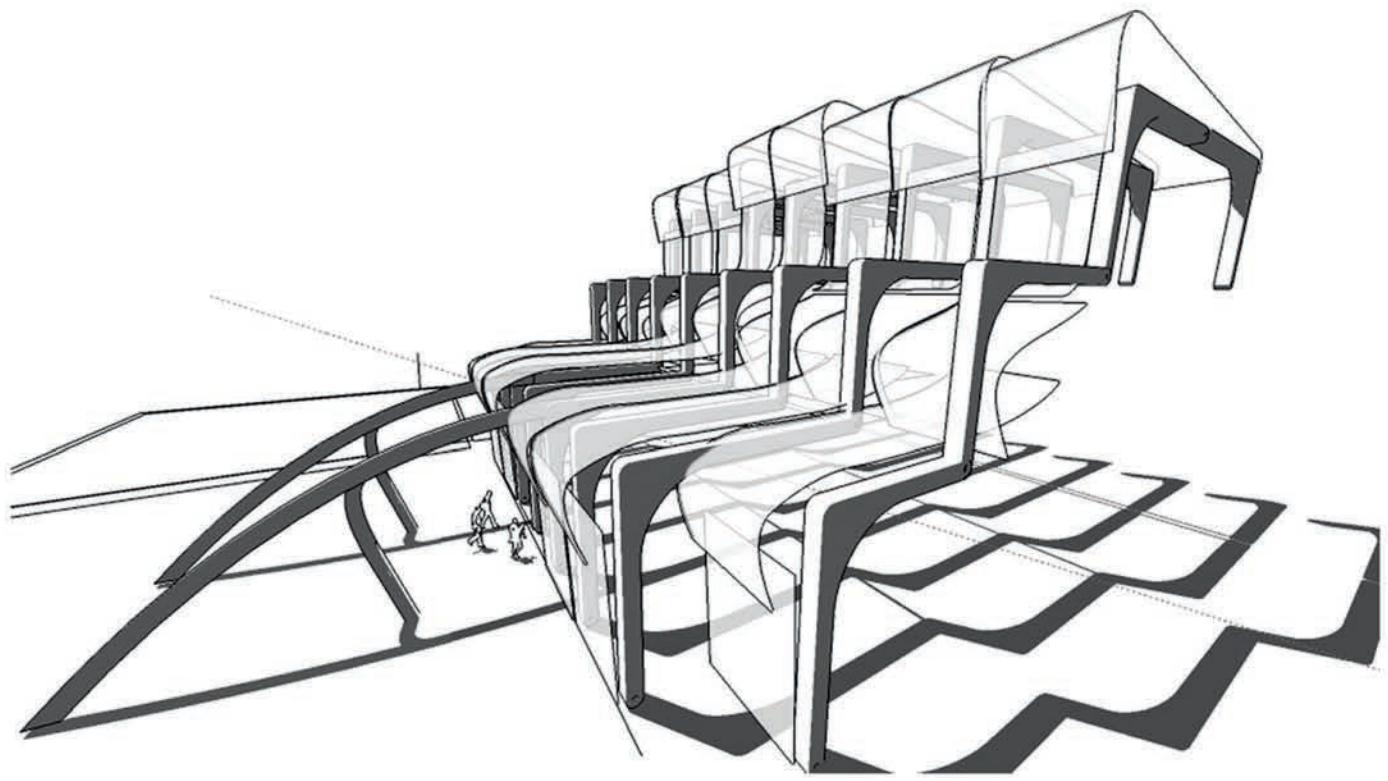


- 2** Freehand lines, overlaid for accuracy on a section of the existing building, begin to define the relationship of new to old. Hints of figures and equipment indicate that consideration of function is beginning to influence decision making and that the designer is remembering that the way in which users experience the building should not be sacrificed to the dramatic gesture.

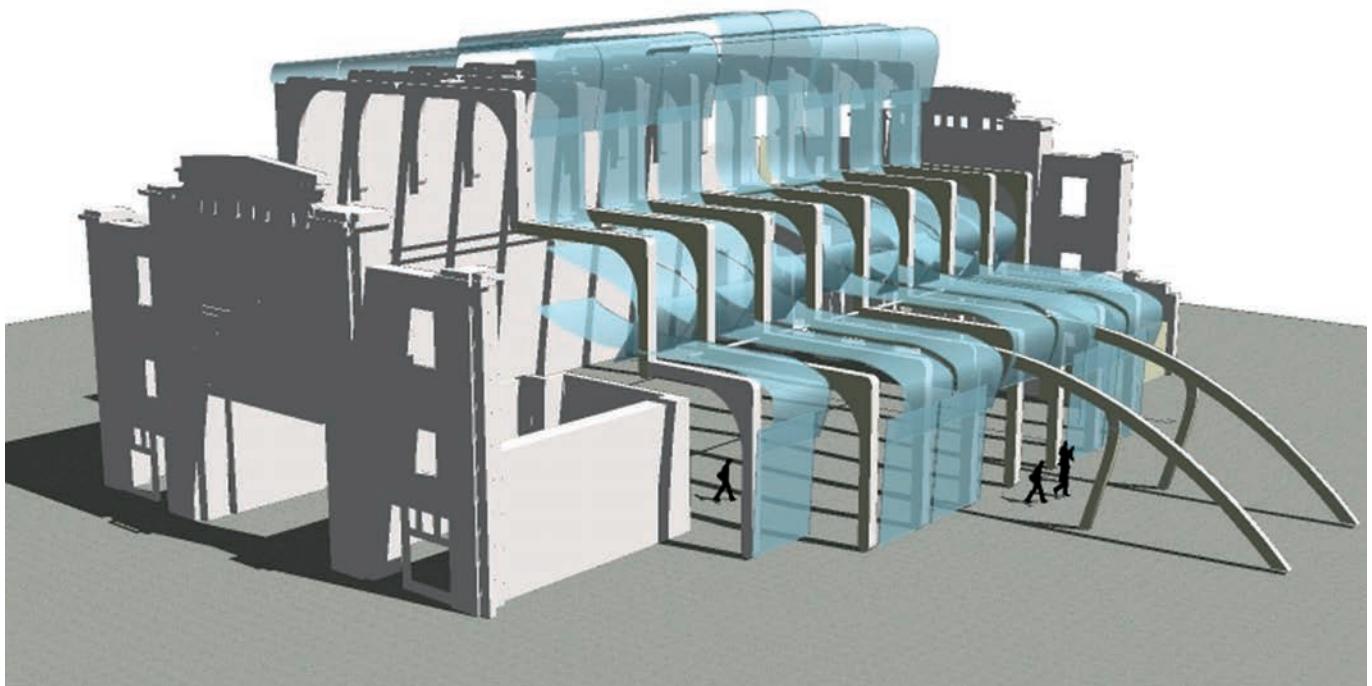


- 3** A much more considered and resolved computer generated version of the section clearly sets out levels and new and existing structures but is most valuable as a definition of the geometry of new glazed cladding and the structure that supports it. The form rather than the transparency of the glazing is given precedence but the nature of the structure, its profiles and joints are clearly identified.





4 A computer-generated perspective clarifies the principles of the relationship between the new structure and the overlapping glazing elements.



5 The contrast between solid structure and transparent cladding and the relationship of both to existing gables is more clearly explained

STEP BY STEP EVOLVING THE IDEA BY COMPUTER

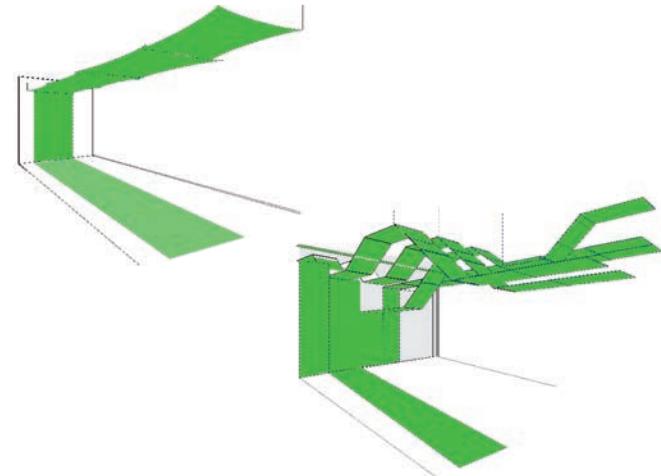
It must still be conceded that in the earliest stages of the design process one is likely to make quick freehand sketches, and for some designers – particularly those educated to use traditional techniques – this is, and will remain, true and they will adamantly defend their position, with a vigour that might suggest they may suspect that their argument is a shaky one. For those who have used computers from the beginning of their training, and as an integral part of their practice and daily lives, it has become as easy to ‘doodle’ and ‘sketch’ on screen as on

a drawing board. It remains a matter of personal preference, but there are significant advantages to working digitally.

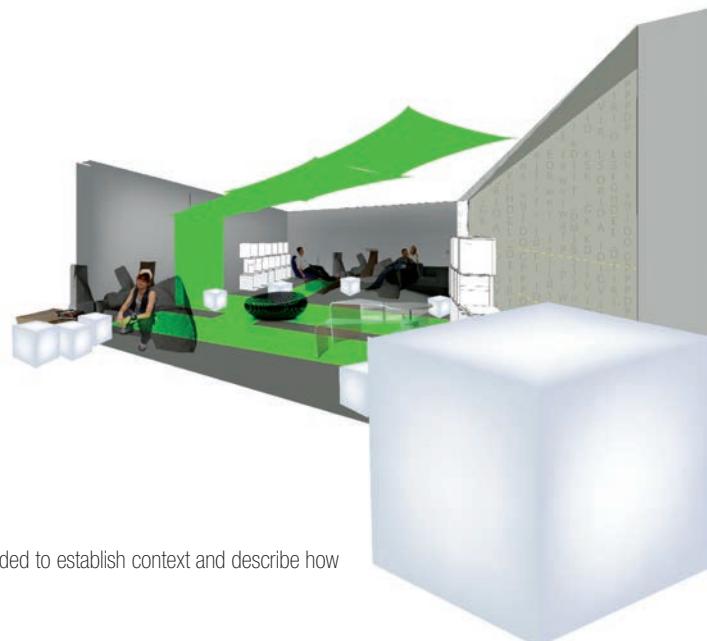
Once basic information has been fed into the computer, it becomes simple to generate outputs quickly and convincingly in two and three dimensions. The accuracy and clarity of the finished image ensure that, in contrast to freehand sketches, there is much less room for misinterpretation during discussion with colleagues, consultants and clients.



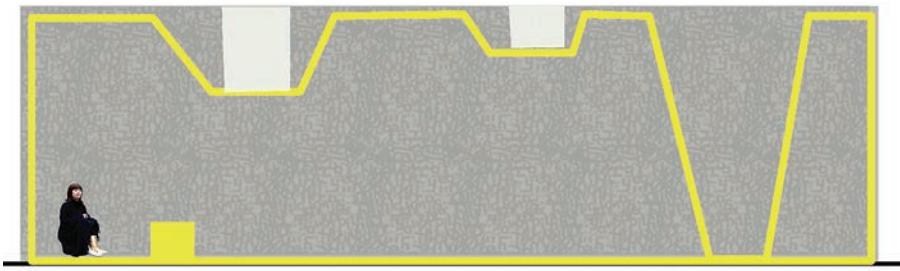
1 An early, diagrammatic sketch suggests the idea of a ribbon stretching over a floor and up a wall.



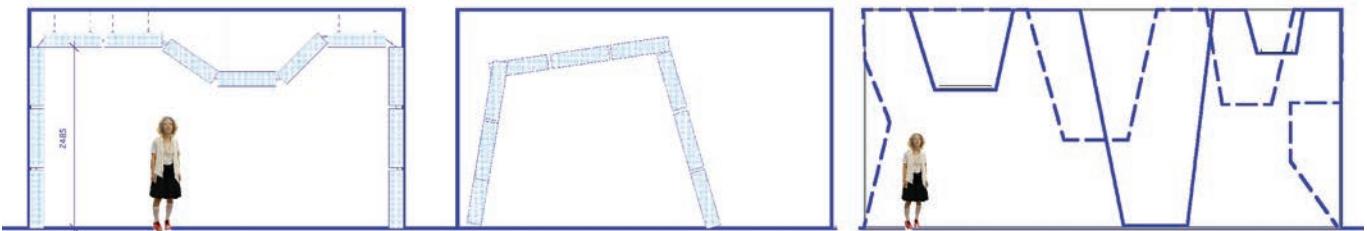
2 The idea of a continuous, undulating ribbon is developed in three dimensions.



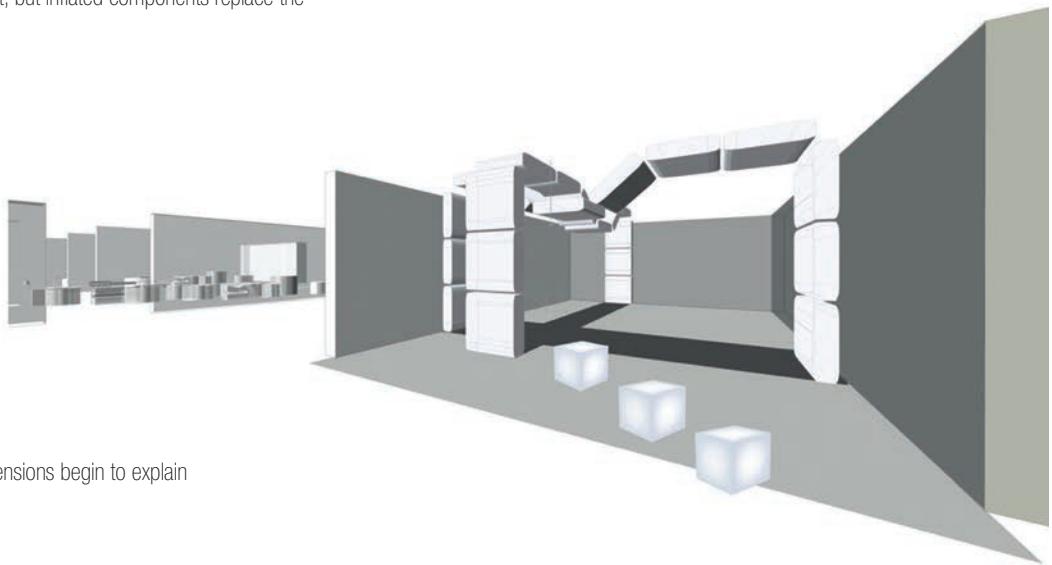
3 Walls, furniture and figures are added to establish context and describe how the area might work.



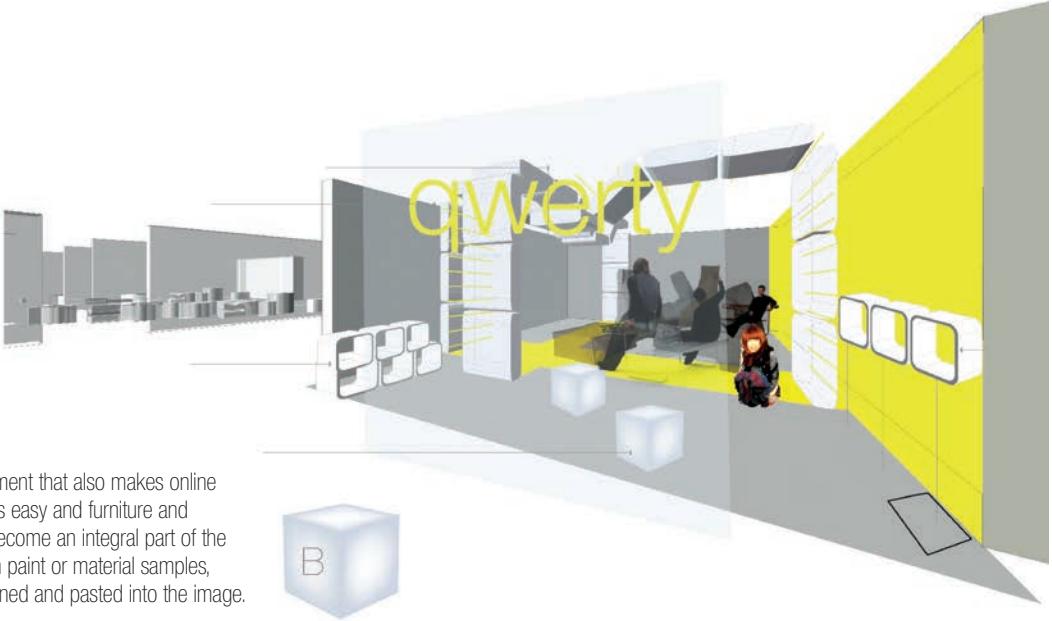
4 A first section, which relates profile to overhead structure, provides information from which all subsequent drawings are generated. The figure establishes scale.



5 The basic form remains consistent, but inflated components replace the original fabric.



6 Sections extruded into three dimensions begin to explain spatial possibilities.



7 The computer is a drawing instrument that also makes online access to manufacturers' websites easy and furniture and finishes may be downloaded to become an integral part of the design process. Colours, to match paint or material samples, furniture and figures may be scanned and pasted into the image.

Detailed thinking

As a project progresses, a designer inevitably becomes increasingly concerned with detail. From the very beginning there will, or should, have been thoughts about materials and colour. Experienced designers will have evolved an instinct that prompts them to consider materials and appropriate construction techniques as they are making the most rudimentary first sketches. These ideas are very likely to change but they represent a first step towards the resolution of a project.

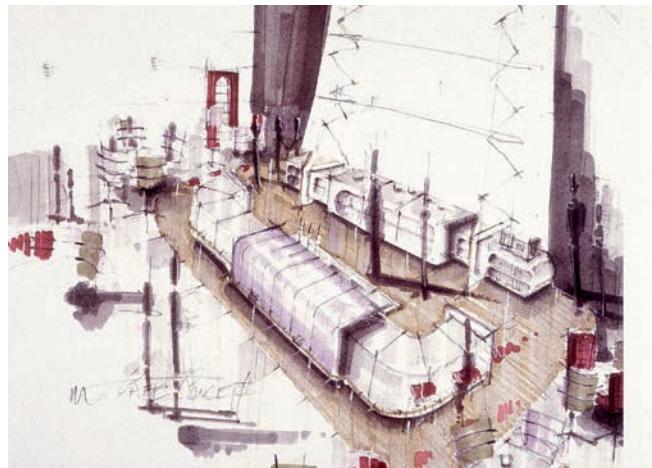
The most cherished drawings in any project are likely to be the earliest. They will have the purest expression of the purest idea and may, superficially, appear to be the most creative. However, it is in the

later, more considered, detailed drawings that the crucial creative work is done. Such drawings may appear dry, but they contain more hard information about the real nature of the project for those who know how to read them and it is often in consideration of detail that designers are forced into unfamiliar territory where habitual solutions must be abandoned and something new is added to their repertoire.

A designer must learn to recognize the moment at which the means of investigating and progressing ideas must become more disciplined and it is often difficult to make the shift from the excitement of the first, comparatively unstructured, outpouring of ideas,

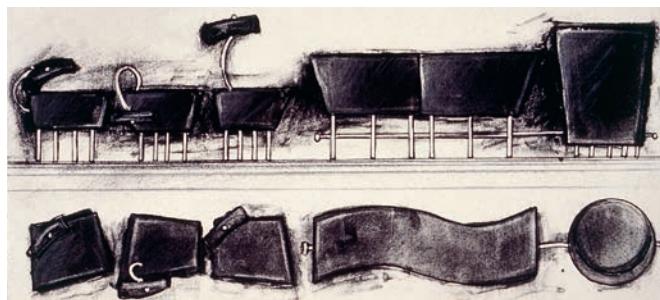
Right

Detailed ideas about materials and form will often emerge clearly in early drawings that are superficially concerned with an expression of atmosphere. Here lines made on tracing paper with a thin black felt-tip pen and thicker coloured felt-tips, express materials and surface qualities. The linear application of the coloured pens suggests floorboards and the hang of curtains. The grey tinting, particularly on the bar front and top suggests reflections on hard, shiny surfaces. The delineation of the bar is just enough to indicate how it operates. Critical decisions are, necessarily, taking shape in the designer's imagination.



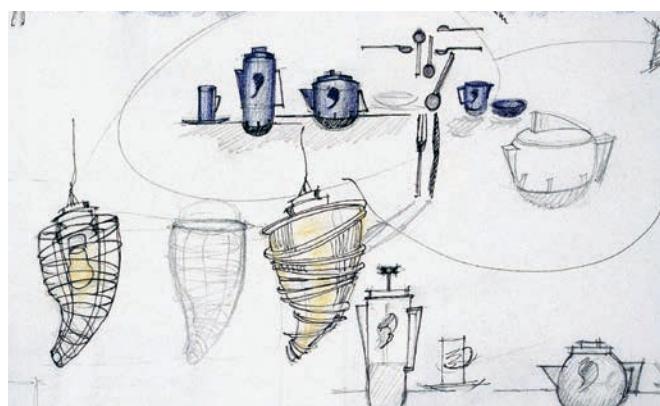
Left

Leather-covered furniture for a reception area was comparatively easy to draw both in plan and elevation. Technically constructed lines were loosely over-drawn in pencil. The dense semi-matt black of the leather-and-chrome structure was rendered with oil pastels, and overshooting of edges integrated the image into the paper.



Right

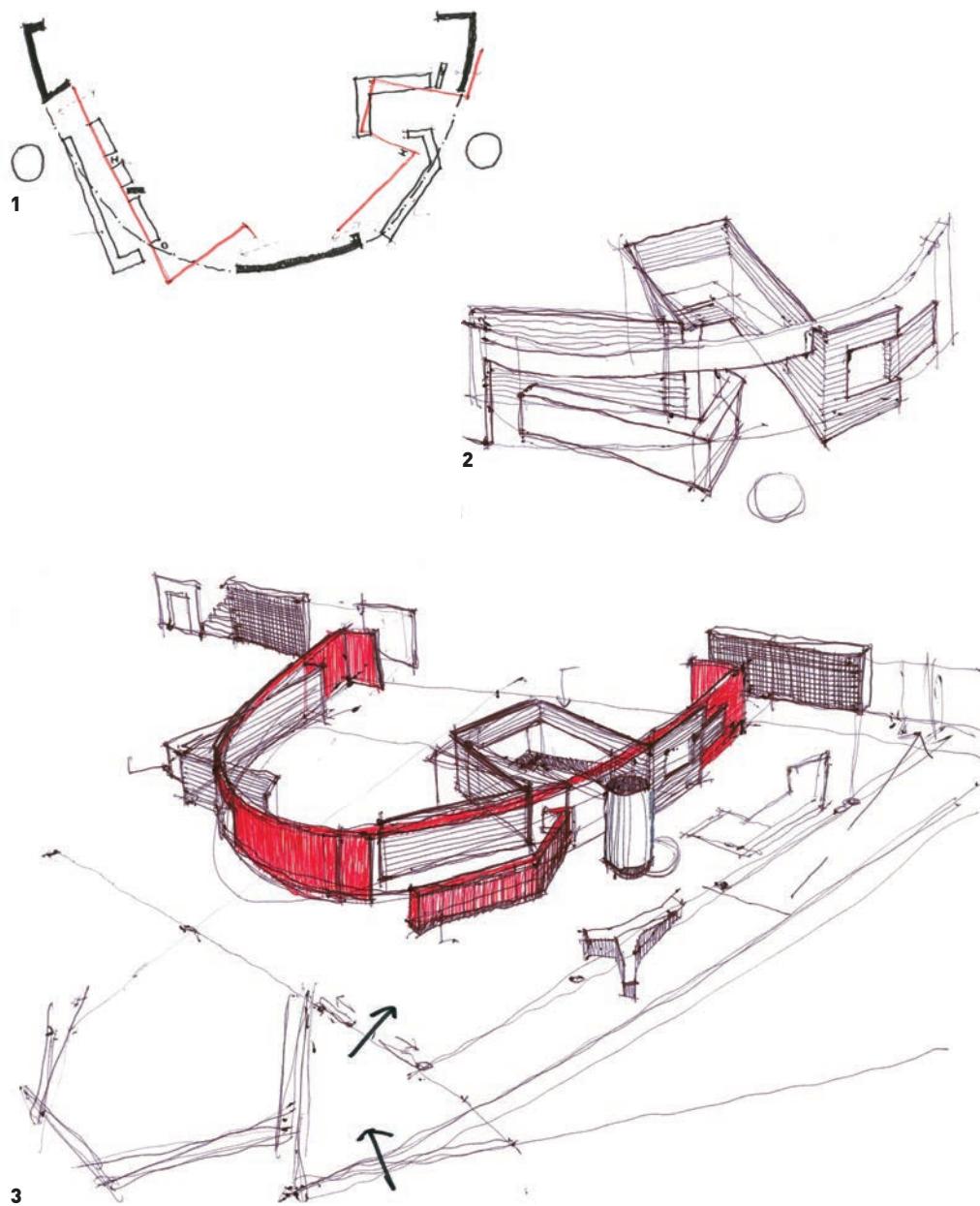
This sketch set out to create light fittings in a cafe and, while considering the context for these, the designer began to speculate about crockery and cutlery. It is very unlikely that such peripheral drawing will have a tangible outcome but, whether productive or not, such speculation will consolidate a richer understanding of the potential of the interior.



when things move with an exhilarating momentum, regularly hinting at exciting possibilities, to the more considered scaled drawings which offer fewer options and identify more practical problems. Such reconsideration will inevitably happen at a slower pace because it requires objectivity, and changes are likely to impact on every other decision made up to that point. Usually such problems, however great their potential effect on the overall concept, will be small-scaled, a matter of reconciling a misalignment or an inadequate dimension, but their solution will take a disproportionate length of time and without their satisfactory solution the project will not achieve the honed perfection to which any decent designer should aspire.

Often, solutions necessitate changes in materials

and methods of construction with a knock-on effect that takes time to assimilate into the whole, and generally the work necessary to create and refine any project will fill more than the time nominally available. The identification of a solution and examination of its impact on the rest of the project will require a comprehensive collection of precise and detailed drawing. These may be freehand but even freehand lines in two-dimensional drawings may be sufficiently accurate if traced over a technically made scaled original or if line lengths are checked with a scale rule. Tracing over a gridded backing sheet also provides a regular module as a base reference. In three-dimensional drawings attention should be paid to proportion and this will ensure that the image is realistic enough to support decision making.



Left

The resolution of complex three-dimensional conditions requires particular attention, if a satisfactory balance is to be found between aesthetic ambition and practical obligations. Consideration of how elements should interact will influence, or be influenced by, the choice of materials. These drawings show a few of the freehand plans and perspective views made in such a process.

1 The plan is traced from an existing drawing. Elements are coded for clarity to define changes in levels and materials.

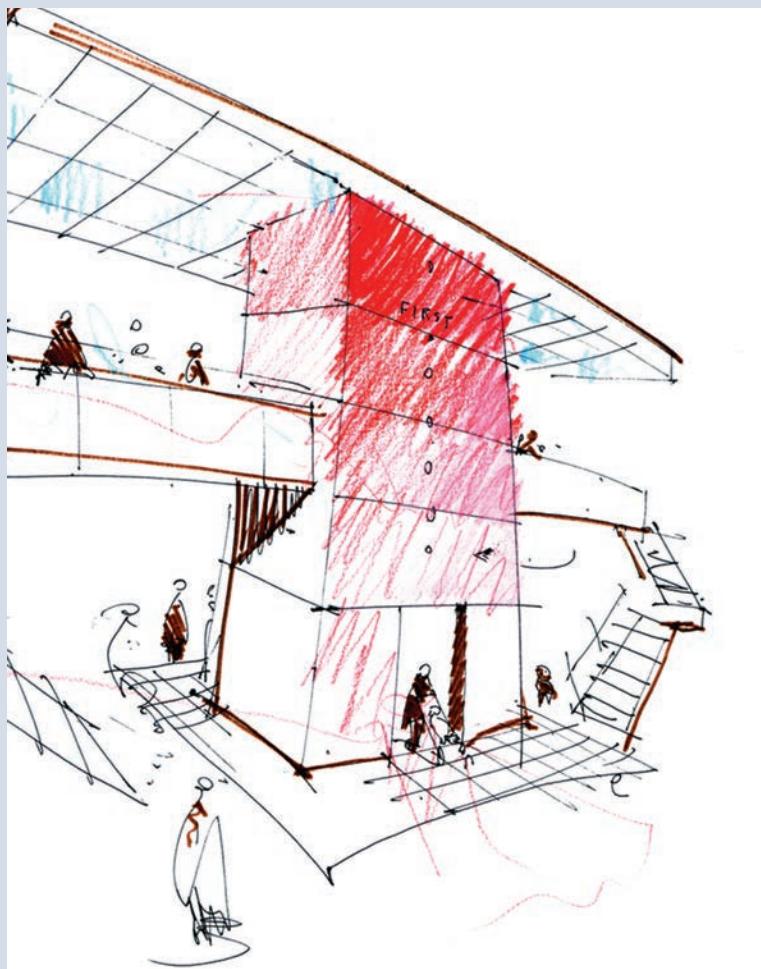
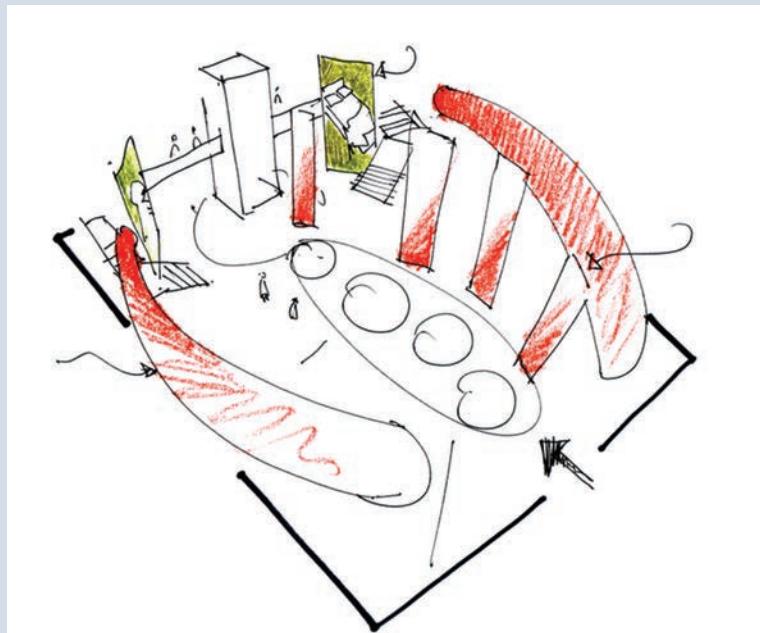
2 A first 3D sketch looks in more detail at the relationship between angled and curved walls. The existing round column is shown on plan, to remind the designer of its existence without its interfering with the view of the new elements.

3 A more substantial sketch explains the further evolution of curved and angled walls. Existing columns, peripheral walls and entrance point put the proposal in its wider context.

Case study Detail emerges

Two sketches, prepared for a preliminary client meeting, introduce strategies for circulation within a shopping mall. They recognize that all participants in the meeting will not necessarily be comfortable with two-dimensional technical drawings. Their informality confirms that the project remains at a formative stage and their cartoonish quality encourages relaxed discussion. However, the accomplished and confident handling of line and perspective lends the proposal credibility and its designer the authority to lead the meeting. The first drawing assists understanding of the crucial ideas, and ensures that everyone can contribute confidently to discussions. The second provides another layer of information.

Designers developing ideas do not require highly resolved images. As they evolve their drawings, they are inevitably considering the nature of the surfaces they propose, and areas – apparently ‘blank’ to anyone else – will trigger the appropriate association in their mind’s eye. They will ‘see’ colour and materials in their black-and-white drawings. Freehand drawings such as these need not be big. Size can be adjusted with a colour photocopier or a scanner. Reduction will often lessen the impact of a weak area, while an increase in size can reveal enjoyable graphic incidents that are by-products of the media used.



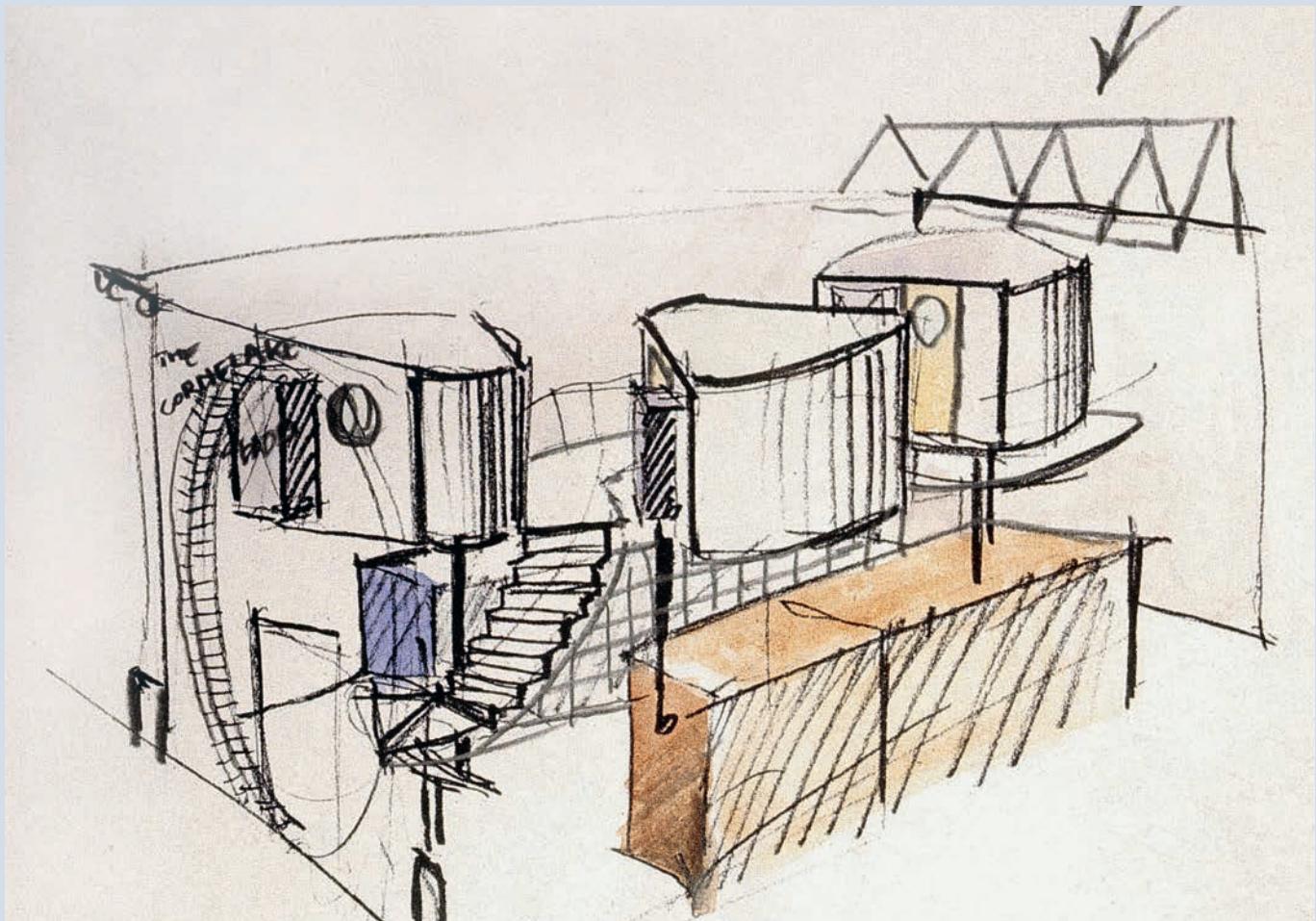
Top left

Elements are reduced to essentials: the lift shaft is indicated but with a minimum of detail, ‘customers’ give scale, and those on the upper level explain how floors interact.

Left

Stylized figures again indicate scale and the figure with the pram leaving the lift gives reassurance that practicalities have not been neglected. Greater attention to detail is signaled by floor and ceiling patterns, cladding panel joints and light fittings at and between joints.

Case study Detail evolves



These drawings, made with pencil and coloured felt-tip pens on tracing paper, chart the three-dimensional evolution of how freestanding elements at an upper level would interact and be accessed. The obvious speed with which they were made, in an attempt to keep pace with, record and give shape to the thoughts that raced through the designer's imagination, convincingly demonstrates how thinking and drawing are symbiotic, the one feeding and driving the other as ideas merge spontaneously. The designer obviously draws with skill and authority but, at this stage, quality of drawing is secondary to the generation and examination of ideas.

The rough outline of the external walls defines the interior space and the two light sources – the circular window and the triangular roof light at the rear – are indicated. In the first drawing the form of the 'cabins', the walkway that connects

them and a distinctive stair structure begins to emerge. The geometry of the stair landing is the crucial element in the second drawing. The remainder of the stair is represented more precisely and there is a suggestion that the designer is also beginning to think about details of doors, windows and finishes to the 'cabins'.

Above

An exploration of how the raised elements sit within the rectangle of the existing shell, with the circular window to the street and the triangular rooflight indicated as aides memoires.

Right

A more detailed perception of the geometry of the stair establishes that the step incorporated into the landing is important to define how the stair flights mirror each other and can sit within the corner of the existing building.



'Sketching' by computer

There is an assumption that sketching is only done by hand, and that it remains the quintessence of 'artistic' creativity. Such a perception confuses technique with quality, and ignores the fact that drawings made on computer can have the values – and even the ambiguities – of a handmade sketch. It is possible to make 'freehand' drawings with a computer using a digital pen, a mouse or a finger on a laptop keypad and these options, like any other drawing medium, determine both the way the hand moves across the drawing surface and the quality of the line made. While the experience of making the drawing is comparatively close to that of using a conventional pen or pencil, there is a fluidity of line that is the product of a digital stylus not being directly in contact with the 'paper'. There is also a uniformity of line quality which it is almost impossible – and probably not desirable – to achieve in a handmade drawing.

Below

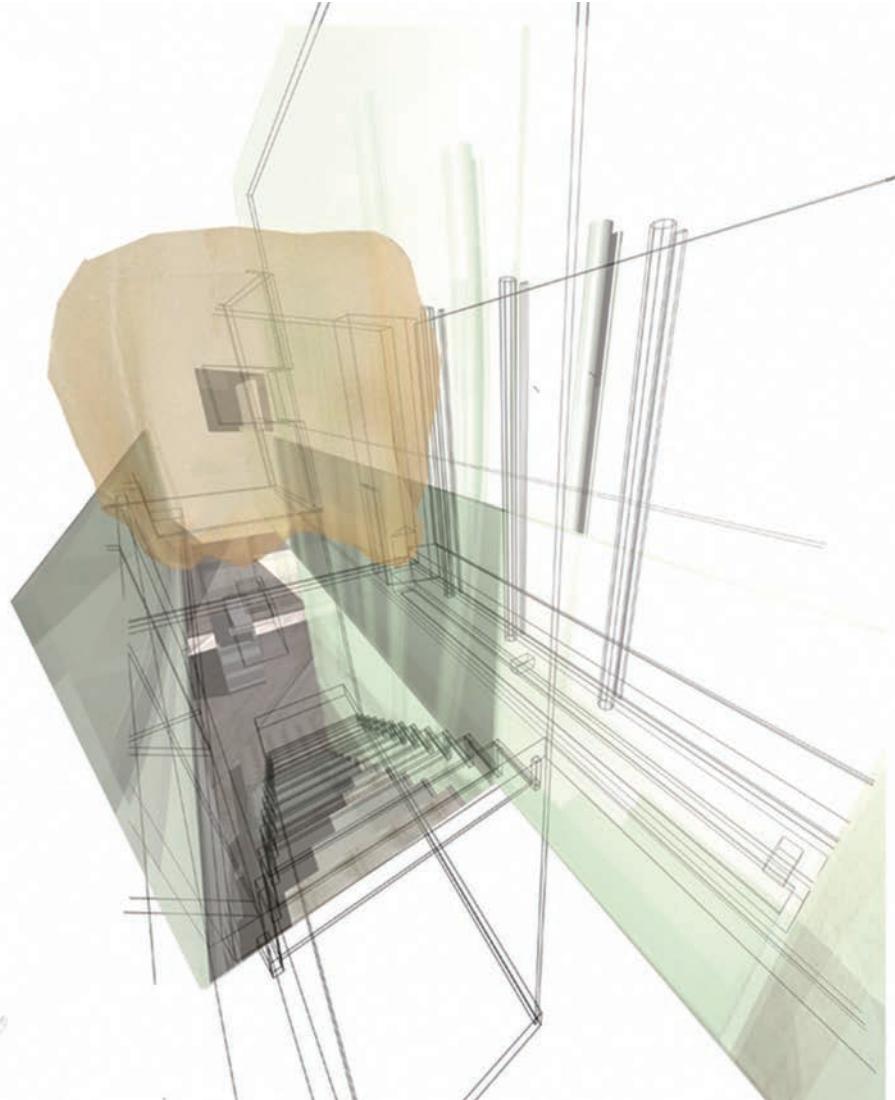
'Freehand' sketch made on a computer – giving a uniformity of line not found in handmade drawings but with the spontaneity of a handmade image.



Right

In this speculation about an enclosed volume within a stairwell, the immediate context – a stair below, a bridge, a glazed wall and the brown blob of an enclosure – are all delineated and rendered in convincing perspective.

The retention of 'hidden lines' replicates some of the ambiguities of a handmade sketch, but the digital image may also be rotated and scrutinized from various angles and heights onscreen.



Composites

Handmade and computer-generated images can coexist very successfully if each plays to its strengths. The skilled hand will give a relaxed and simple line, focusing of necessity on representing broad essentials, but is unlikely to deal convincingly with perspective and the representation of materials and lighting. The computer's output, although having great potential for the accurate representation of complex form, materiality and lighting, is likely to appear bland at the same early stage in the evolution of a project when those qualities are unlikely to have been convincingly evolved. The strengths of the two techniques may, however, be combined most persuasively.

The computer translates two-dimensional information in plan and section into three-dimensional images more accurately, and significantly faster, than can be done by hand. The initial image it produces will be exact, but is also likely to be bland. The further refinement

of that image by the addition of colour, materials and light using the computer will take time – particularly at an early stage in a project when definitive decisions that would justify fine-tuning have not yet been made.



Above

The lines of the two-storey space are precisely sketched by computer, and blocks of tone and colour represent opaque floor planes and transparent glazing. The crossing and extending of computer generated lines gives them some of the informality of the traditional sketch, underpinned by the heavier freehand line, which also emphasizes the contrast between rough walls and pristine glass.

Above

The computer sets up the perspective which is then drawn over by hand, to enrich the thin lines of the original. Blocks of colour are added in the computer to the new scanned image.

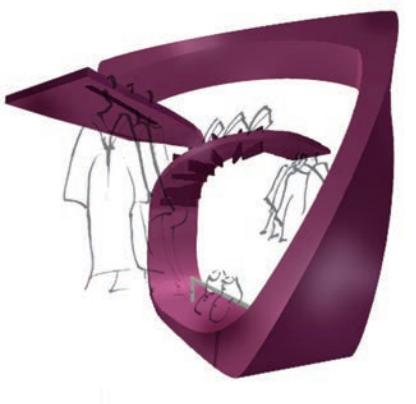
Right

In the computer, it is simple to add colour, here graded to suggest three-dimensionality, to a scanned hand-drawn sketch.



TIP COMPOSITES

A computer creates the complex three-dimensional structure. The secondary content, the hanging garments that give it identity and explain its function, are suggested less powerfully with a substantial hand-drawn line that does not interfere with the strong expression of the primary form but shares its weight and directness.

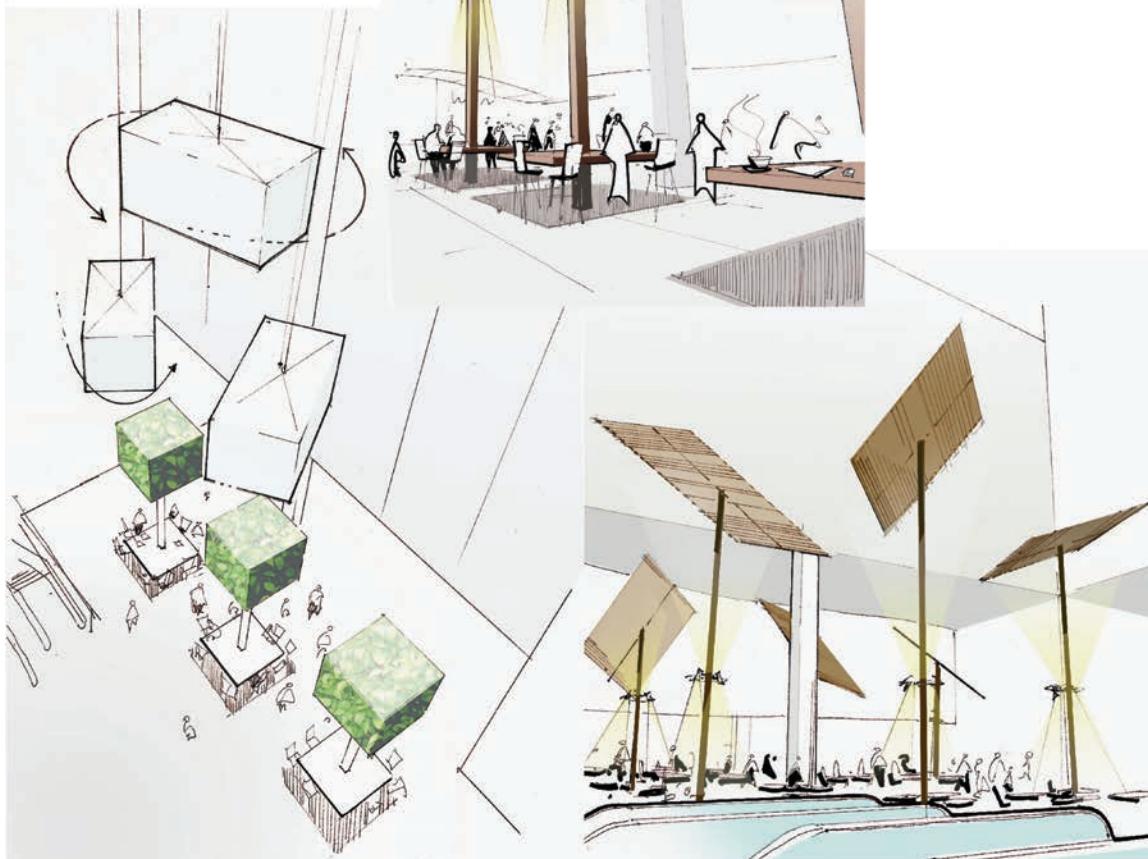


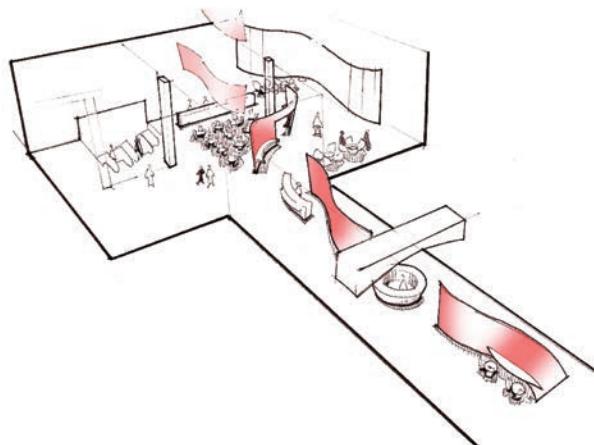
'Base' drawings, created on computer, provide members of a team with an accurate perspective template, over which they may draw as individuals or as a team. When adjusting line weights for emphasis precision may be maintained by the use of ruler, circle templates and French curves.



Left

It was important in this project to reinforce the perception of height within an atrium. The computer's capacity to create perfect perspective achieves this persuasively. Over-drawing and the addition of people take the image beyond the basic computer printout.

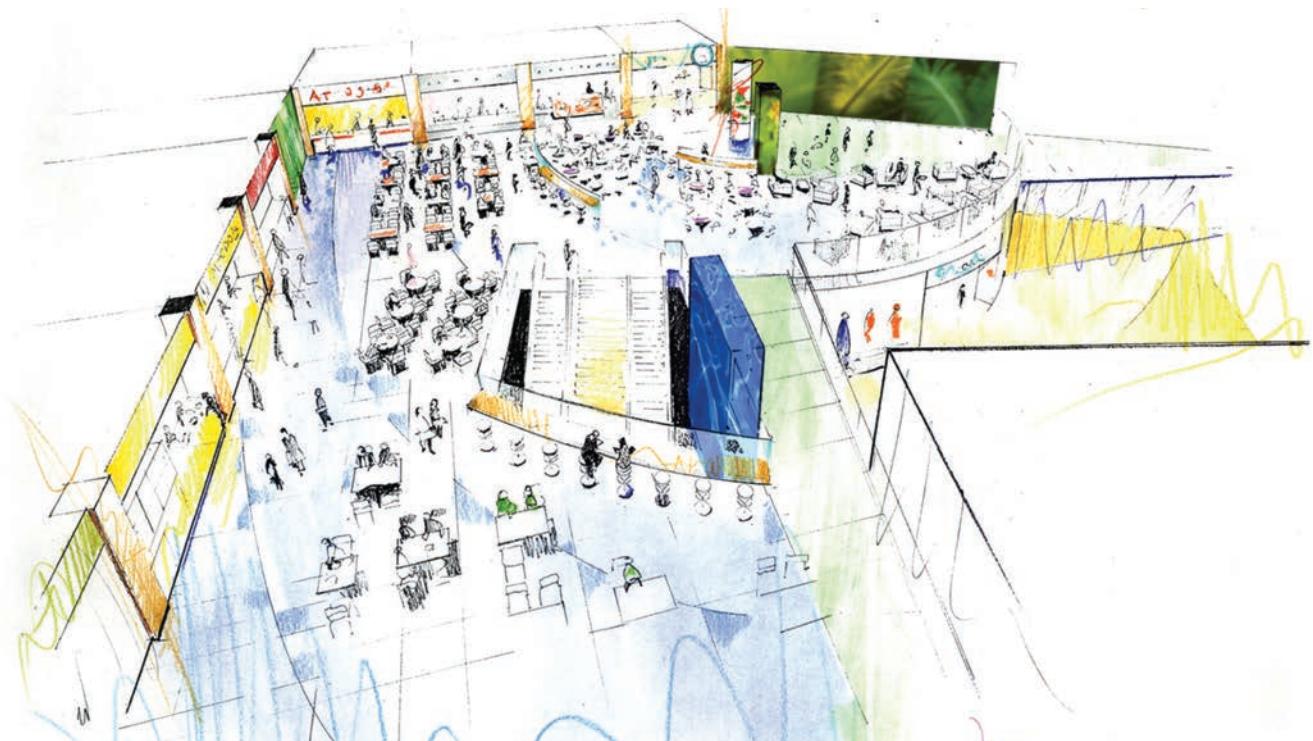


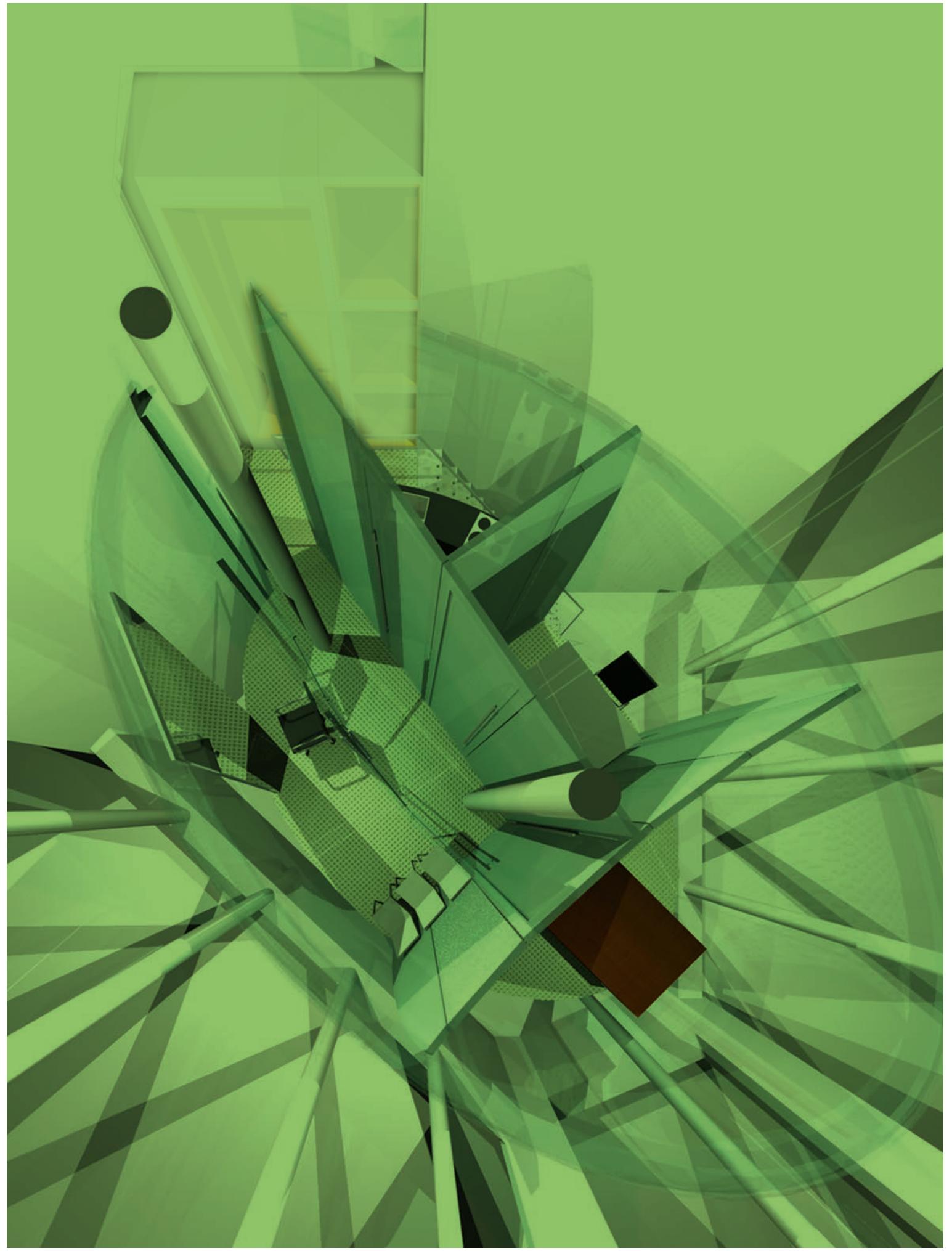
**Top left**

The computer sets up the complex three-dimensional elements, but lines are drawn over for variety and colours are added by hand. Stylized hand-drawn figures explain function and scale.

**Left and below**

These drawings, good enough for first presentations to clients, retain some of the character of the handmade image. The essential preliminary delineation by computer, including the scanning and pasting of advertising images, allowed a number of designers to add to the basic drawing without their individual freehand styles becoming discordant. The larger figures were traced from photographs to ensure convincing body language.





CHAPTER 3 PRESENTATION

- 82** PRESENTATION TO CLIENTS AND OTHERS
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- 124** EXPLAINING ELEMENTS AND IDEAS
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- 127** TEXT
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Presentation to clients and others

Presentation images are made to persuade the client, and sometimes others, of the desirability and credibility of a proposal. Approval is also often necessary from the statutory bodies responsible for giving formal, legal permission. If this is refused at the first attempt, there is little opportunity to appeal against verdicts or to make adjustments because the timescale for interior projects is usually short. Planners will be primarily interested in street frontages, but they will, along with conservation bodies, also want to know about changes to protected historical interiors. A client will often rent premises, and the building's owners will want to approve proposed alterations and although their conditions are seldom onerous, they will be mandatory. Interiors within multi-occupancy developments will normally have to comply with conditions that apply to all leaseholders.

For most projects, however, the crucial approval is that of the client, who can make tangible ideas that otherwise only exist in a designer's imagination. A good designer should be able to find a way of meeting a

Below and opposite

Two drawings from a set of 14, both showing different areas within a shopping development, focus client attention on the distinctive elements of each and provide comprehensive material for detailed discussion.

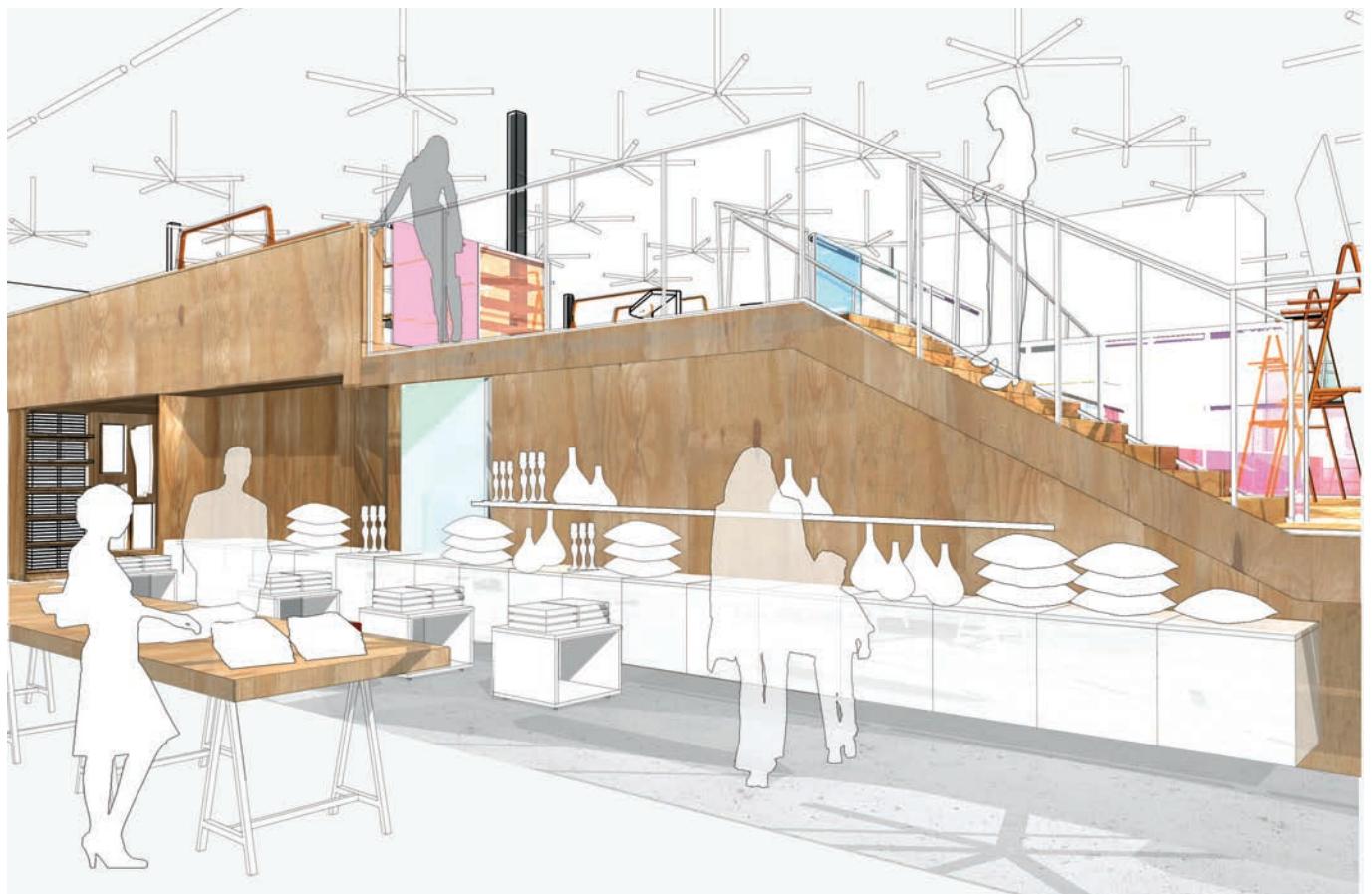


client's practical needs and aesthetic aspirations, however antipathetic they may at first appear. Presentations should take into account the knowledge, preconceptions and prejudices of those for whom they are intended. Some will be impressed by the 'artistic' quality of drawings, while others will be reassured by evidence of technological expertise. They all ought to be able to understand everything to which they are being asked to agree. Shortcomings may be glossed over temporarily, but they will become blatantly apparent when the work is complete and making them right will be expensive and embarrassing. The extent of a client's ability to understand the various types of drawings that can make up a presentation will become obvious in early conversations.

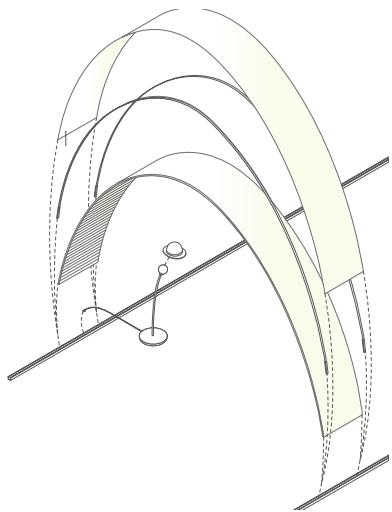
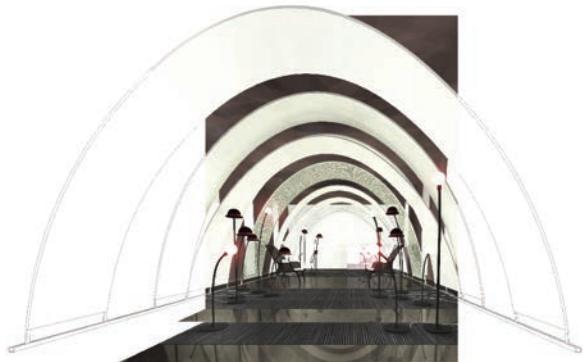
Presentation to a client, or any other interested party, is not necessarily a one-off event. It is prudent to talk to all individual and organizations during the progression of the design process in order to avoid protracted, unproductive work. Fine-tuning of a brief is frequently necessary. The nature of interior design, working within the restrictions of the shell of an existing building, means that, almost inevitably, the detail of an initial brief will have to be reconsidered in response to emerging realities. Clients who accept significant financial risks deserve to be consulted

at all stages and, as proposals are evolved and scrutinized, other possibilities will suggest themselves and changes of direction must be discussed and agreed. It therefore makes sense to set up a series of preliminary presentations in order to consider and agree on work in progress.

When a client is familiar with a designer's work – or when the two have collaborated before – it may be appropriate to produce fewer, and perhaps less-polished, drawings, but it must not appear that the client is being taken for granted and receiving less for their fee. Equally some may be concerned that they are paying for unnecessarily glamorous presentation and it may be sensible to agree at the outset what is included in a fee and what will be an additional charge. With new clients it is obviously important to make an impression – perhaps even to offer a little more than is strictly necessary, and certainly no less. Evidence of enthusiasm and ability will overcome most reservations. Some clients, old and new, enjoy the sense of collaboration in the development of ideas and will tend to prefer the less-polished drawings that suggest work in progress.



Successful presentation material



Above

The partially rendered perspective suggests the end result and the line drawing describes the construction of a free-standing 'tunnel' within a rectangular shell.

TIP DRAWINGS FOR INTERIM PRESENTATIONS

Drawings should be:

- Simple and informal
- Comprehensible without appearing definitive
- Realistic – don't hint at something that can't be delivered
- Quick – elaborate presentations consume time and therefore cost money

Designers tend to be fascinated by clients' response to presentations, particularly to individual drawings within the whole, and are always keen to identify the one illustration that swung the argument in favour of a proposal that met with initial scepticism – often reminiscing later about how a single, seductive image persuaded a client to find extra money.

The tone of any presentation, particularly during the face-to-face encounter with the client, depends very much on the personality of the designer. Some have natural gravitas and can easily convince clients of their serious intent and reliability, while others are instinctively inclined to humour and to finding a more personal level of communication. Whatever the inclination, it will be manifested in both visual and verbal presentations. Both positions, and any in between, will be drastically undermined by a blatant error in any drawing. It is prudent to have drawings scrutinized and text proof read by third parties.

Some projects are won in competition. In these cases, the strategy must be slightly different because the designers may not have an opportunity to talk to the judges.

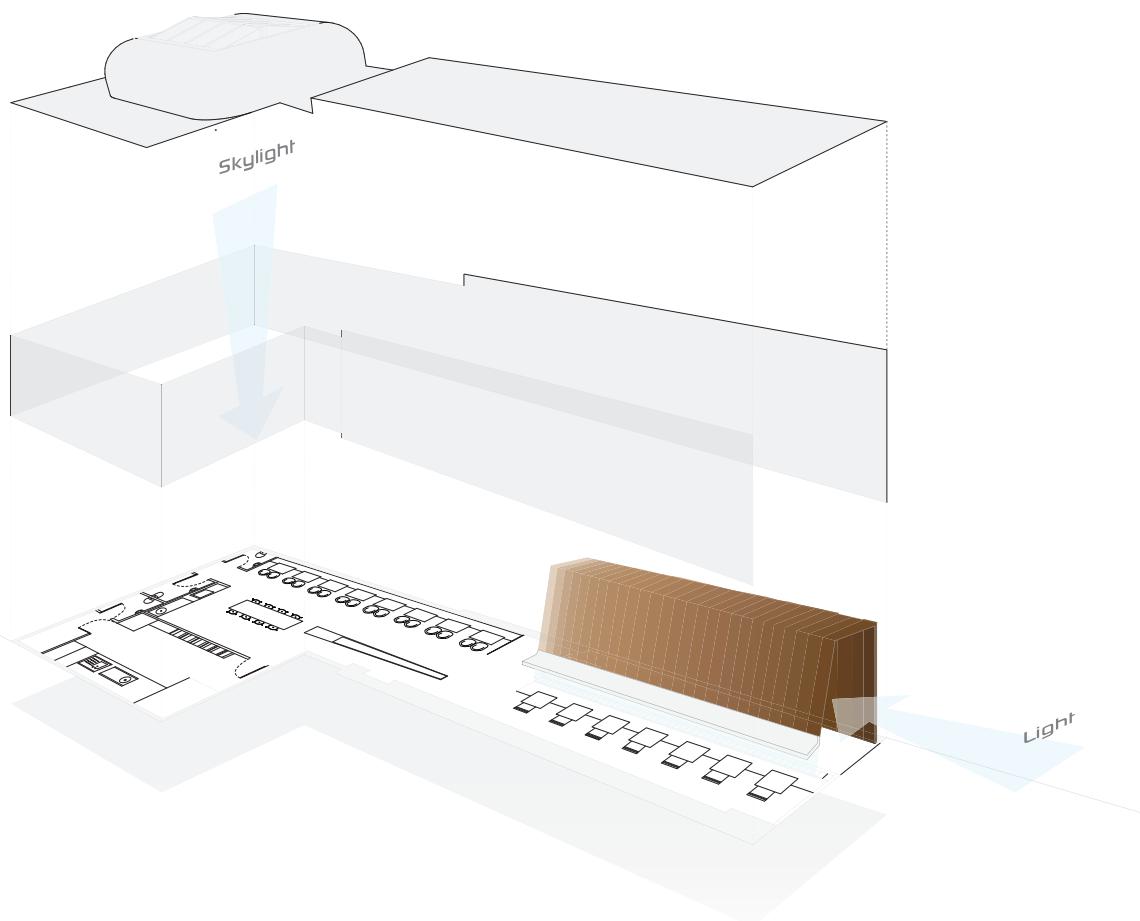
Sometimes a commissioning client may not be a user of the space. Often, particularly with work for public bodies, the client will be a committee – not usually an easy body with which to negotiate. There is no single individual to respond to, and there may be tensions within the group which make differences of opinion – even differences unrelated to the proposal – inevitable. In such circumstances, things must be kept clear and simple. Often laypersons are concerned that they will be unable to understand specialist drawings and are anxious about looking foolish. Such anxieties can make them reluctant to engage with the material presented and hesitant about expressing opinions and approval. Accessible drawings supported by a relaxed, preferably good-humoured, verbal presentation can begin to overcome this.

Right

When explaining a proposal it often makes sense to start at the entrance.

Below

A three dimensional diagram explains the strategy of the entrance 'tunnel', a device for leading customers to the core of the interior, beneath an existing rooflight.



Case study Presenting concepts to clients



The following examples of presentation material resulted in the clients' agreement and commitment to the project.

On this page the plan offers the 'low impact concept'. The plan on the opposite page illustrates the more ambitious 'high impact concept'. The perspective views give an indication of how each option may look. They introduce ideas broadly but offer enough information to allow the client to feel confident enough to express opinions.

The computer provides credible perspective lines to define the planes of the interior. The hand-drawn details for furniture are necessarily simplified but are enough to suggest style and function. The quality of freehand additions, particularly of the chairs, suggest that the designer is in control of all aspects of the creative process.

Frequently, although not in this case, a client will suggest a solution incorporating elements of some or all of the options offered. This may irritate designers, but it helps identify a client's real priorities.

An alternative to the preliminary sketch, and one that may be useful in the very first meeting with a new client, is to present photographs of built interiors or collages of completed interiors and finishes and furniture that suggest some of the anticipated qualities of the project. There is however a danger that overindulgent use of found images will distort clients' expectations, and it is sensible to use illustrations from one's own completed projects where possible. Talented and ambitious designers are unlikely to countenance association with another's work.



Top

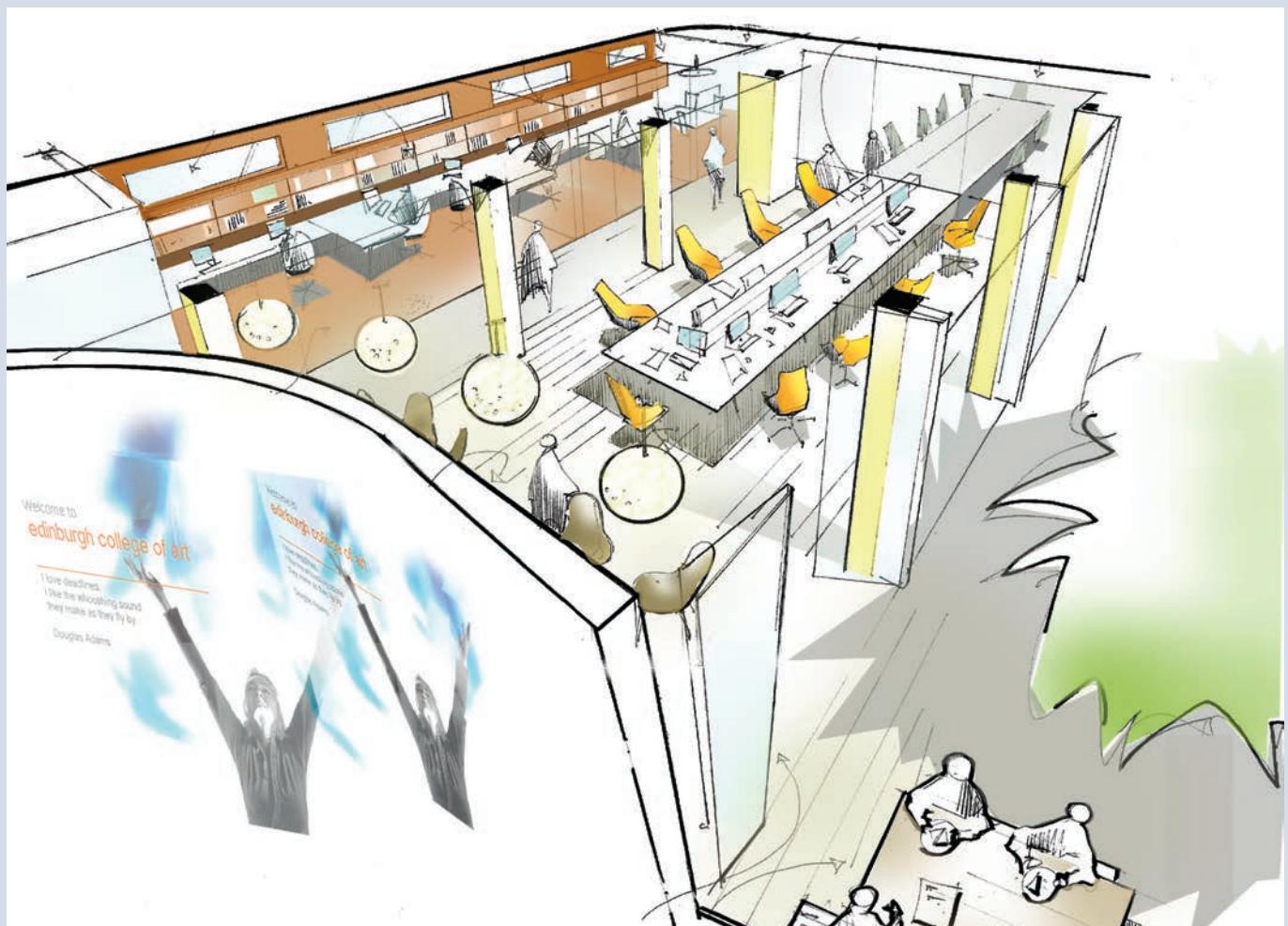
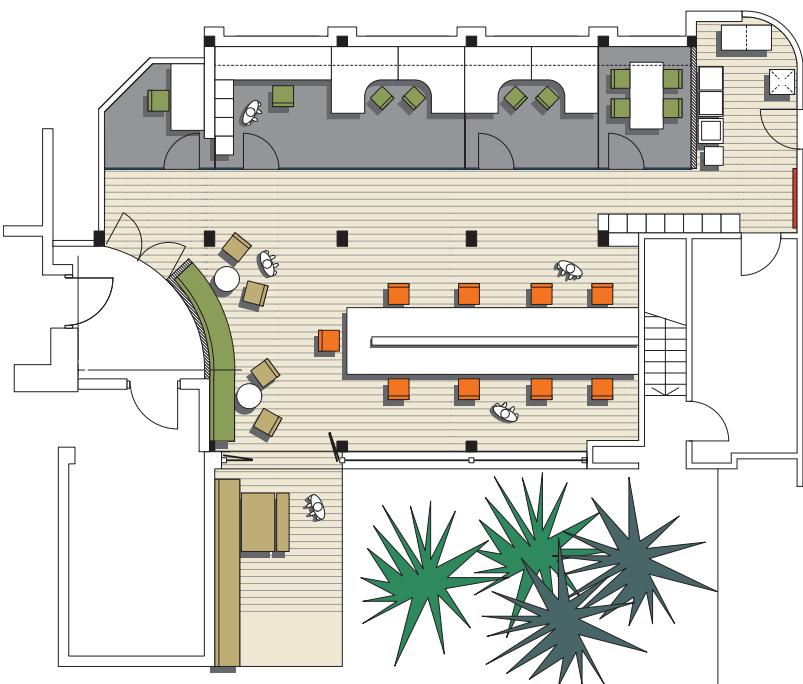
The 'low impact' solution, illustrating how minimal tidying up of the plan and the introduction of new furniture improves the workspace.

Above

The perspective view, set up on computer, is overdrawn by hand and blocks of colour and tone are then added by computer.

Right and below

Option 2: The perspective view now illustrates the whole of the office because the entire area is reconfigured, giving the outdoor area prominence. The designer's own preference for this version is perhaps indicated by the more extensive pencil work embellishing the raw computer lines. The clients also chose this option.



The components of a presentation

Whether for preliminary or final presentations, there are a number of standard types of drawings – each with its own defining conventions – that will necessarily be produced for most projects.

The character of drawings, whether technical or not, is always determined by the medium with which they are made. Drawings for interior design must eventually be precise, in dimensions and finish.

When drawing by hand, different weights of line, in the case of pencil, and thicknesses, in the case of pen, help legibility. The use of colour was formerly restricted to one-off drawings until the arrival of effective colour photocopying. Definition of elements within the drawing required laborious hatching and toning. Computer drawing and printing now makes it easy to use colour and infinite shades of grey. The computer's richer palette offers a battery of options for the creation of more accessible drawings. However, it is important not to obscure crucial facts with an overload of colour

and texture, to remember what information the drawing is intended to convey rather than to become waylaid into creating a drawing that is an end in itself.

While the fully-rendered perspective view may be perceived as the quintessential presentation tool, other, less spectacular, two-dimensional drawings convey crucial information more clearly.

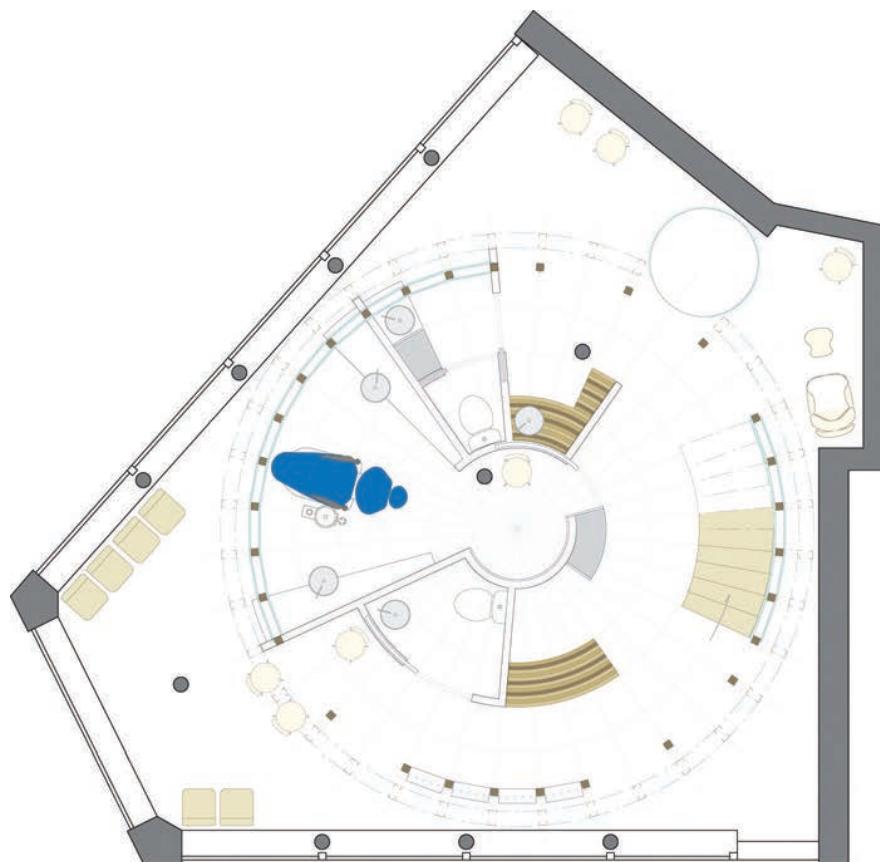
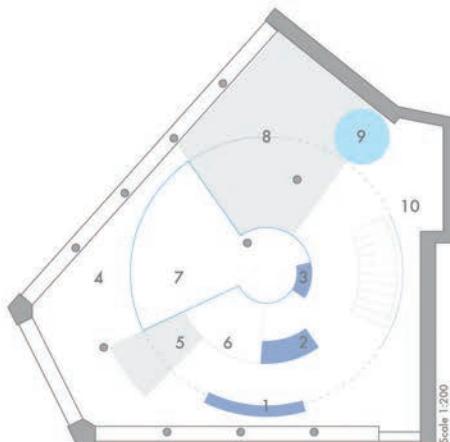
The plan

A plan is usually essential. It defines how the required accommodation will be set out and how furniture will be deployed, and confirms that the proposal will fit into and maximize the potential of the existing space.

Plans may, of necessity, be visually complex. It is, therefore, often good practice to use a diagrammatic version of the plan, explaining how the essential elements are arranged, as an introduction to a more complex version that incorporates more comprehensive and detailed information.

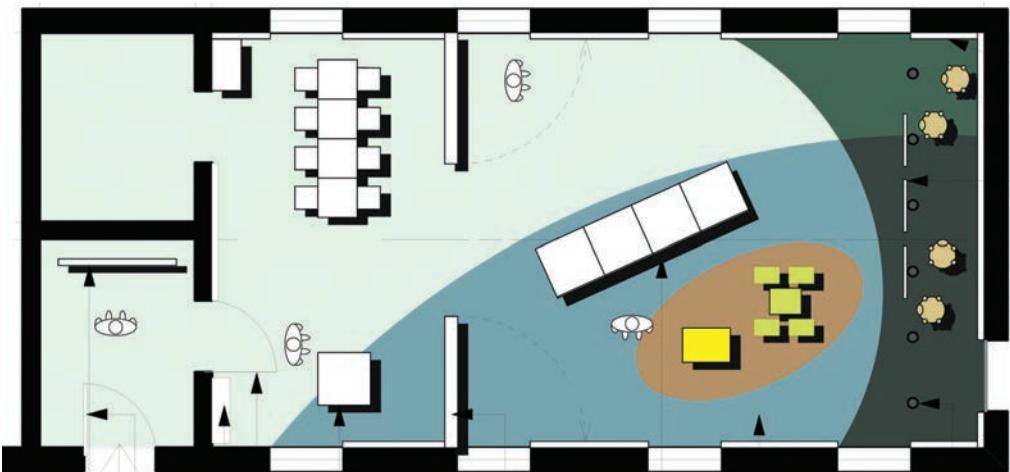
Right

The small plan defines the functional subdivision of the existing building. The detailed delineation in the bigger plan is enriched by the computer's capacity to deal with tone and colour. The addition of furniture and equipment confirms that the uncompromising planning strategy delivers efficient work areas.

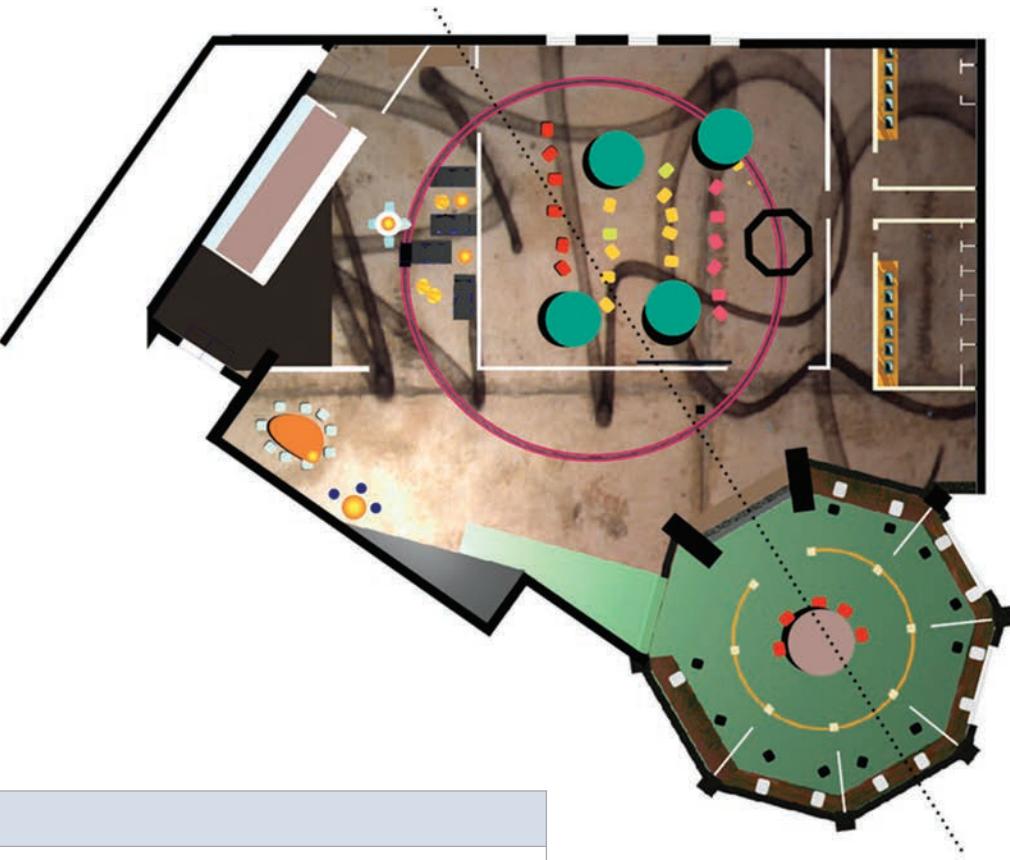


Right

This plan also works as a diagram, because the space is simple and contains few elements or items of equipment. The floor pattern dominates and identifies different areas, as it would in the finished interior. The furniture layout confirms that the spaces work.

**Right**

Solid black represents existing structure, and white indicates new walls. Other colours refer to floor finishes. Tonal variations suggest the impact of artificial lighting. 'Shadows', cast by the round tables, and the graded colour on the green ramp add a degree of three-dimensionality.

**TIP SCALES**

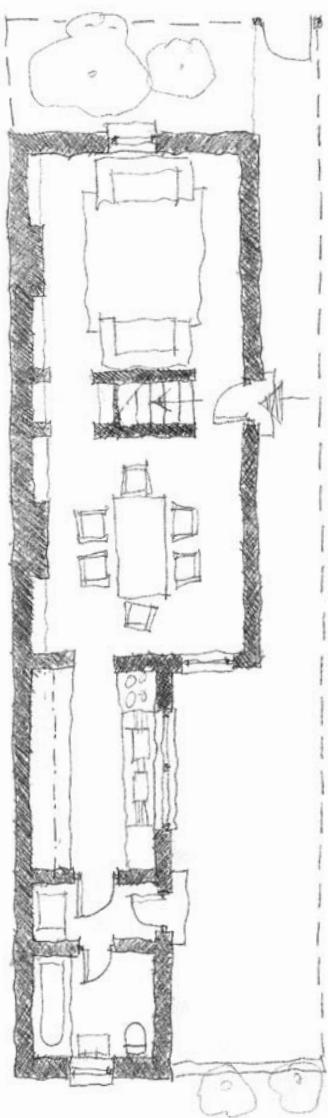
There are standard scales for drawings, recognized throughout the building industry. Generally, 1:50 is most useful for presentation plans: it is big enough to show a comprehensive amount of detail and to allow most projects to be contained on a single page. A scale of 1:100 is also capable of providing significant information, particularly with the precision and quality of line possible on a computer, but a 1:200-scale plan begins to lose important detail. If a comprehensive plan of a large project is necessary and may only be achieved at 1:200, then areas that

are densely organized, or of particular interest, may be dealt with at a larger scale, say 1:50 or 1:20. The capacity of the computer to alternate easily between scales makes this conversion simple.

The scale of a plan should be declared on the drawing, but when a scale is used for which there is no 'ruler' – and therefore no way of measuring the paper copy – it should be declared to be 'not to scale' in a prominent position somewhere on the sheet.

TIP EFFECTIVE SHARING

When designers sketch it is usually a private function in which they give some shape to their first thoughts, but the freehand sketch is also an efficient way of communicating with other members of the design team: colleagues and consultants. It therefore makes sense to observe drawing conventions when making even the roughest sketches, otherwise they are open to misinterpretation by those familiar with normal practice.



Left

Tracing over a measured survey ensures that dimensions are accurate to an acceptable degree. Fast freehand drawing makes shading and indications of furniture layout easy.

Right

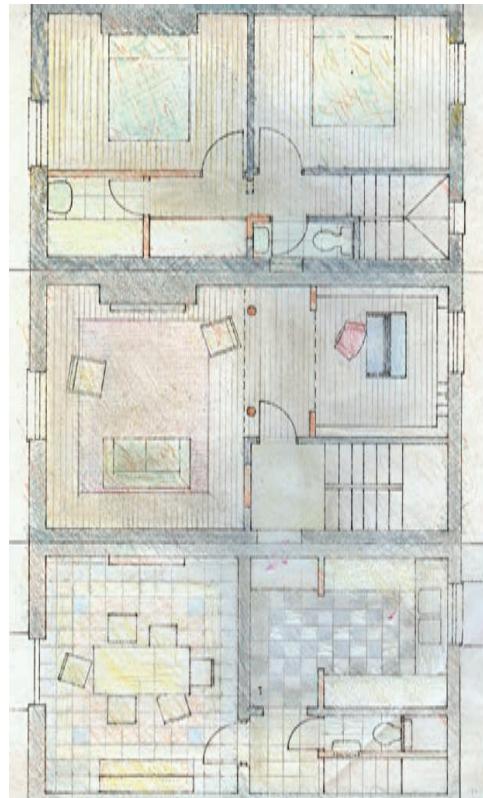
This project involves more detailed work, and consequently the drawings are more accurate. A drawing pen was used in preference to a pencil, because it ensured precision and permanence of line. The black ink outline was drawn on tracing paper, which was then tinted on the back with coloured pencils. New walls and columns were coloured orange to clarify the modest extent of construction work. Other lines and colouring represented floor finishes and furniture layouts. The plans of the three floors were butted together, and distinguished by different densities of tone.

Handmade plans

Near perfection of line can be achieved by someone constantly making technical drawings by hand, but the hand can never match the extraordinary precision of the computer, its consistency of line and its perfect corners. It is therefore logical, when drawing by hand, to aim for a more 'relaxed' outcome: to allow lines to cross, for example, and to apply hatching and toning vigorously, perhaps to suggest a certain creative exuberance.

For some simple projects drawing may be done freehand, without the use of T-square or set square. Corners, usually close to ninety degrees, may be judged by eye, and practice will improve this skill. Significant dimensions may be measured, even in a freehand drawing and, if these are comparatively accurate, other elements may be drawn credibly in relation to them.

For more complex plans, an alternative is to create a quick, technically constructed draft of the crucial elements and then to make a freehand overlay. It is not advisable to trace the original too carefully, because with most of the drawing being accurate the inevitable minor discrepancies will appear clumsier in comparison. It is generally better to trace quickly in order to sustain spontaneity. Technically constructed and freehand lines may usefully be employed in the same drawing – the first can define the precision of new elements, and the second the imprecision of existing features.



The section

All the observations made about drawing plans apply equally to the section. The section is the essential way to accurately describe changes of level, whether at floor or ceiling levels. If the plan allows a viewer to navigate and understand the subdivisions of a space, the section describes its vertical planes and allows an understanding of their composition as the viewer 'moves' vertically through the space. A section can offer a prosaic description of the physicality of a space or can evoke atmosphere with accurate depictions of colour, materials, lighting effects and furniture. The computer's capacity for precise representation of finishes makes it the ideal tool for this job.

It can be counterproductive to be overly conscientious when drawing sections. If too many lines are incorporated, in order to represent background detail, the whole becomes difficult to decipher. When planning the drawing, it is important to decide on priorities and to edit out insignificant information.

The crucial decision, which will determine whether a section is useful or not, is that about the location of its 'cut' through the building. This should ensure

that the subsequent drawing includes the information most essential for describing the project. It is usually good practice to make a number of sections, each dealing with a significant condition, rather than to attempt the false economy of superimposing one on the other. Generally speaking, one section should cut through a stairwell in order to explain, practically and aesthetically, how floors connect. It is also imperative to cut through the edge of any mezzanine floor, to describe changes and visual links between levels.

There is also a choice to be made about the direction in which a section ought to 'look'. It should obviously be orientated to place elements in the most informative context or to incorporate information about an important background element.

Introducing people and props can give scale and help explain how the interior will be used. Well-chosen figures can assist in making otherwise forbidding technical drawings appear more accessible.

Below

Drawings are often peopled with glamorous models, and such superhumans sit incongruously in most interiors. In this meticulously detailed image there are many more eclectic and engaging characters.

Bottom

Developed rendering of finishes can give an impression of materiality, colour, texture and light.

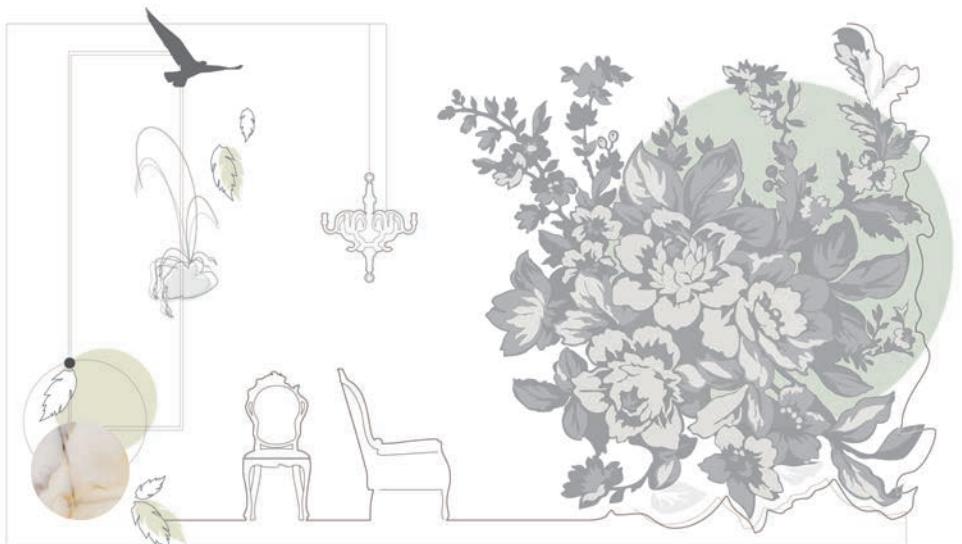


**Above**

While not a traditional section, the coloured elements describe the essential components of a minimalist clothes shop. The projection of these elements beyond the strict confines of the section plane introduces a sense of depth. The sparse precision of the whole is relieved by the ironic intrusion of wildlife.

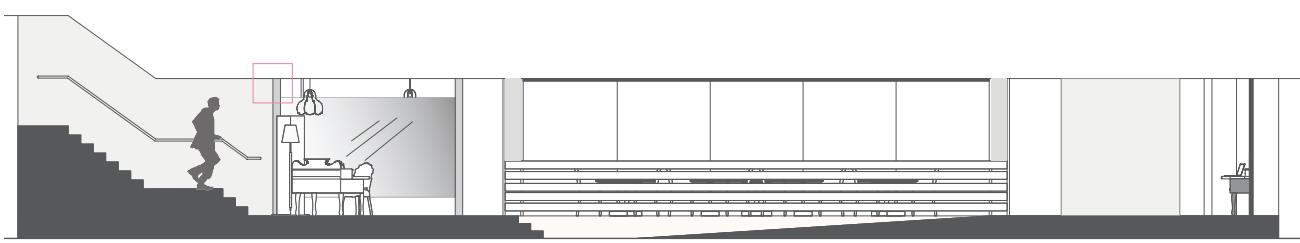
Right

An even more reductive treatment in which the white furniture and fittings that sit against white walls are reduced to outlines. The areas of scanned materials and monochromatic pattern are shown in proportion to their proposed presence in the finished interior.



TIP CHOOSING THE BEST PLACE TO 'CUT' THE SECTION

While sections are useful ways to indicate wall finishes they also make clear changes in floor and ceiling levels.

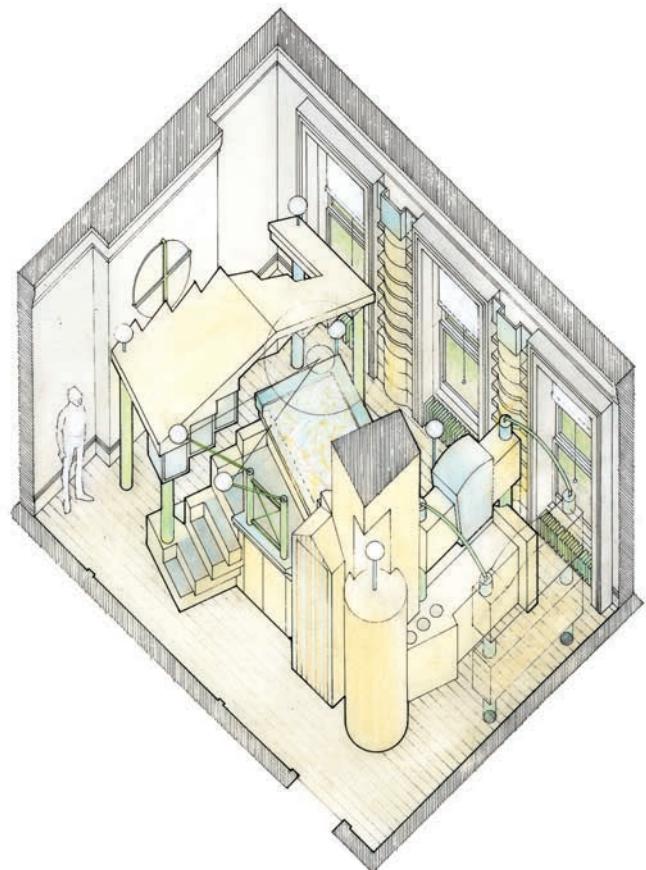


The axonometric and the isometric

Plans and sections provide the two-dimensional information that enables those who understand their conventions to inhabit an interior. The perspective offers a static image, a single view from a fixed viewpoint with no opportunity to 'move' through the space. Axonometric and isometric projections provide a method of constructing images that exhibit the virtues of both two and three dimensions. They are essentially three-dimensional views of all areas within a building, with roof/ceiling and at least two walls removed. They present information about adjacent areas, showing remaining walls and other vertical elements in the third dimension and, when rendered, materials, colours, textures and lighting effects.

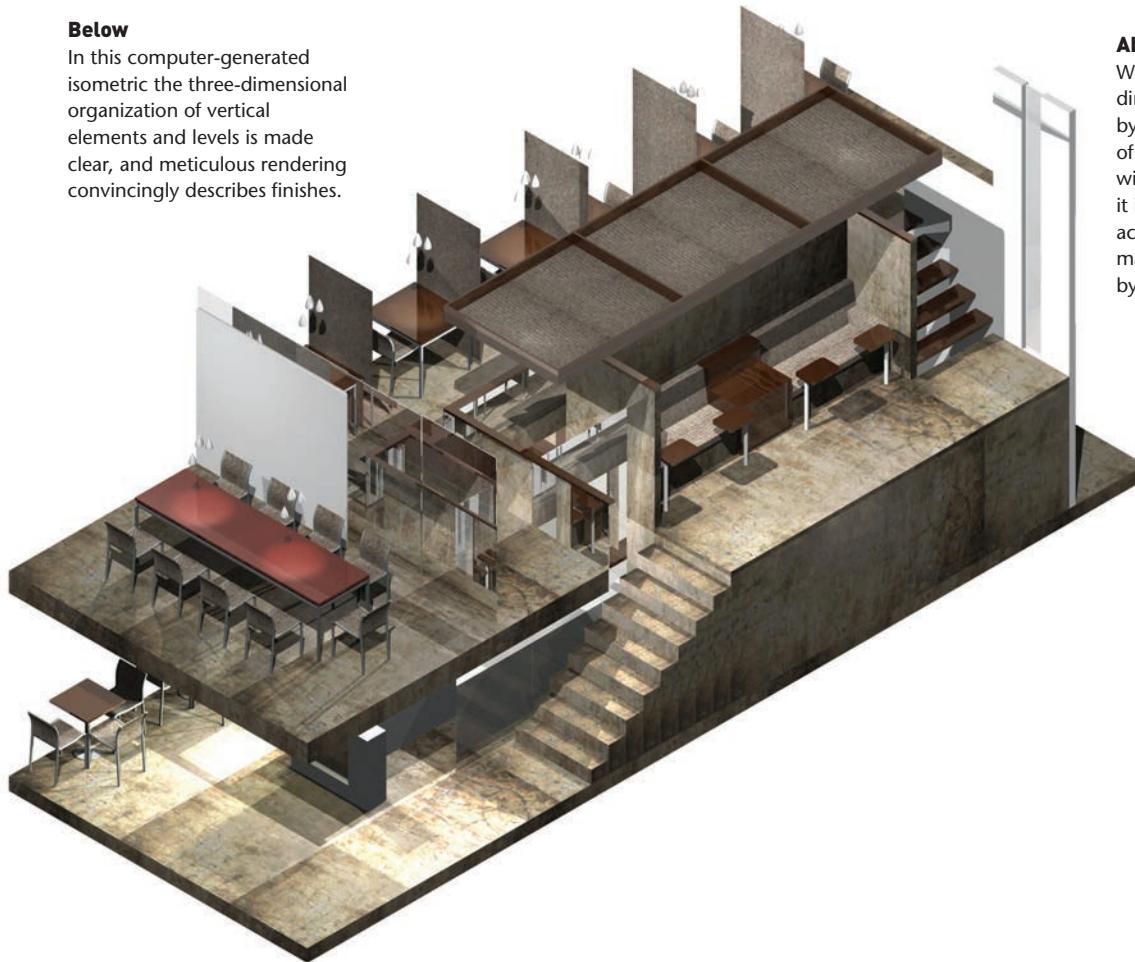
They are simple to construct, and explain the translation of plans and sections into three dimensions. They allow the viewer to imagine moving around the space, or sequence of spaces; to understand how one area flows into another; and how the aesthetics of one evolve into another.

A viewpoint must be selected in order to ensure



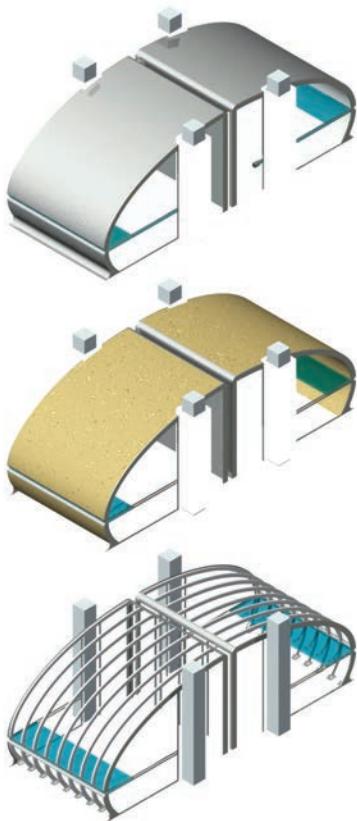
Below

In this computer-generated isometric the three-dimensional organization of vertical elements and levels is made clear, and meticulous rendering convincingly describes finishes.



Above

When made by hand, three-dimensionality is defined primarily by outline and, while every surface of this axonometric is rendered with pastels and coloured pencils, it is impossible to achieve an accuracy in the depiction of materials to match that achieved by computer.

**Above**

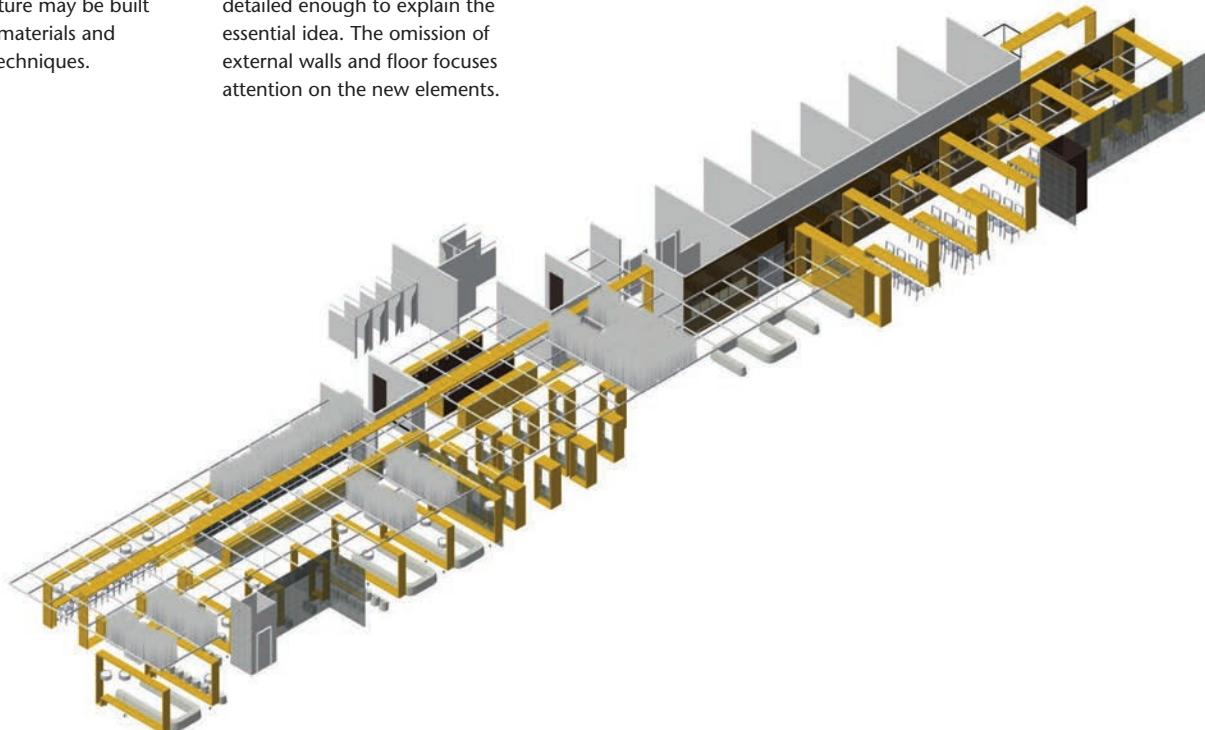
This sequence of three computer generated isometric images documents a strategy for the construction of an enclosed office space, demonstrating that what is an apparently complex structure may be built using familiar materials and construction techniques.

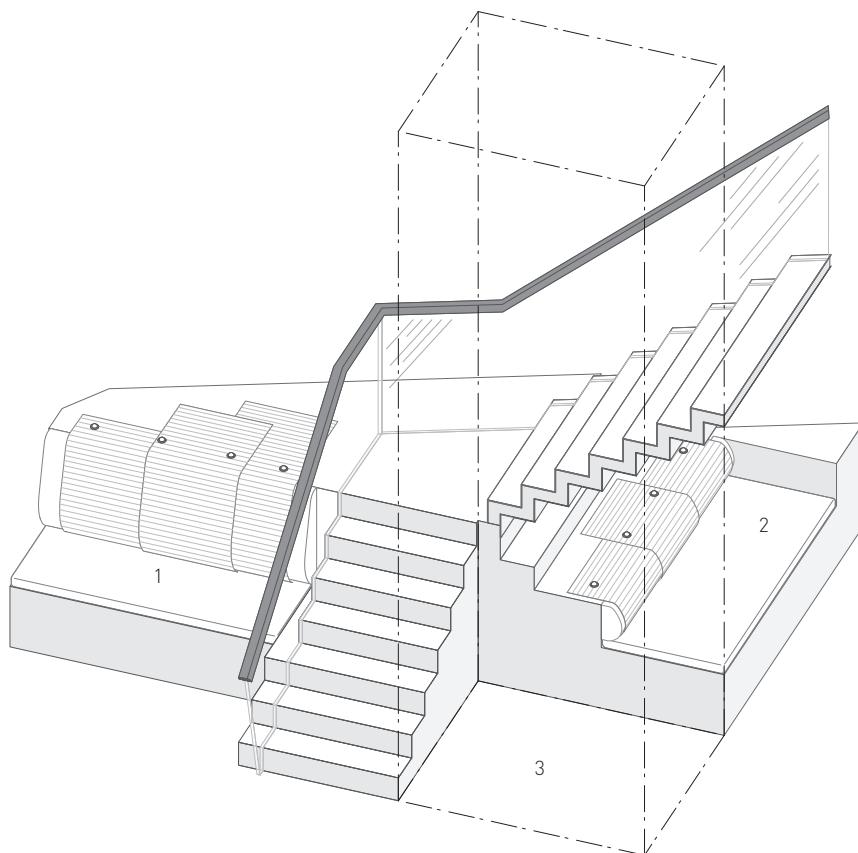
Below

This isometric describes a continuous element that runs the length of a long, narrow building, progressively changing its function but not its character. The drawing is simplified, but remains detailed enough to explain the essential idea. The omission of external walls and floor focuses attention on the new elements.

that the maximum information is offered, and it is often sensible to draw a project from more than one, usually from diagonally opposite corners, to provide an even spread of information. The axonometric is marginally simpler to draw by hand but the thirty degree structure of the isometric, which is no more difficult to draw digitally, appears closer to the more realistic format of the perspective.

Obviously, it is simple to generate a number of such images digitally, once information about plan and section conditions have been fed into the computer. It is also comparatively easy to set them up by hand because all horizontal and vertical lines are parallel rather than in the constantly changing divergences of the perspective view. This uncomplicated formula makes it feasible to draw both quickly and with a satisfactory degree of accuracy by hand and they can be an effective way of making spontaneous but controlled three-dimensional sketches during the course of a meeting. (For the principles of setting them up, refer to the section on 'Axonometric and isometric projections' in Chapter 1, pages 44-45.)





1. Waiting seating
2. Recovery niche
3. Lift



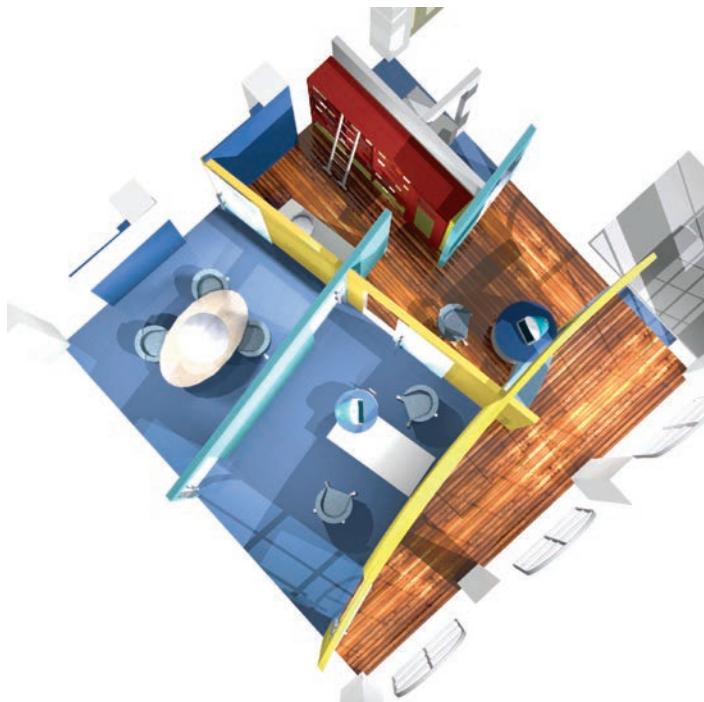
This page

An isometric provides a diagrammatic explanation of how fixed seating elements are tucked around and under a stair and lift tower, which is shown in dashed outline to reveal the stair behind and the heavy handrail helps explain the configuration of the flights and landing. The perspective adds materiality.

For a computer, it is no more difficult to draw a curved line than a straight one – a perspective is as simple as an axonometric. Working digitally it is therefore possible, when appropriate, to use the slightly more naturalistic overhead perspective view rather than an axonometric or isometric. For very complex spaces, however, the formal logic of the traditional configurations is likely to be more comprehensible and therefore more informative.

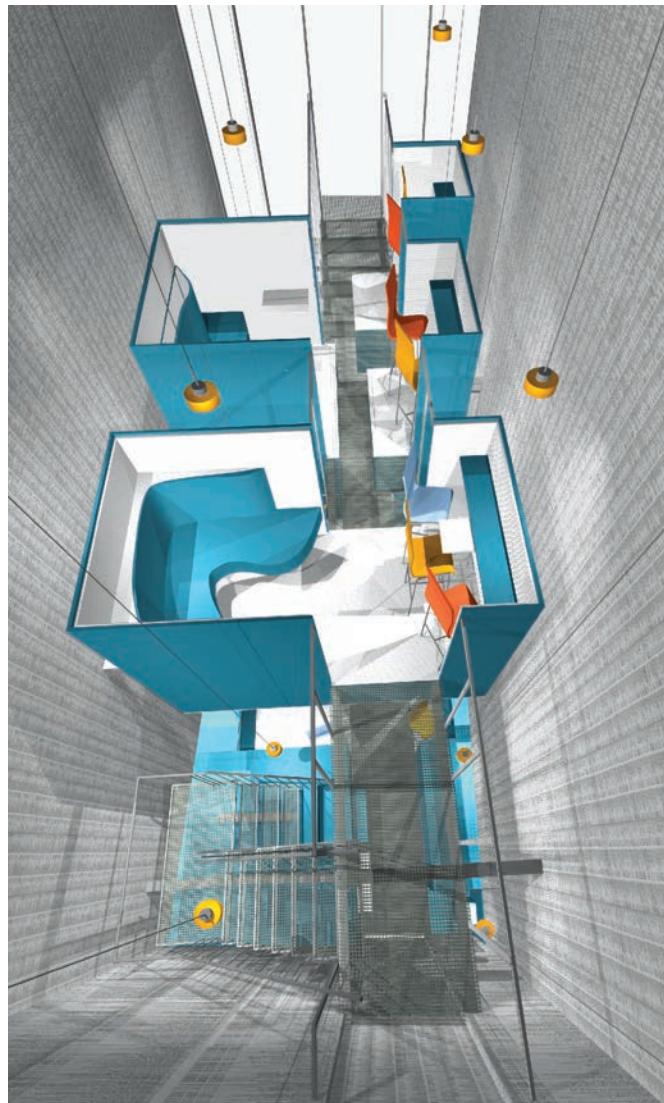
Below

This overhead perspective veers away just enough from the true plan to indicate how colour and materials are used to express the interaction of the walls. Furniture indicates room functions. Crucial elements of the exterior walls, such as windows and columns, are indicated on the edges.



Right

This overhead view explains how elements sit within a double-height space. The image is necessarily complex, but clearly contrasts the fragility of the stair and the bridges with the enclosed workplaces they connect.



The perspective

Detailed and polished perspective views are generally the most accessible images in any presentation and a well chosen viewpoint will quickly convey the essential elements of the project. One comprehensive perspective may express all that needs to be shown, but it is always worth considering a number of views, each concentrating attention on different important elements. Such shifts of attention are, after all, the normal response to a built interior, the eyes focusing consecutively on particular set pieces. It is also worth considering incorporating large-scale views of details, junctions of materials and pieces of built-in furniture. Such detail

can create a sense of intimate involvement with the project. (For the principles of setting up perspective views by hand, refer to the section on 'Making a simple freehand perspective' in Chapter 1, pages 42–43.)

The advantage of drawing by computer is that, once essential information has been fed into plans and elevations, it is simple to extrude as many complex perspective views as is necessary or desirable. However, with too many such views the impact of the whole may become diluted. It is better to identify those that are crucial, and invest effort in refining them.

Right

It makes sense to include a new street frontage as the first image in presentation material. In this example it is presented as a flat plane behind which the shop and its customers set up the idea of perspectival depth and the pedestrians and pigeons suggest a pavement, as a receding foreground plane.



Below

The street frontage as perspective. The computer makes it easy to manipulate a new elevation to match the perspective of a, preferably digital, photograph of surrounding buildings. These buildings may, in turn, be further manipulated within the computer to produce a more compatible alignment and graphic quality.



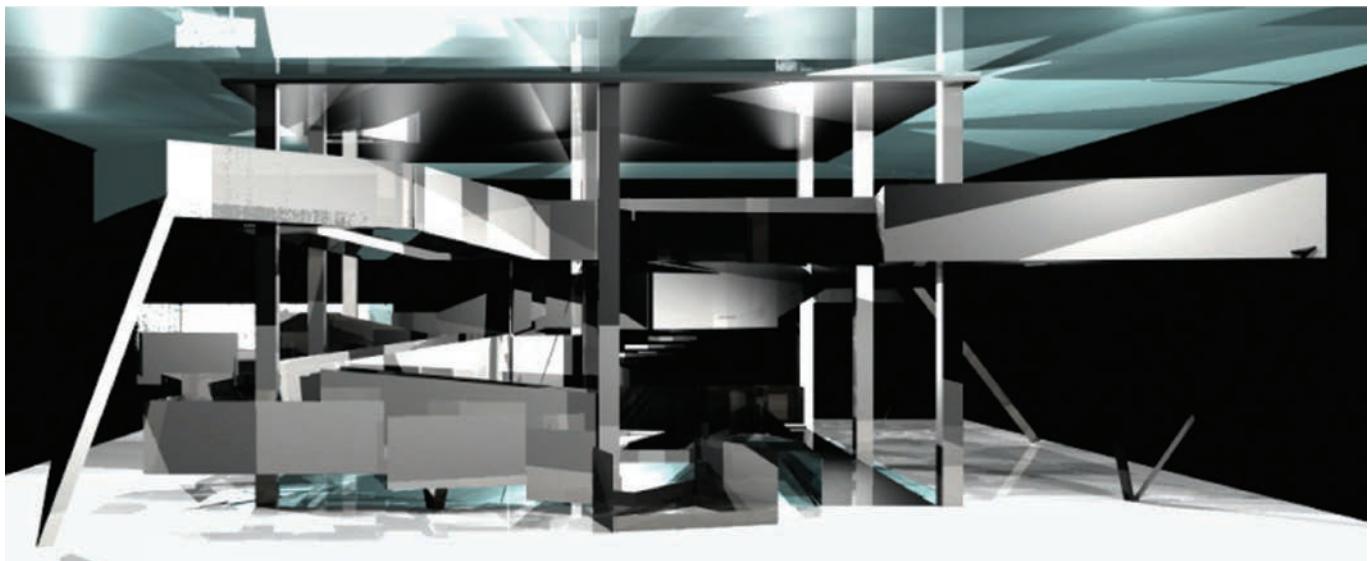
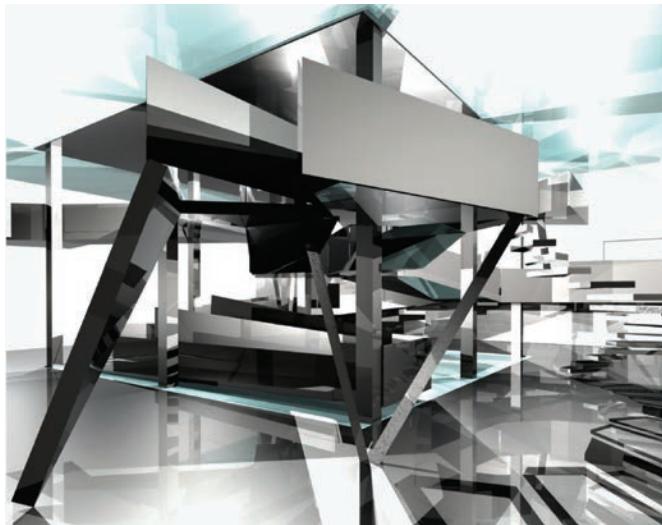
Constructing the real interior is necessarily a more difficult undertaking than generating an idealized image of it. If a rendering appears perfect, then a client may be entitled to assume that the materials and colours shown are precisely those that will appear in the finished interior – and any variations may lead to complaints. It is therefore sometimes sensible to offer a more impressionistic image of the proposal, one that expresses the essence of the project but is obviously not photographically accurate.

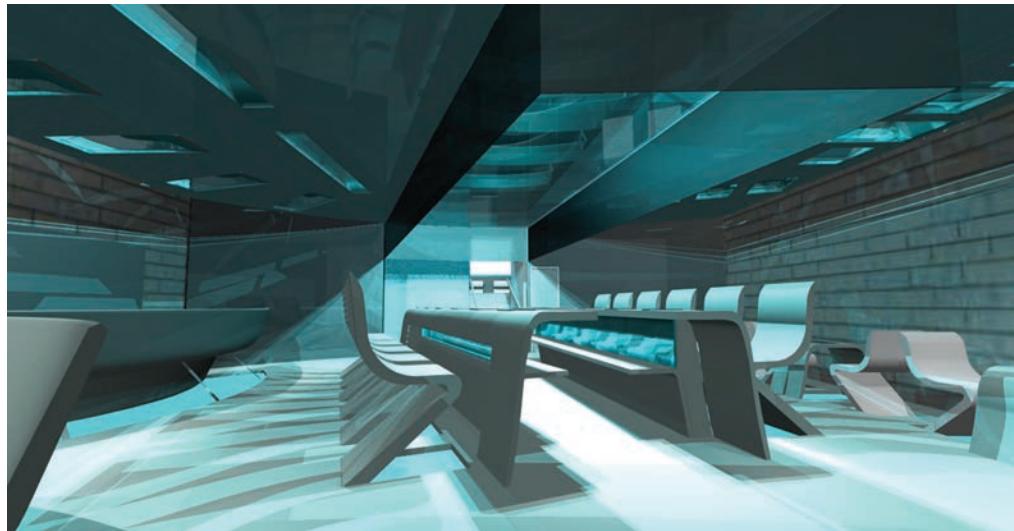
The conventional perspective view, neatly composed within a rectangle, tends, like a photograph, to give equal weight to all elements within it whereas, when in a real interior, one is more likely to focus on visually assertive elements. In a drawing it is sensible to concentrate viewers' attention on what will be, in reality, the most significant components, the impact of which may be lost if every surface is rendered with the same intensity. Content should be prioritized.

A strong argument can be made for computer-generated images that retain elements of the sketch. Sketches are always intriguing: they are not definitive, they leave room for the imagination to speculate – and they have spontaneity, energy and an intimacy that the perfection of the polished image inevitably loses. They remain accessible and appear to offer more evidence of a designer's creativity.

This page

The most complex proposals may be easily and endlessly rotated in the computer for critical appraisal and presentation.

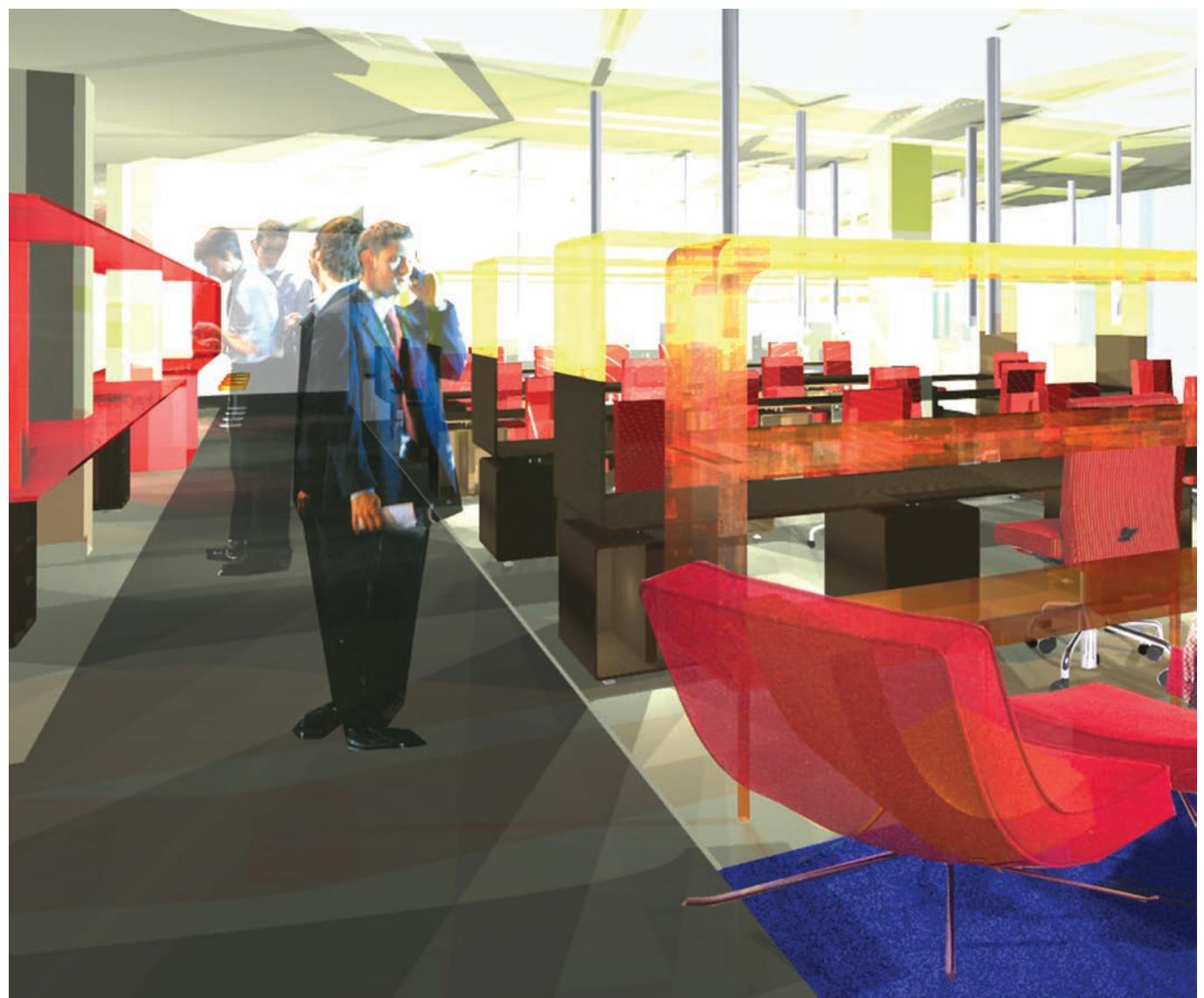


**Left**

While, at first sight, this image appears photographic, its concern is to convey a sense of machined perfection, so the surfaces are hyper-smooth and the whole is dramatically lit. Such distortion is legitimate in order to express the spirit of the project – as long as the manipulation is obvious.

Below

Artificial transparencies indicate obvious stylization, and in this example also express the aesthetic intention.

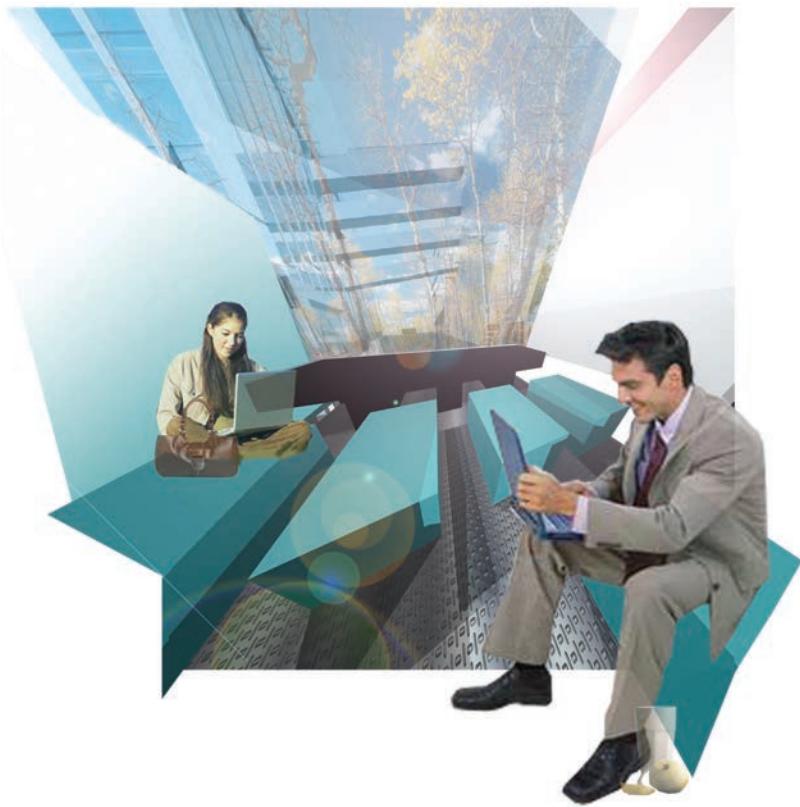
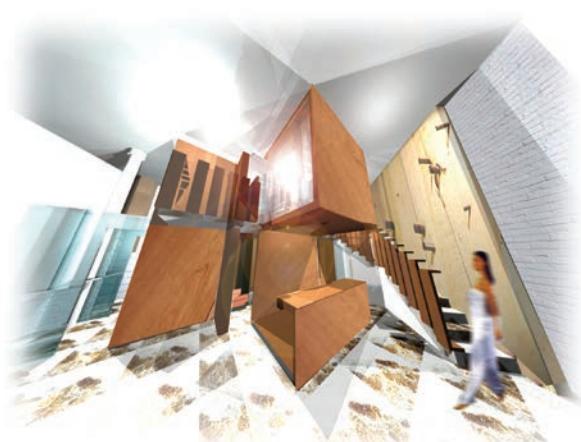
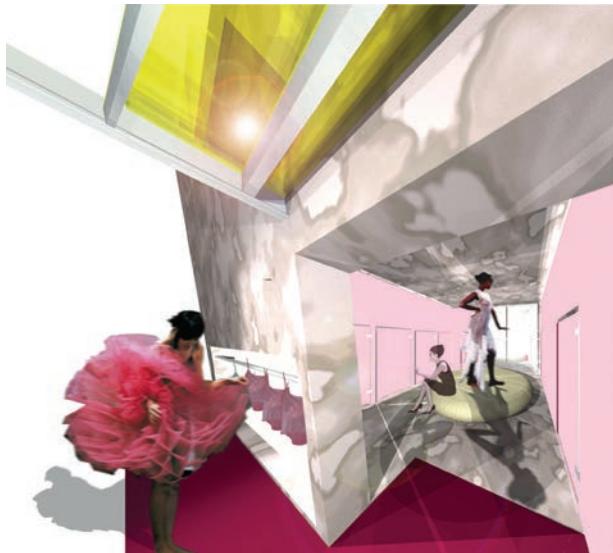


Below and below right

These images explain how a palette of materials and colours runs consistently through a sequence of spaces. Created 'freehand' on computer, they describe finishes without the precision necessary to plot three-dimensional detail. Important elements, like the clothes-hanging recesses and sculpted ceilings,

are delineated carefully, but the obviously deliberate discrepancies of size in the figures, as well as their extreme postures and costumes, confirm that literal accuracy is not intended. They suggest that the designer relished the creative process.

While it is standard practice to generate computer perspectives from plans and sections it is also possible to draw 'freehand', directly on to the screen. Program tools make it easier to delineate volumes with perfectly straight lines, rather than the undulations of the hand made, and to add blocks of colour, and to scan and paste in patterns, textures, figures and furniture.

**Above and right**

Neither of these images aspire to accurate perspective, but they make clear statements about the nature of the spaces illustrated: that on the left is tall and airy, that on the right smaller and more intimate. Both are very clear about finishes.

**This page**

The flat, white planes of walls, floor and ceiling are represented by the white of the paper on which the image is to be printed. Only crucial elements are drawn. The stylization of the view is acknowledged by the obvious distortion of perspective, which is confirmed by the view of the street beyond the window

Image edge

In built interiors, the eye focuses on the area directly in the line of sight and registers less precisely elements at the edge of the cone of vision. It will be drawn to, and linger on, the dominant elements, and while areas of peripheral vision contribute to the impression of the whole they will not be scrutinized with the same intensity. There are a number of graphic devices that can begin to replicate this focus. Some break the rectangle others work within it.

An irregularly shaped image also breaks up the rigid grid, with its straight sided dividing strips, that results when a number of rectangular images are collected on a presentation sheet.



Left

The partial retention of wire-frame lines allows the intensity of rendering to reduce from left to right. The drawing fades into the paper.

Bottom left

The easing in, or out, of naturalistic rendering (as seen in the representation of the screen) dilutes the rectangle.

Below

The white dotted lines, like the framing device in a camera viewfinder, define the area of interest and, along with the floating pink rectangle behind and the figures overstepping the edges of the images, enhance the sense of depth.

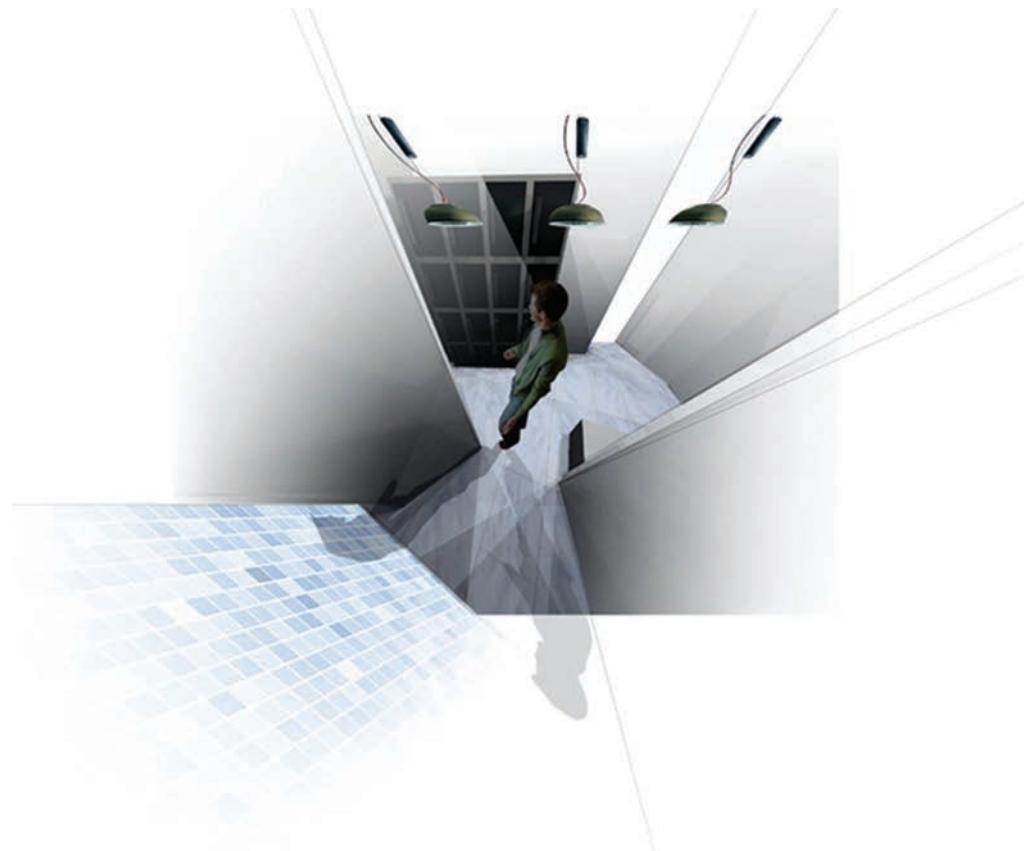
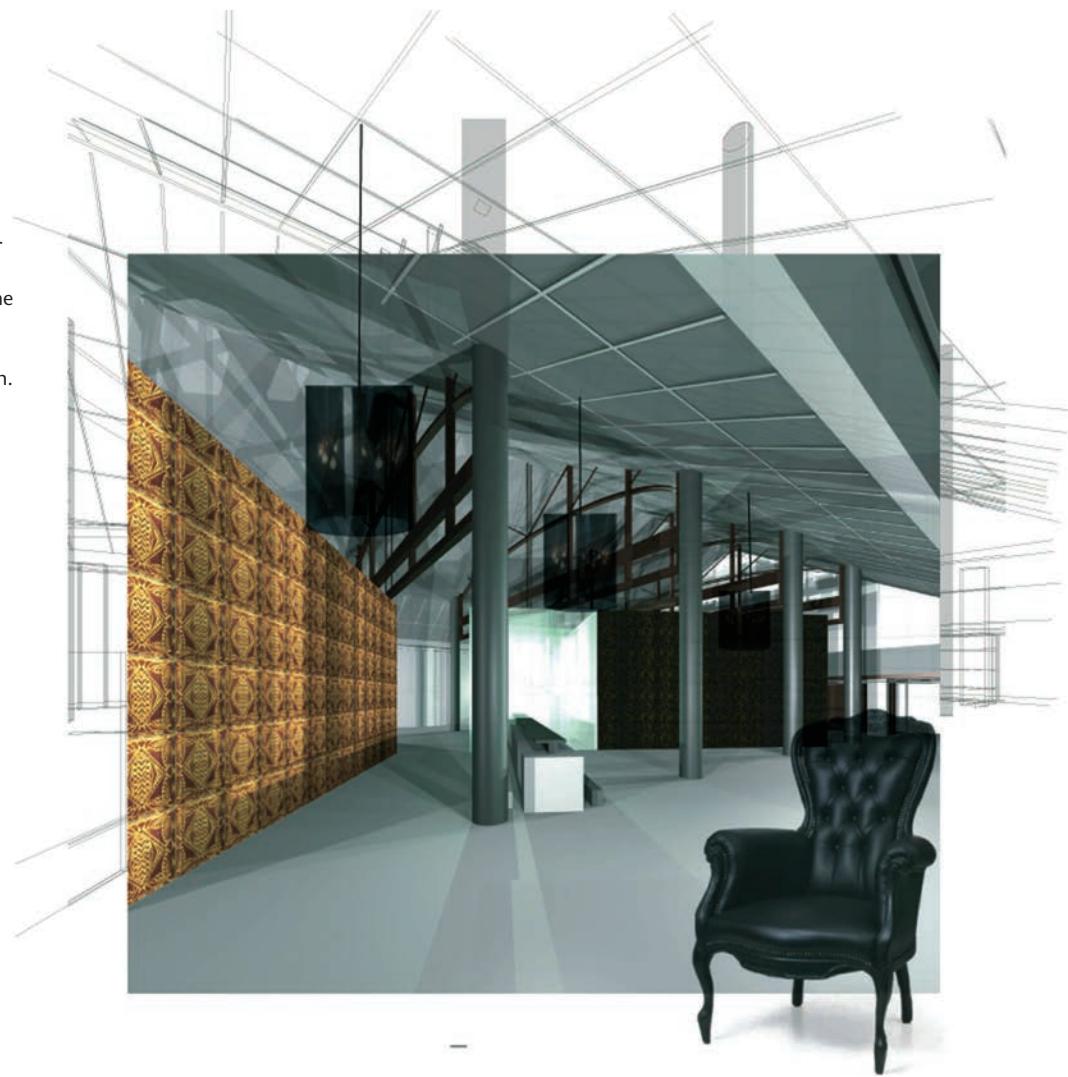


Right

The projection of the lines of the wire frame integrate the image into the page. However, the lines, while they obviously belong to the project, are not aligned precisely with the image and their disjunction suggests that it floats above the surface of the paper. The legs of the chair, also projecting beyond the strict confines of the image, increase the sense of depth.

Below right

The centre of this image is the most solidly rendered area, and tones fade as they 'rise' from it. It is an impossible view, but it deals with a tiny space and the main purpose of the drawing is to describe the finishes.



**Left**

Significant elements are rendered realistically. The ragged curved edges of the rendered mass and the light grey lines that define basic structures emphasize the section of the original shell and ease the drawing into the white of the paper. Abandoning the rectangle here allows a clear statement of the geometry of the tunnel that houses the new interior. A few deliberately wavy lines on the upper edge suggest the evolution of the project from first tentative line to wholly realized core.

Below

The white of the paper is allowed to cut through this image. As a result, while an edge is clearly implied, the elements, particularly the green structure, have a strong sense of 'space' around them – something that tends to be lost when one rendered surface is set against another.

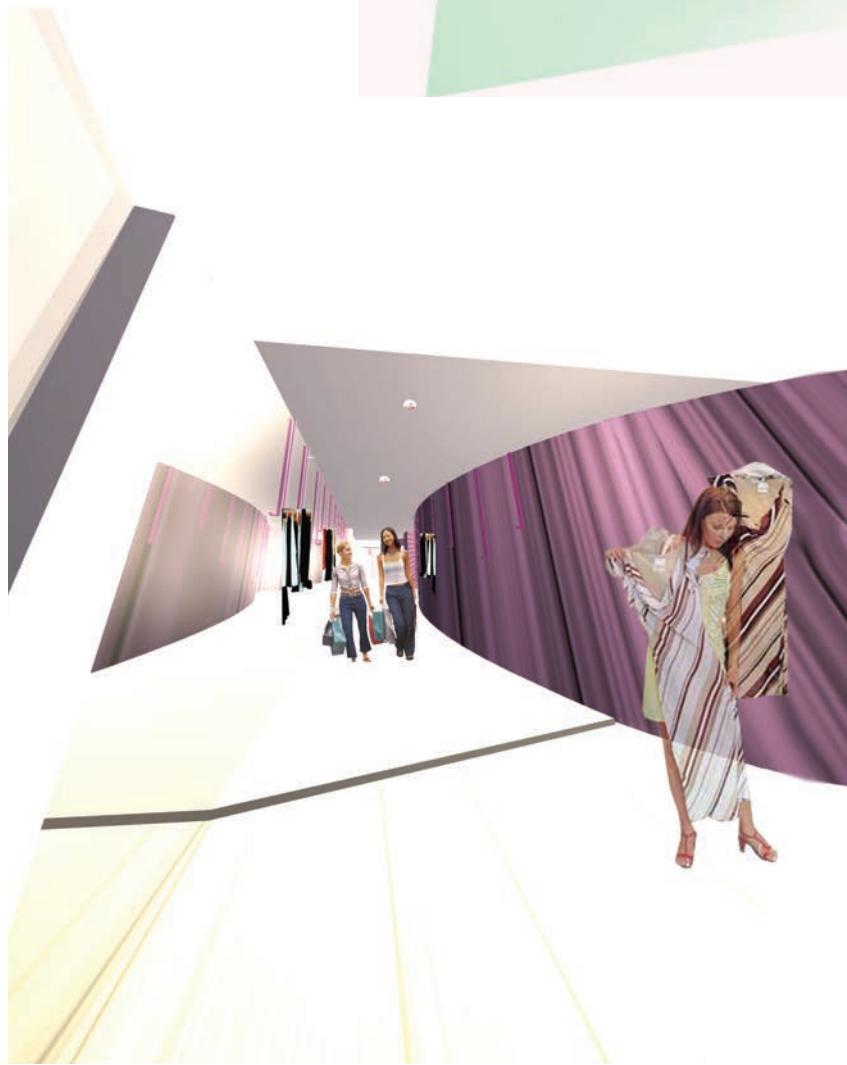
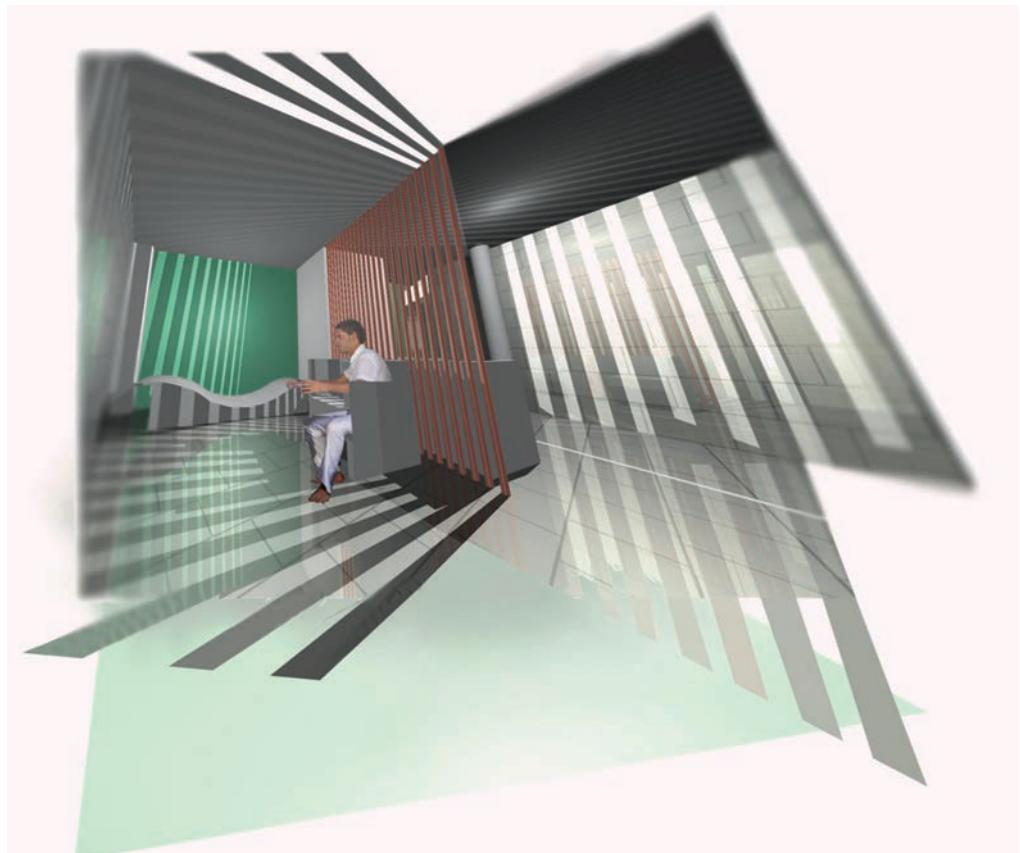


Right

The angled linearity of stripes and shadows is focused on the curvilinear chaise longue, and held within a pale pink square that is just visible against the white of the paper.

Below

This image is stripped back to give an expression of finishes and a suggestion of planes. Colours and pattern are complemented by the foreground figure. The bottom brown line defines the floor plane. The heavier, right-hand, side is balanced by the floating shape on the upper left.



New finishes

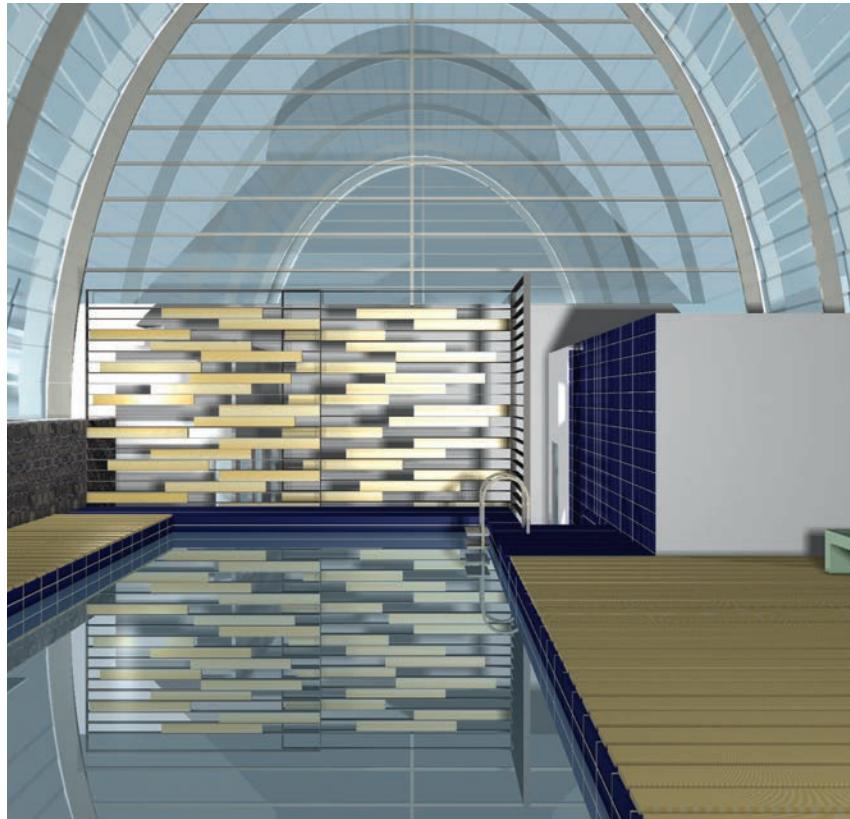
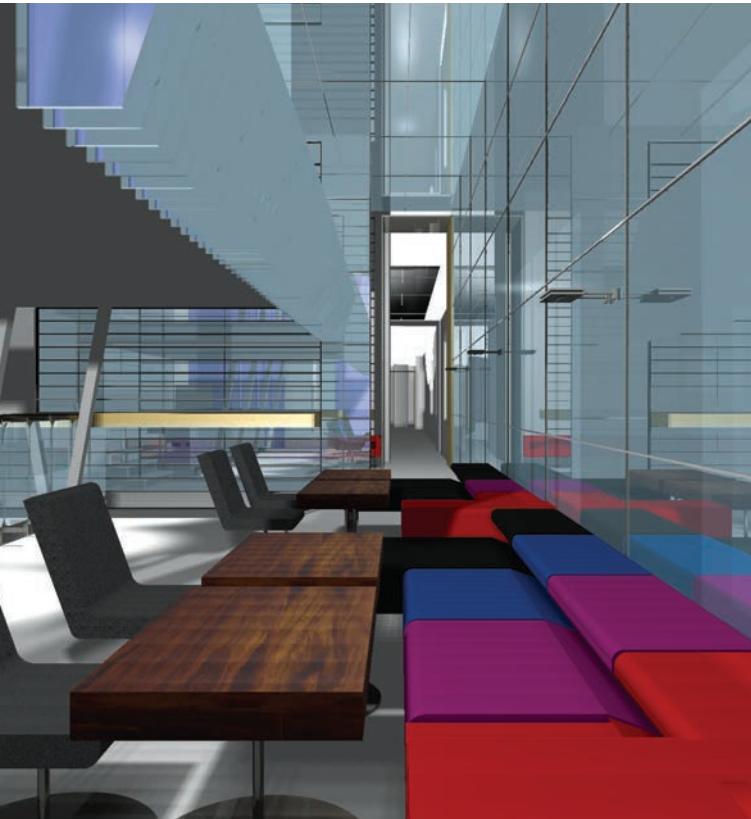
Below left and right

The computer deals objectively, as programmed, with the complexities of perspective, materiality and lighting within a precise three-dimensional representation of context. These images illustrate particularly its capacity to plot and represent the interaction of reflective surfaces. Realistic and objective depiction eliminates the necessary stylization and coding that were inevitable with hand rendering.

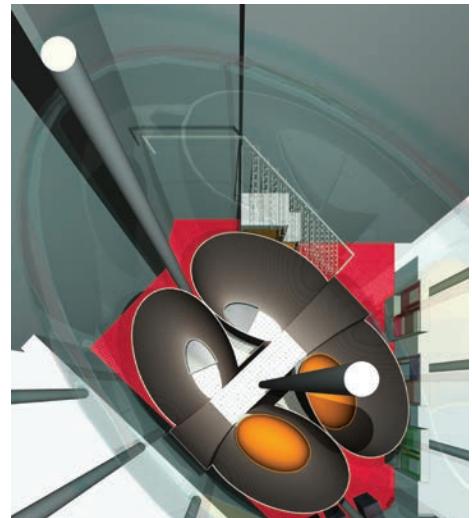
It is common, and somewhat glib, to say that interior design is 'about space'. It is as much – and probably a great deal more – about surface, colours and textures. Since interior 'spaces' are usually rectangular and typically around 2.5 metres (8 feet) high, they depend for their success more on the creative handling of surface finishes than on dramatic sculptural gestures. Furthermore, no matter how well such 'sculpture' is handled, the way it is perceived will depend on the materials from which it is made.

When clients want hard evidence of what their interior will look like, it is sensible to produce images that focus on materiality. This should be apparent in conventional perspectives, but often it is worth making additional images that give priority to finishes.

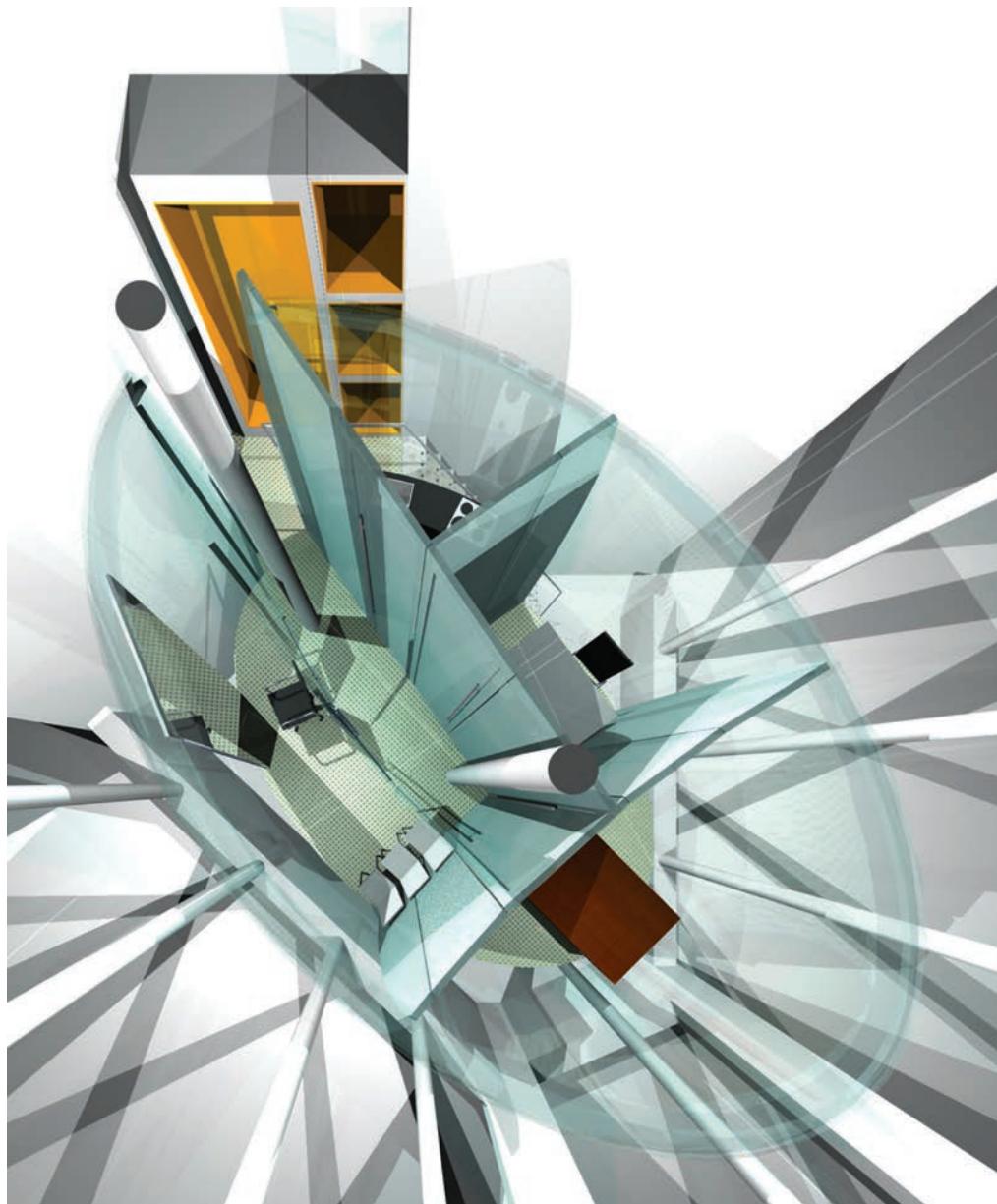
No hand rendering method can rival the computer's capacity to represent materiality. Hand rendering relies on visual coding, with varying degrees of accuracy, to imply reality. Because such skills are highly specialist it was common to employ a consultant 'visualizer' – who, through constant practise, could achieve something close to reality – to produce a handmade perspective. Such specialists inevitably have their own style, and designers tend to employ those whose technique they consider most compatible with the spirit of their project. The disadvantage is that, regardless of how attuned designer



and visualizer may be, the former is at the mercy of the latter, who will inevitably not 'see' the proposal precisely as its creator intended. Now, with regular practise and appropriate computer software, designers can produce their own perspectives, expressing their vision exactly. Finishes, once the most difficult element of any drawing to make convincing, are now simple to represent and materials that would once have been presented as disjointed fragments on a sample board are now scanned and presented in context with photographic accuracy.

**Left and above**

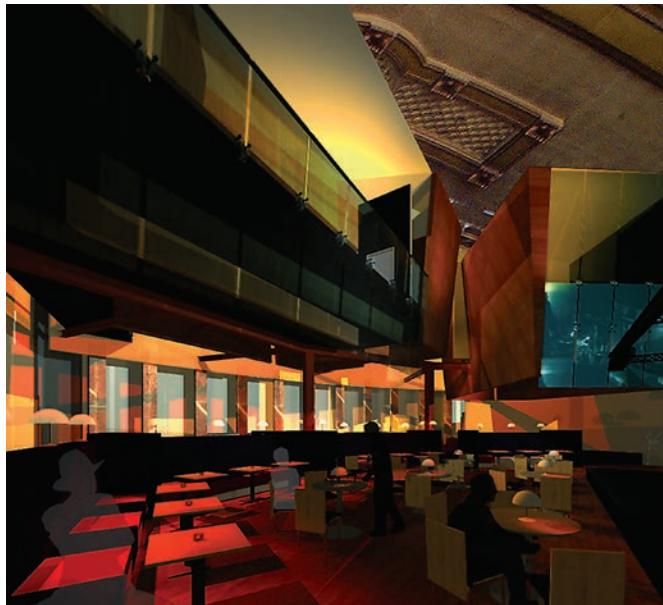
More abstract evocations of transparent, translucent and opaque planes demonstrate the computer's ability to calculate and emulate the surface qualities of different materials, their interactions and the impact of artificial and natural light sources.



Existing finishes

A new interior should respond to the volume and the materiality of the existing building that houses it. Amongst the bare surfaces of a modern utilitarian shell there may be nothing worth retaining and integrating into the new but, particularly in older buildings there are surfaces or elements that have a quality that can add to the richness of the new and it becomes important that they are included in any representations of it. It would be laborious to recreate these elements by computer, and the solution is to photograph them – preferably digitally, to

allow the manipulation that will match the perspective and tonal values of the rendered image. When taking such photographs it is sensible to position oneself as near as possible to the viewpoint of the intended rendering, so that the orientation and perspective of the existing feature is compatible with that of the virtual elements and require minimal adjustment in the computer.



Above

It is easier and more efficient to photograph existing elements and finishes (such as the decorative plaster ceiling in this space) and scan them into digital images, than it is to recreate them, from scratch.

Above right

In this digital collage the mundane, generic bookshelves – with their patchwork of book spines, scanned and pasted in with no attempt to refine them – transmute into outline, to match the representation of the existing masonry walls (depicted as a computer-made pastiche of a traditional architectural line drawing). The new stone floor with its irregular pattern is pasted in at an inflated scale to make its grain visible. None of the three principal elements makes any attempt to conform to a common perspective, and thus avoids the problems of compatibility.



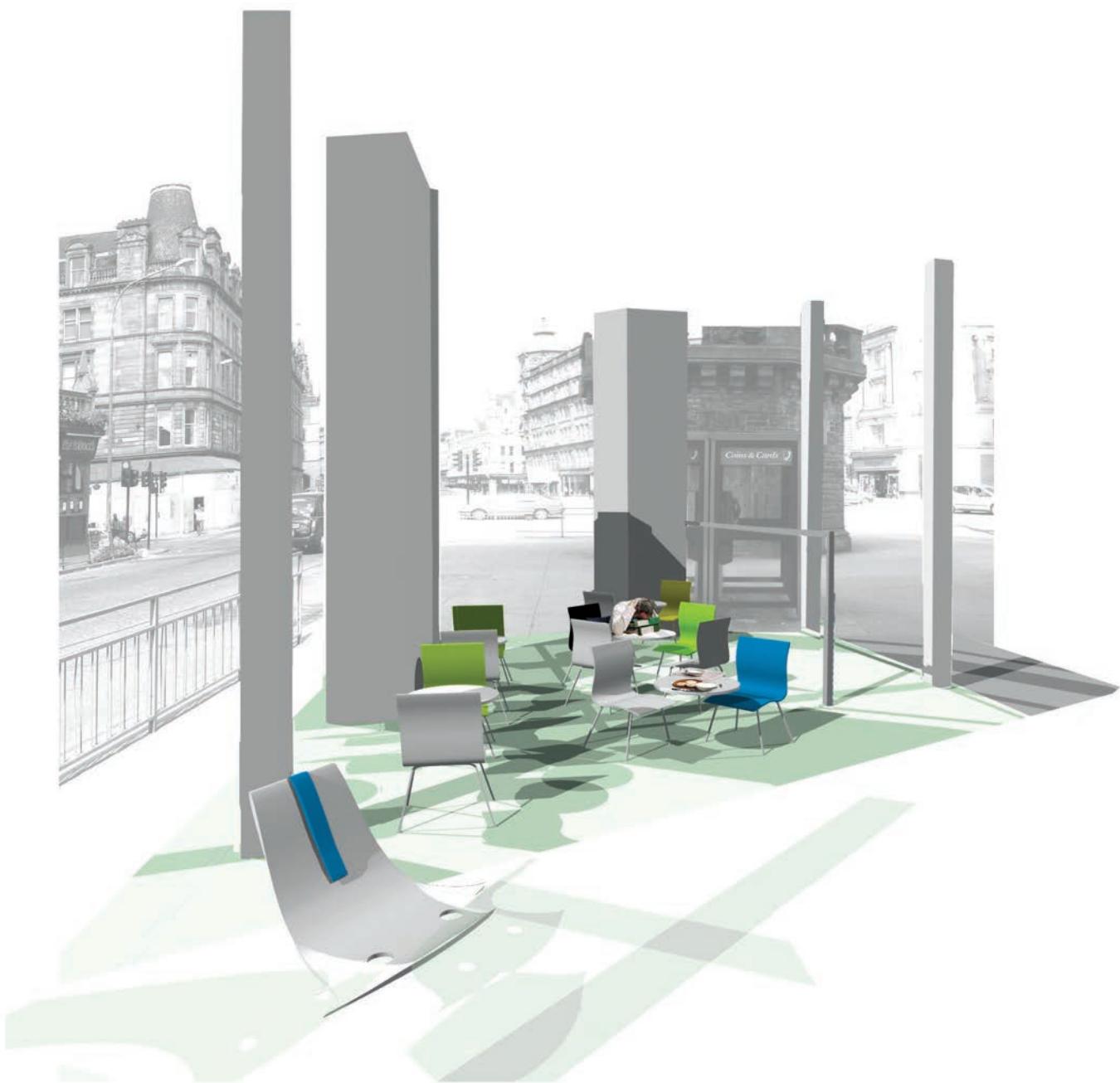
TIP PHOTOGRAPHING EXISTING MATERIALS

The existing wall on the right was digitally photographed, scanned and manipulated. The problem of reconciling the perspective of the new drawing precisely with that in a photograph is dealt with by the exaggeration of both, so that conventional rules are seen not to apply.



This page

In many projects with large areas of windows the view to the exterior is, necessarily, an integral part of the interior, and 'pasting' in a digital photograph of the street puts the proposal into context. The intensity of the street image can be reduced to suggest its being 'diluted' through glass and problems of incompatible perspective may be solved by distortion of one or both originals.



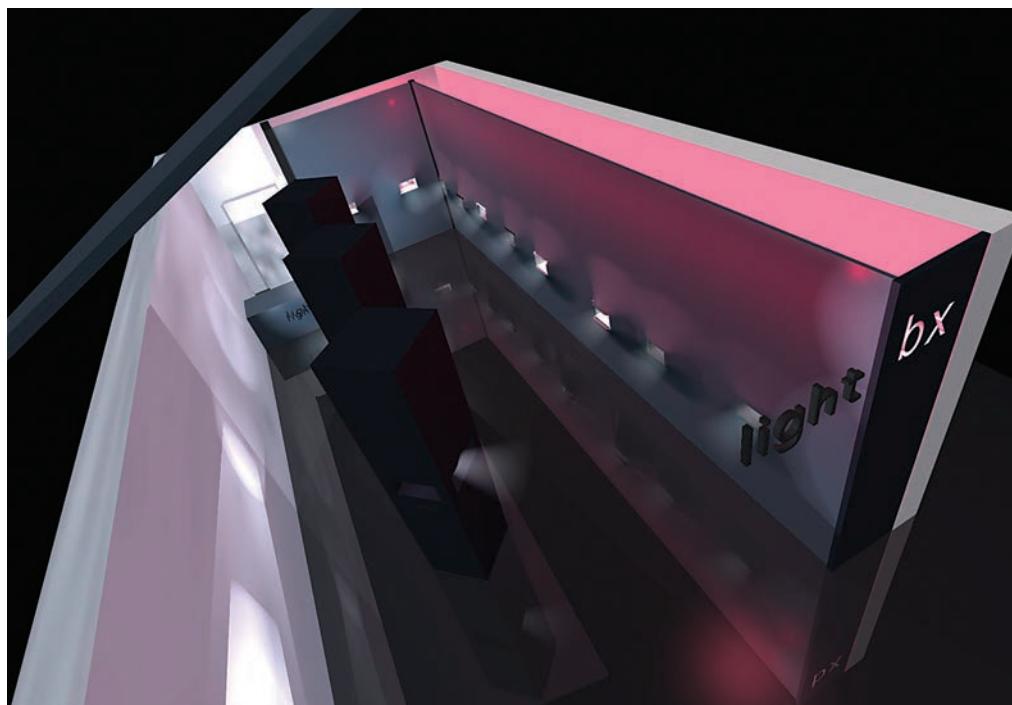
Lighting

In hand drawn images the effect of light, both natural and artificial, has to be estimated and it is difficult to achieve a convincing complexity of highlights and shadows. In contrast light sources, natural and artificial have to be programmed into digital perspectives as an integral part of the information required to generate the image and the finished version has a wholly convincing subtle and complex reality. This process has

the added advantage of allowing designers to appraise a convincing facsimile of their lighting proposals and to make adjustments to the position and intensity of sources. The examples illustrated on this page show proposed artificial lighting schemes, while those on the opposite page show proposals that use natural light.

Right

Spotlights, suspended and recessed into the floor, play on the folds of translucent hanging fabrics.



Above

Angled glass sheets rising through openings in the floor are lit from below.

Left

A representation of intense but concealed light sources on highly reflective surfaces.

**Above**

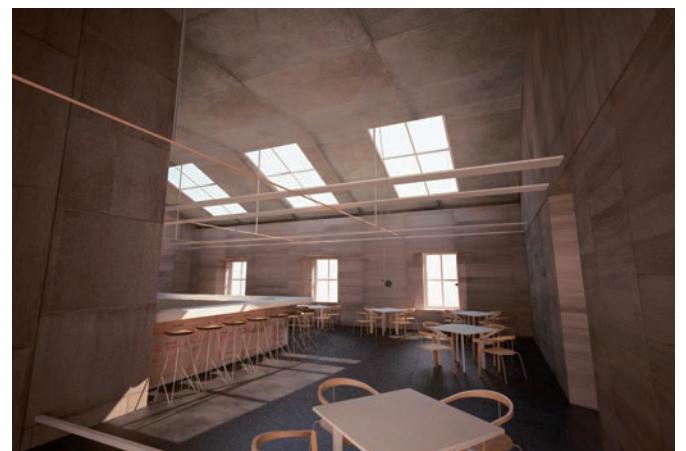
For projects in northern latitudes a cool, gentle light is more convincing.

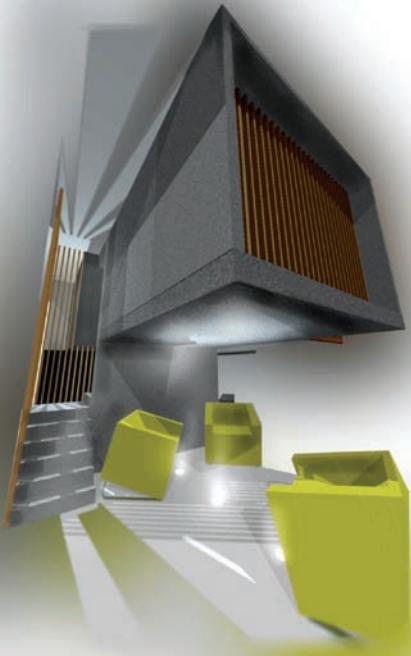
Below left

Strong light spills through windows and is reflected appropriately on the various surfaces, reflective and absorbent.

Below right

Sloping rooflights light top edges and reflective surfaces of furniture and light fittings. The highlights on the dark floor finish are muted in comparison with the bottom corner of the lighter stone wall that just catches sunlight.





Furniture

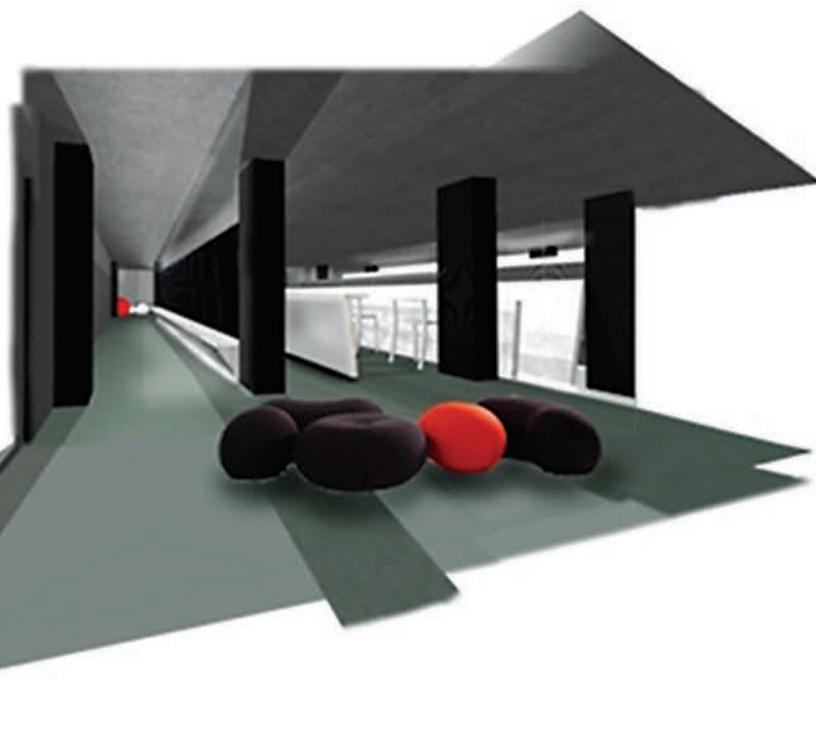
Furniture is a fundamental component in any interior – the element with which users interact most directly – and it must be considered from the very beginning of the design process, because it is integral to the expression of a project's aesthetic.

Other than for one-off pieces, such as reception desks and bar counters, there is seldom a need to design furniture specifically for a project. A designer may enjoy isolated, inspired moments of creativity when a powerful idea springs tangentially from thinking about the entirety of a project and is worth pursuing, but these moments are rare and it is logical to select pieces instead from the superabundance of manufactured options. It could be argued that it demonstrates a lack of imagination or professional knowledge if one cannot find something suitable amongst the myriad variations of manufactured tables and chairs already available.

By and large, furniture conforms to strict size requirements and restrictions, and therefore familiar objects – such as chairs and tables – can be effective substitutes for the human figure in establishing the scale of an interior.

This page

This pair of images establishes a stylistic connection between the furniture and the interiors that contain it. The yellow-cube armchairs above reiterate the volume of the projecting floor above them. The charcoal 'blob' seats to the right match the colours and simplicity of their interior. The red unit acts as a focal point.





Left

Furniture is necessarily smaller in scale and frequently intricate and this can be lost in the complexities of an interior perspective. A few books explain how these bespoke library shelves operate without obscuring their configurations.

Because furniture has such an impact on the character of an interior, it is important that it is accurately represented in any images. This may involve the resizing and pasting-in, by hand or computer, of photographs from catalogues and appropriate adjustment relative to the perspective of the space that accommodates them. It may mean the laborious creation of a near-likeness by hand or computer. Alternatively, and most efficiently and conveniently, it may mean the downloading, where it is available, of data from a manufacturer's website that will provide exact images of individual pieces, which may be convincingly manipulated and integrated within the constraints of an overall perspective.

TIP USING FURNITURE TO DEFINE A SPACE

Meticulous detailing and setting-out of furniture, from data downloaded from a manufacturer's website, gives reality to an otherwise impressionistic rendering.



This page

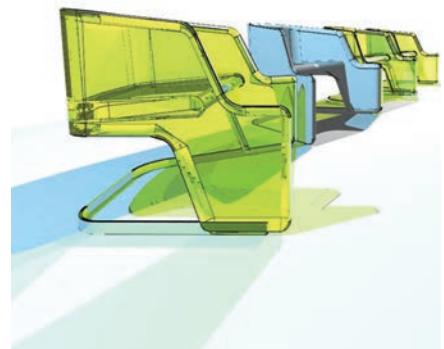
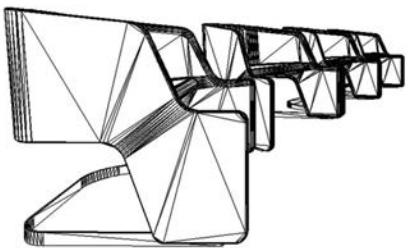
Two extraordinary pieces of furniture are wittily located in context. The detail in the drawings seems to acknowledge their singularity. In the image to the right, the circular window and the face it frames echo the inflated orange tube and the figure within it. The contorted faces on the screens in the image below seem to despair at the extraordinary seating that floats beneath them.



STEP BY STEP DOWNLOADING FURNITURE FROM MANUFACTURERS' WEBSITES

There is little need for a designer to create new pieces of furniture for any but the most unique projects. Many manufacturers, to encourage selection of their own products, provide digital versions of pieces in their range which may be downloaded and used in plans, sections and, most

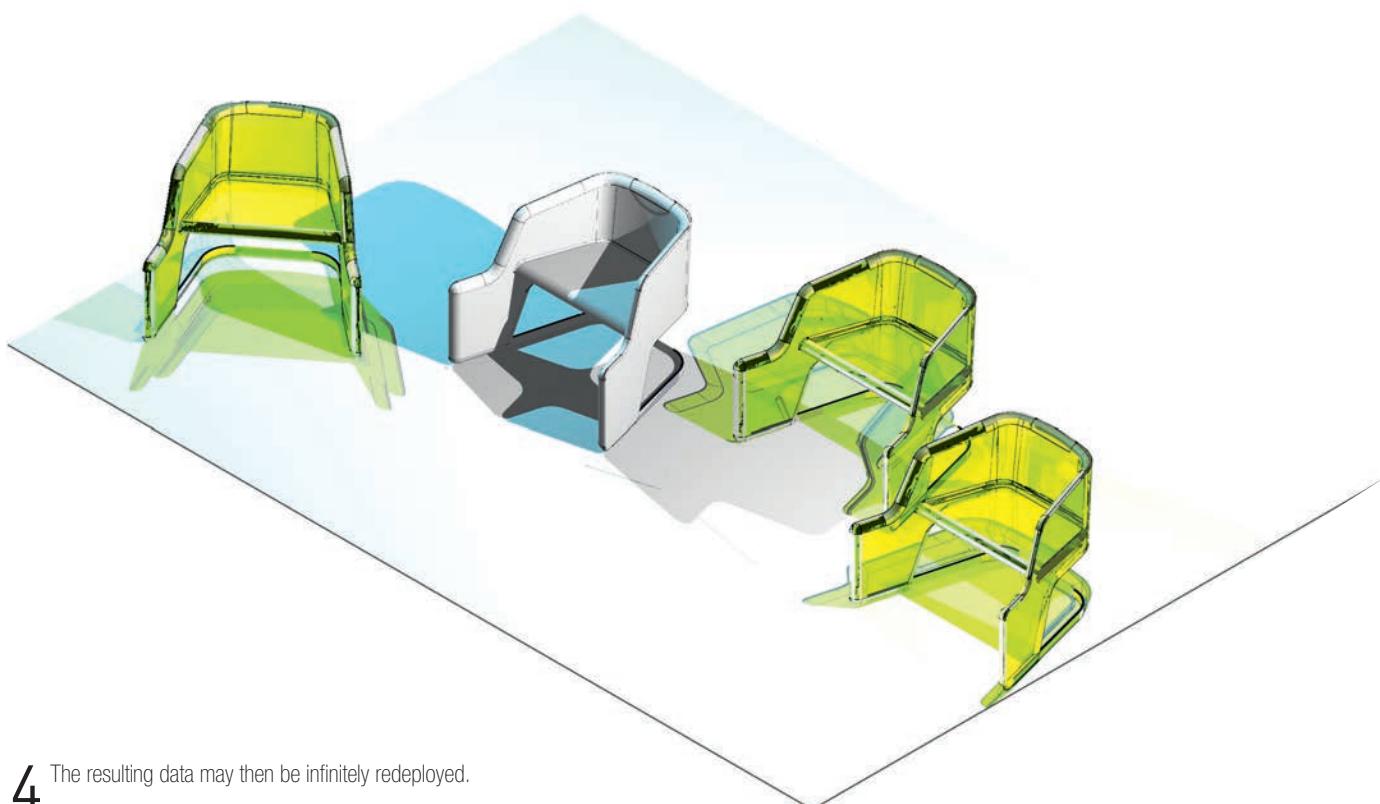
spectacularly and usefully, in perspective views. Since furniture and fittings have such a fundamental importance in the expression of the character of an interior, it is important that they be rendered with precision. Downloading ensures this and eliminates the laborious creation of less accurate facsimiles.



1 The data needed to construct a piece of furniture digitally is first downloaded as a wire-frame image, which allows the pieces to be precisely created compatible with the perspective of the intended finished image. It is in manufacturers' interests to supply this information free to encourage use of their products.

2 When the composition is acceptable, the elements may be made solid.

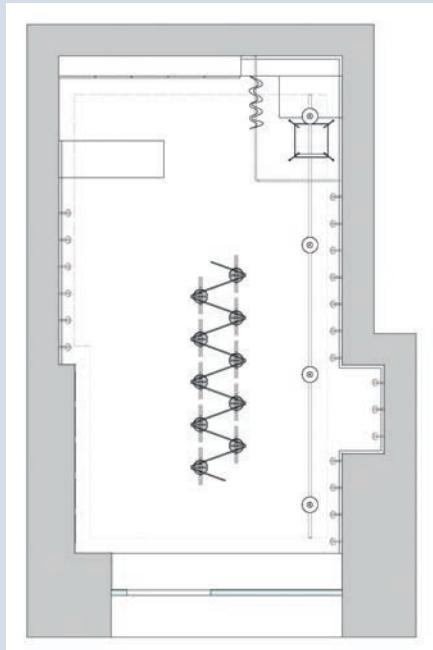
3 Or elements can be rendered with progressive refinement.



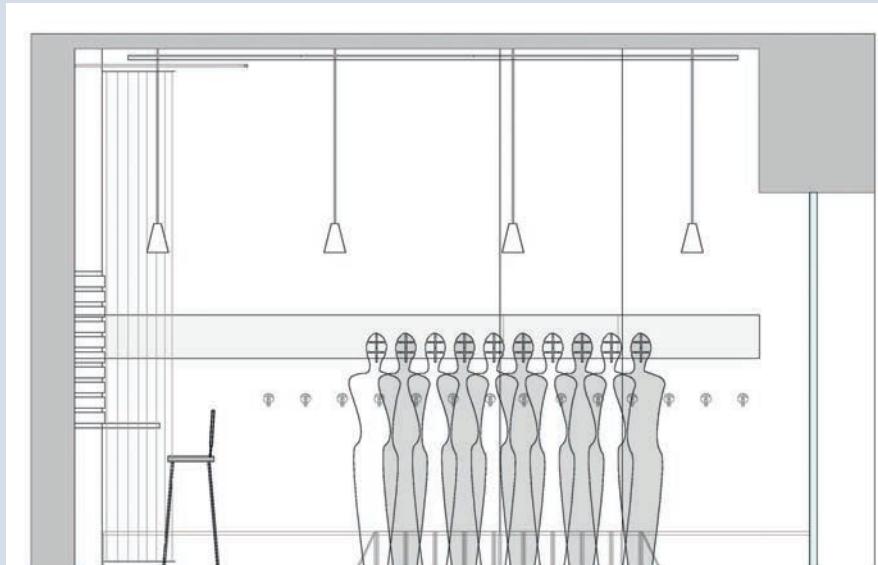
4 The resulting data may then be infinitely redeployed.

Case study Creating one-off pieces

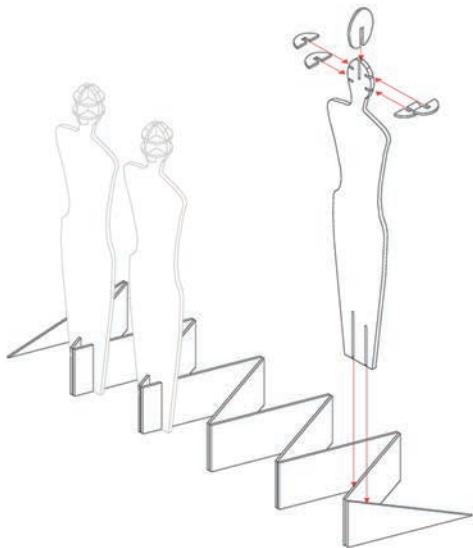
This sequence of drawings, for a display system, serves to explain the proposal both to the client and the prospective maker, describing both the aesthetic intention and the method of construction.



Above
Plan showing display unit in the centre of the shop.



zig-zag structure 250mm (10 in) high
each MDF piece is placed at a 60° angle to the previous
MDF 'people' (1600mm [63 in] high)
slot down onto base securing the freestanding structure
head pieces slot together to give a
3D form on which wigs are displayed
precise cuts ensure tight
connections and structural rigidity



Above
Elevation of a side wall showing proposed 'people structure' display unit, with a detail below explaining the unit's construction and specification notes.



Pendant light



Wood flooring



MDF sheets



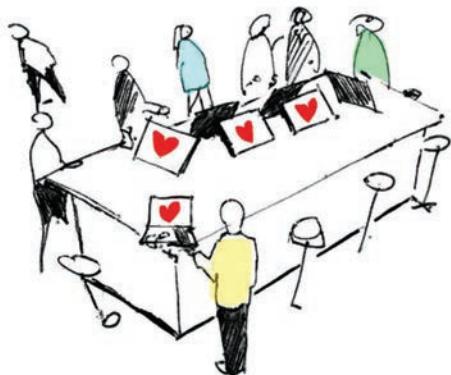
Colour palette

**Above**

In this presentation sheet a rendered perspective with figures gives a sense of the proposed finishes and scale, while below it are details of proposed materials.

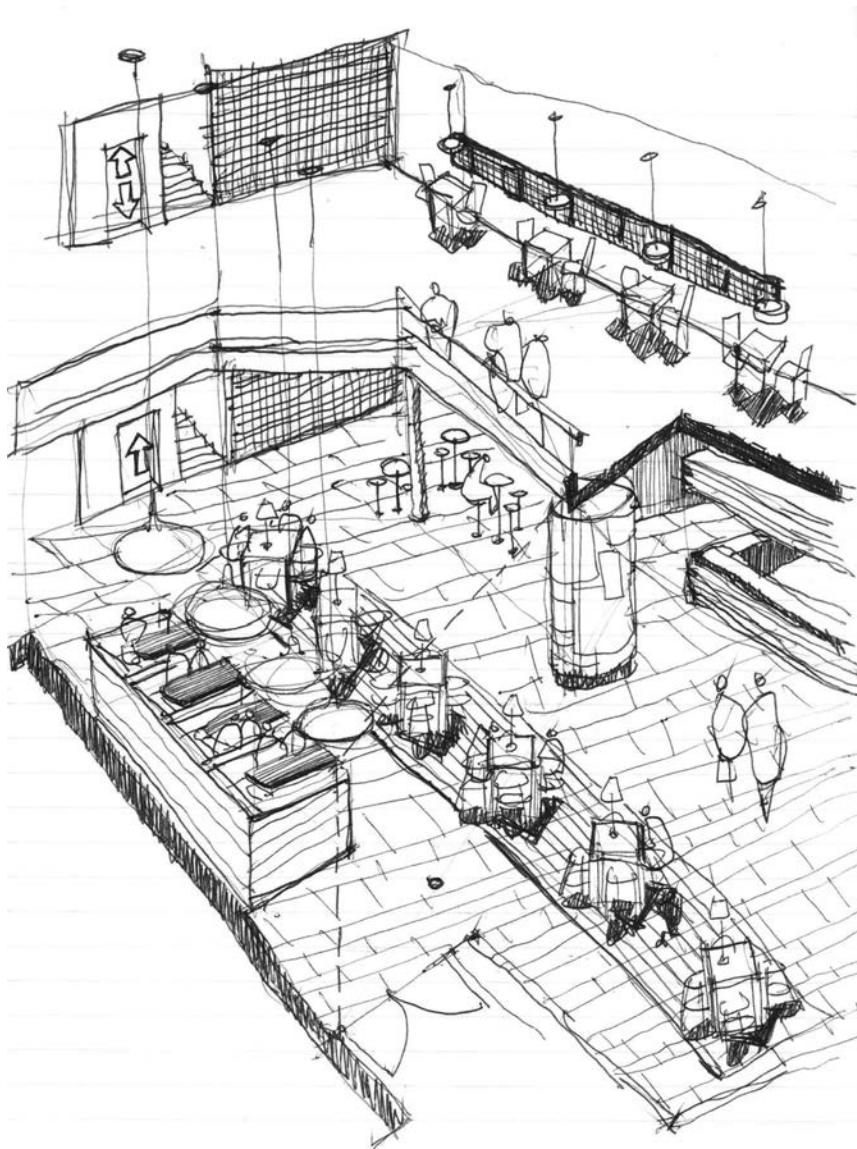
Figures

Human figures give scale to an interior and help explain how it will work and be inhabited. Photographs of completed interiors are notorious for being bereft of people, which makes some sense because changing fashions in clothes and haircuts can embarrassingly date the most radical creation. Inappropriate dating is not however a problem for presentation drawings, which need, and should, only be relevant to the time of their making. The computer offers opportunities for including well-chosen figures that complement the aesthetic of the project. They can be witty or poetic, and may be particularly effective in engaging a client's imagination and sympathy.



Left and above

Figures give scale to interior presentations but it is not necessary, and often impractical, for them to be highly detailed or lifelike – the use of stylized figures is common practice.



**Left**

These hand-drawn figures are traced outlines of photographs, made quickly to retain something of the spontaneity of a sketch. They are distinctly secondary to the finishes that dominate the image.

**Left**

Transparent figures give scale without obscuring the interior.

Below left

One way of ensuring that a figure is in sympathy with the perspective of its surroundings is to create a bespoke image, which is easily done with digital photography.

Below right

Figures can indicate the changing scale of spaces within one interior.

**Left**

Figures can clarify different levels and their function. The figure on the left identifies a stair, which is not itself visible, the figure in the bottom right obviously looks up through a void, the other two explain the booths and access to them. All four are deliberately in soft focus.



It is difficult, in interior-design presentations, to incorporate lifelike handmade drawings of people. The body is too complex, and difficult to make the freehand lines of the drawing sit comfortably with the hard edges of interior elements and it is common practice to stylize the hand drawn figure.

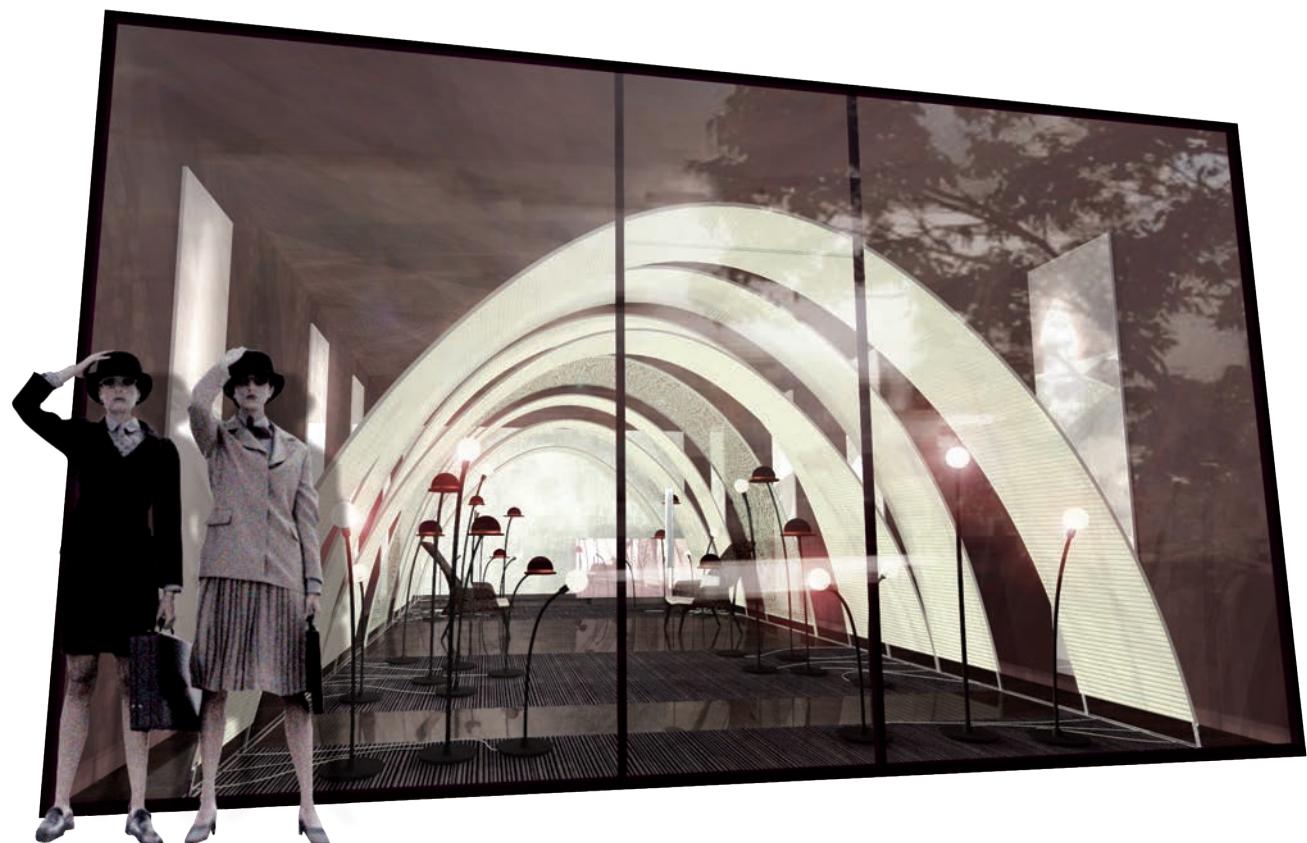
Such manipulation of the size and quality of an image is easier, and can be taken further, on computer. It is also possible to download, from free and subscription websites, batteries of figures in wide ranges of age, character and posture. There are sites that supply wholly digitally generated figures that may be programmed to adopt appropriate poses, but these are disturbingly characterless and unconvincing.

Below

Figures provide witty confirmation of the interior's function (a hat shop).

Right

When making project-specific figure images, record a series of slight variations from which that most compatible with the perspective of the interior may be chosen. Final adjustment on the computer should integrate the figure convincingly with the elements of the building. In this example the shadow – made on a computer – suggests a convincing ground plane.



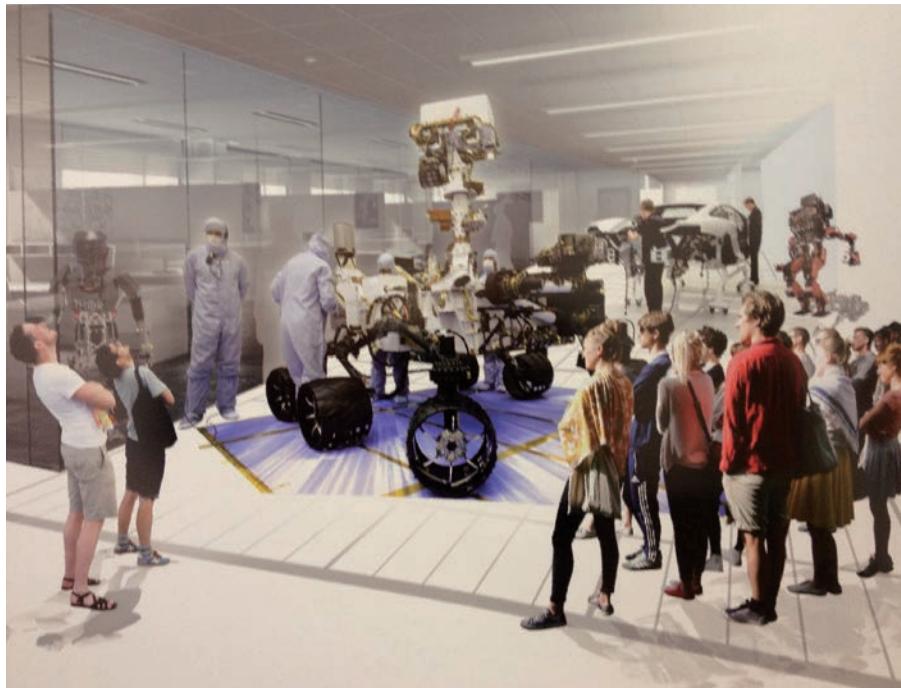
Below

Figures, such as those on the right of this image, can identify activities. Others, like those on the left of the image, can express the spirit of a project. The exuberance of such an image can only help seduce the client.

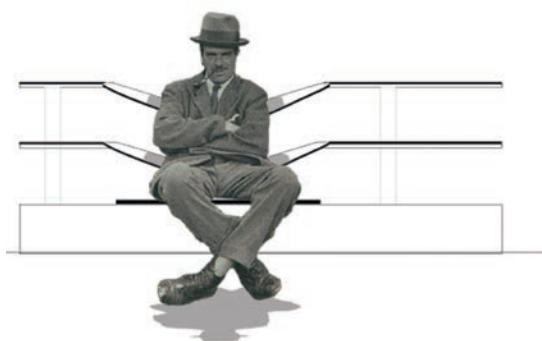
The most common practice among designers is to build a personal library of figures scanned from magazines, or to carry out project-specific searches for photographs of suitable 'characters' in appropriate positions. Generally, the figure should not dominate the interior but a well-chosen and adjusted figure can significantly influence perception of the design.

People obey the rules of perspective, and this is the major problem in including them in any drawing. Images culled from magazines are often difficult to locate convincingly. They may, for example, be at odds with the floor plane on which they are placed. However, there are ways of dealing with this. It is possible, with a digital camera, to pose volunteers to meet project specific needs, and such digitally created images may be extensively manipulated within the computer for compatibility with the digital image.



**Left**

The isolated figures that give scale to most drawings, without obscuring large sections of the interior, are unsuitable to describe some activities and it is difficult to find appropriate ready-made images of groups. In this example a number of photographs, of individuals and smaller groups, were collected and combined. There are minor discrepancies in relative sizes and perspective but the image itself is composed loosely enough to absorb them.

**Left and blow**

Idiosyncratic figures and period costumes demonstrate wit - and avoid the possible alienating associations prompted by contemporary alternatives.



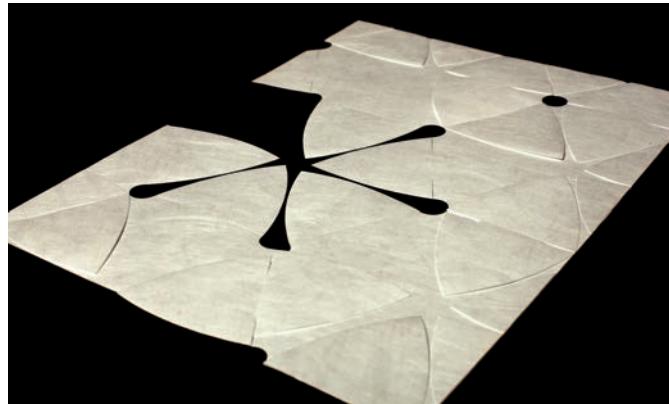
Samples

Selection of the right materials is fundamental to the success of every interior. Different choices and different combinations of colour, pattern, texture will radically alter perception of the same volume. It is therefore important, not just for the designer but also the client to see samples of unfamiliar, and familiar, materials at first hand.

Traditionally this was, and continues to be, done with 'sample boards', which are usually cumbersome sheets of white mounting board to which swatches and swathes of fabric, pieces of wood, tiles and other components were glued. In the weaker examples individual pieces are stuck down arbitrarily, in the better the arrangement reflects the relative areas that each material occupies in the finished interior and its relationship to other examples. Card mounting boards tends to distort under the different weights and rigidities of different samples. Stiffer plywood baseboards add to the overall weight.

The necessarily limited size of sample boards meant that the effect of large-scale textures and patterns was not made clear. The traditional board originated to demonstrate finishes for traditional interiors, which tended to sport an expansive range of materials. While

the modern interior can match that prodigality, generally, the number of materials used tends to be more modest and the impact of large unbroken areas is often more important. Whatever the inclination of the project it is now more usual to explain the orchestration, the areas and interactions of finishes in a rendered perspective, particularly since the advent of the computer as a presentation tool and the use of scanned images of materials, appropriately scaled, downloaded from a manufacturer's website or collaged from the designer's own photographs. However, no matter how accurate the reproduction, it always makes sense to obtain a generously sized real sample, particularly for all manufactured materials with textures and patterns and all natural materials with variable grains for precise reference during the design stage. And all should be shown to the client for formal approval. It is important that agreement is reached for all finishes, to guard against clients' misinterpretation of drawn images, which can lead to disputes and claims when the project is completed.



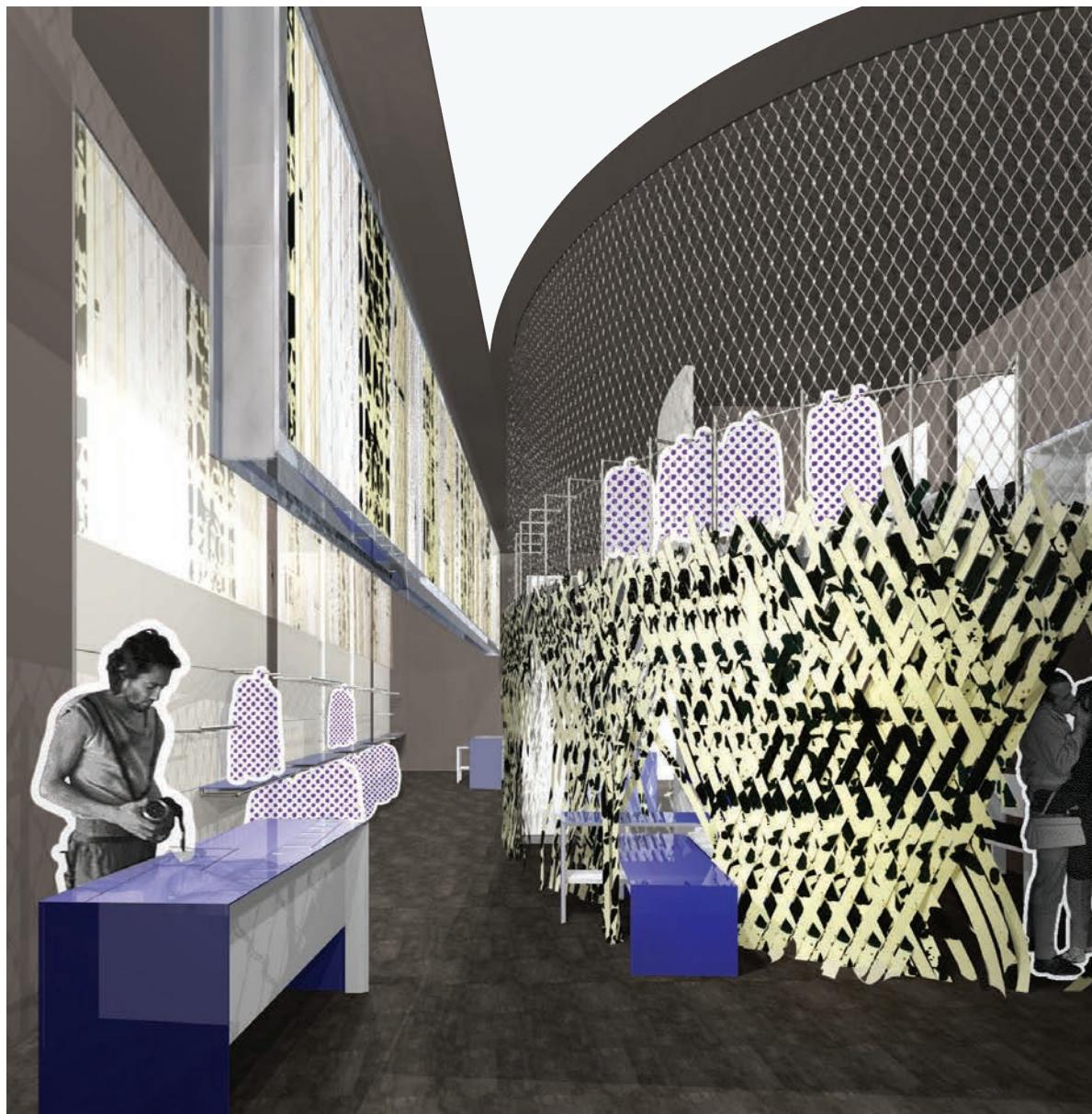
Left and above

An image explains how the thin cardboard sheets will look when sandwiched between sheets of clear glass. A full-size section of a proposed wall covering demonstrates how scored and cut lines may be adapted to make a decorative pattern.



This page

A drawing made to accompany a full size sample of the 'weave graphic' explains how it will be constructed and deployed (left). A perspective shows the mesh and weave in location (below).



Explaining elements and ideas

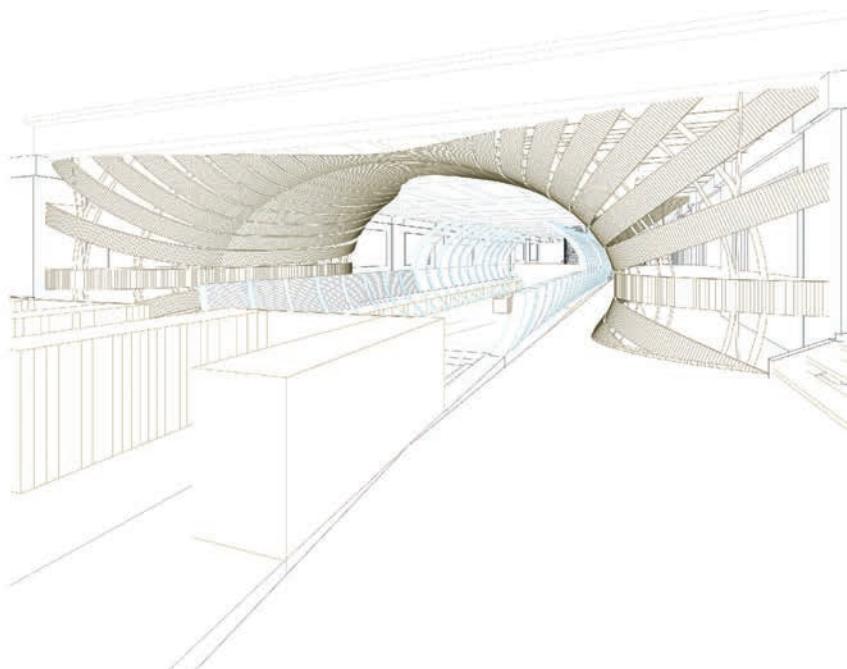
Below

The abstracted 'winged' image on the left expresses the concept that generates the tensile structure drawn in situ on the right.

Bottom right

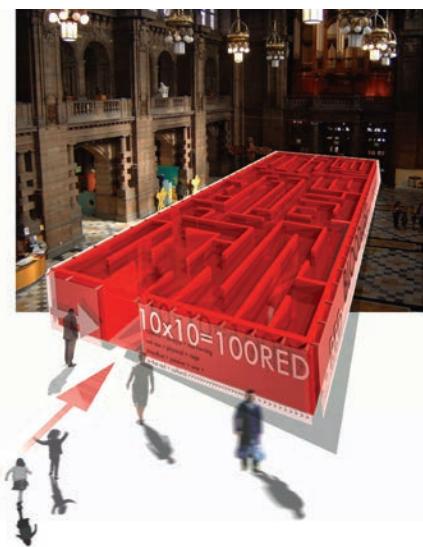
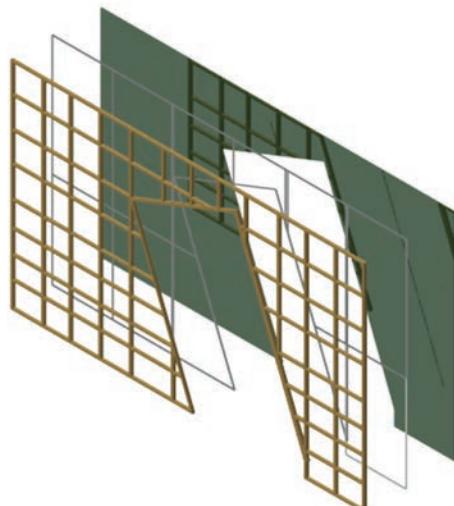
A computer-generated structure superimposed on a digital photograph explains how the new 'maze' is accessed and its impact on the existing space.

It is always good practice to begin a presentation by explaining the thinking, whether conceptual or practical, ambient or organizational, that underpins a project, so that the rationale for subsequent steps is clear and convincing. Such drawings tend to be most effective when they are simple and, although simple images can be bland, the computer's capacity to be delicate and precise can ensure that they have presence and authority.



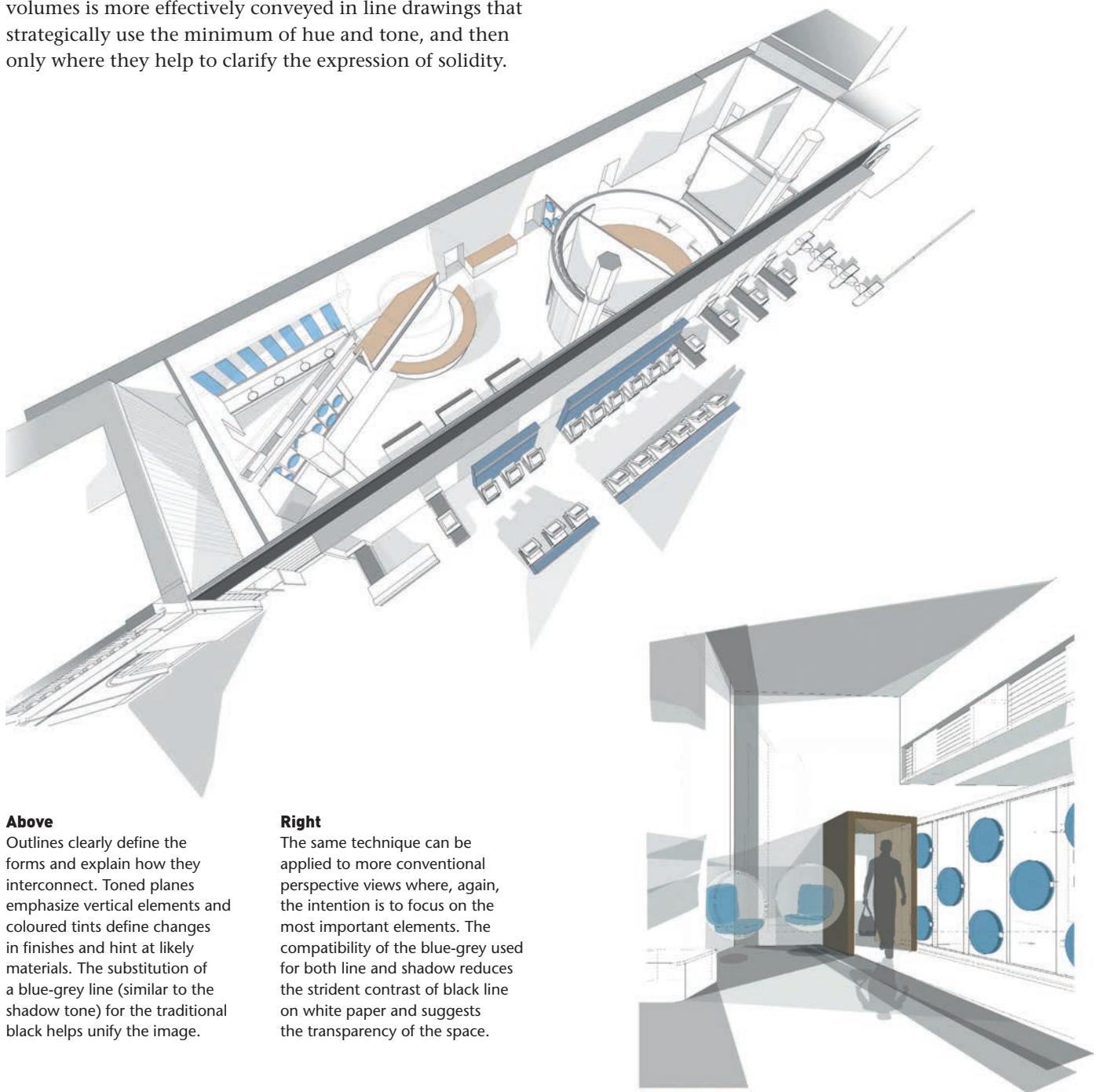
TIP CLARIFYING COMPLICATED ELEMENTS

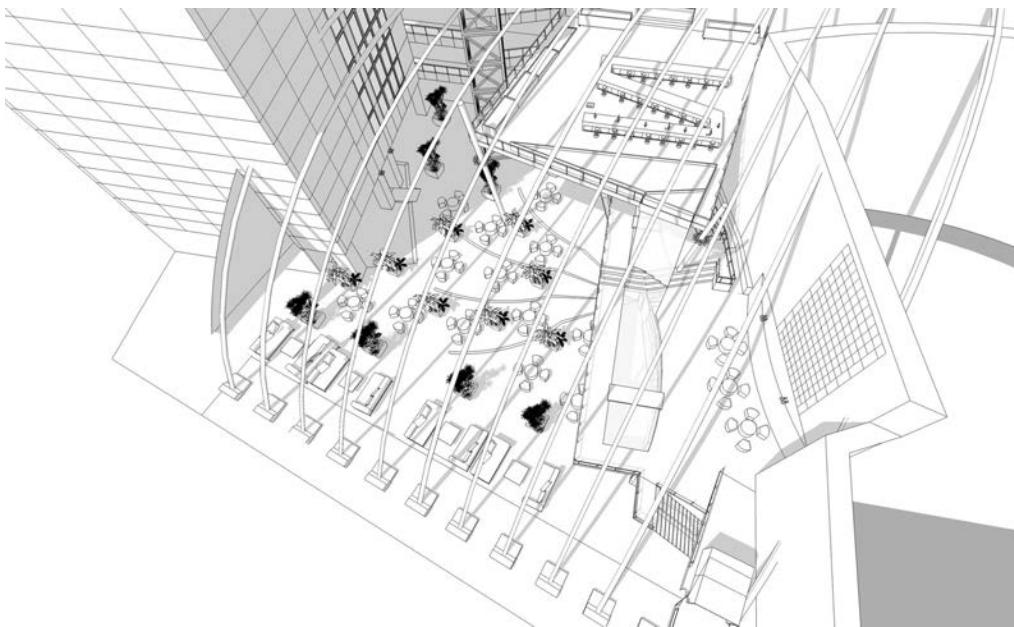
The reduction of complicated or unfamiliar elements to their constituent parts can help in the understanding of the whole. Here, the separation of elements around a skewed wall opening explains superimposed layers.



Linear and tonal clarity

The computer is an ideal tool for representing materiality. Most projects deal with modest rectangular single-storey spaces and therefore an accurate depiction of surfaces and finishes is all that is needed to explain the nature of the design proposal. There are, however, other projects when the character of an internal space is defined more usefully by the representation of more complex three-dimensional conditions and gestures. The clarity of these is often lost in elaborately rendered images that obscure the clear expression of form and depth. Information about complex volumes is more effectively conveyed in line drawings that strategically use the minimum of hue and tone, and then only where they help to clarify the expression of solidity.



**Left**

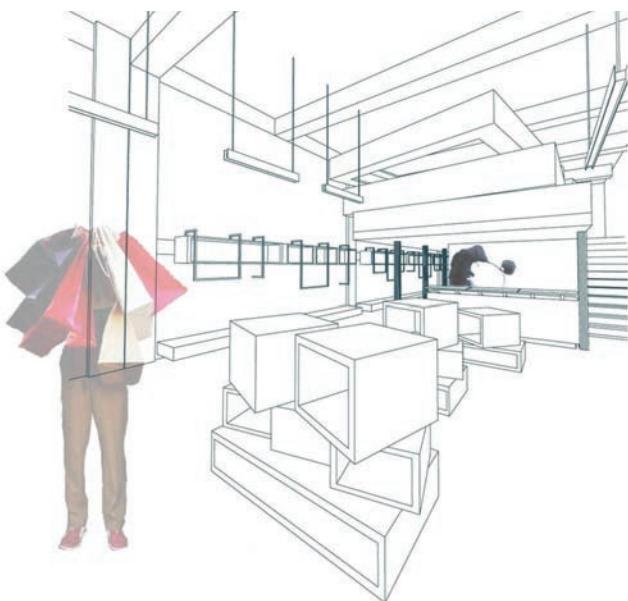
Dramatic perspective drawing underlines the height of this internal volume and is emphasized by the lines of joints in the wall claddings. The single flat shadow tone is enough to give three-dimensional solidity. The recognizable elements of furniture and plants give scale.

**Left**

In this more conventional view of the same space the block of shadow is enough to convey the suspension of the foreground level, which would inevitably be less apparent in the complexity of a fully rendered view. Again, furniture and plants give scale and explain how the areas will be used.

Below left and right

The outline drawing defines three-dimensional form and the rendered version identifies finishes.



Text

While most presentations are made face-to-face with clients, with verbal explanations to support the images, it is still important to become adept at adding text to visual material. This is emphatically not about writing a long, supporting essay. Ideas should be defined with a minimum of evocative words – using well-crafted phrases rather than sentences, and words rather than phrases. It is productive to explain the evolution of ideas so that clients understand the rationale underpinning the final outcome. Clients usually have their own expectations of a project, and if these are not met they need to be persuaded that the alternative is the consequence of serious analytical thinking. It is generally good to leave

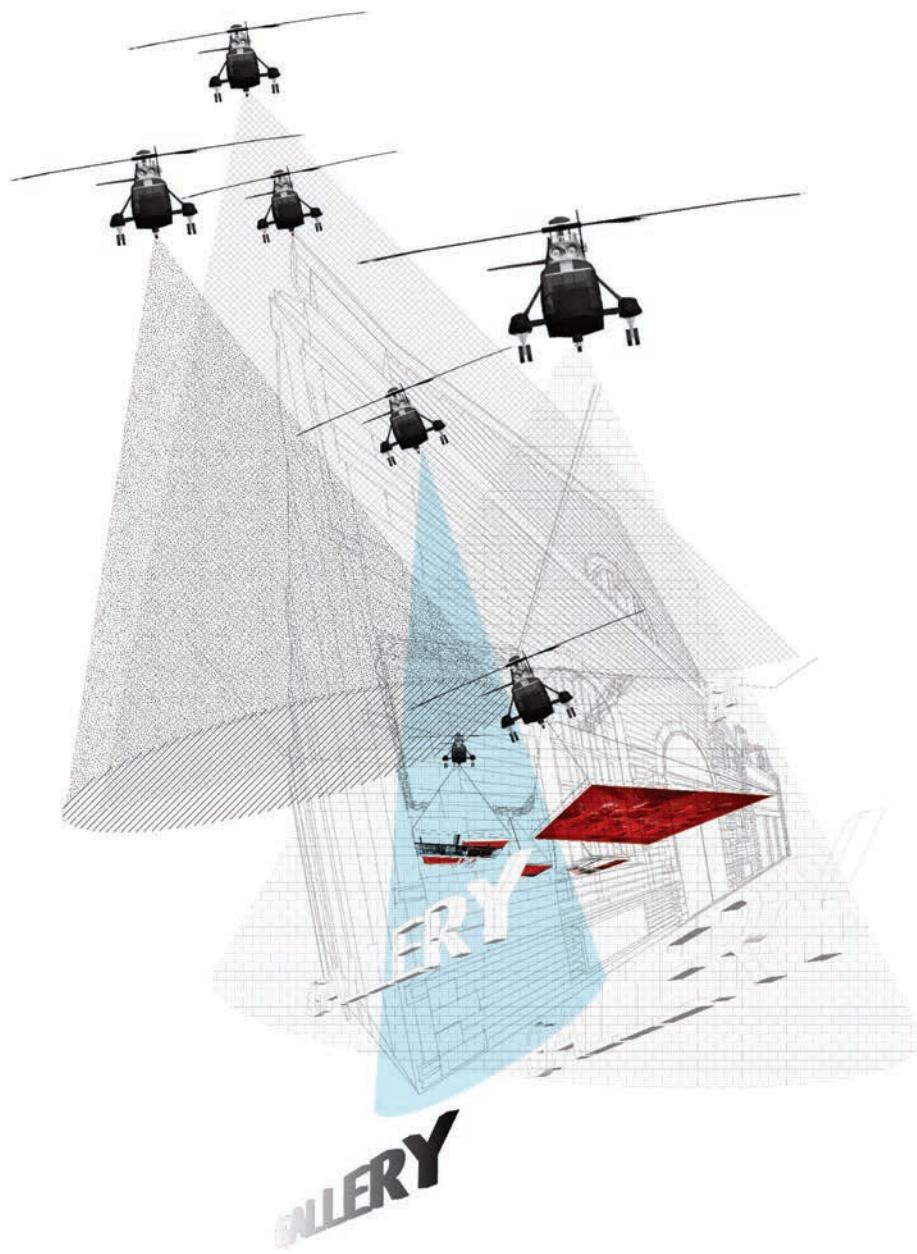
presentation material behind after a meeting for a client to mull over, and text will prompt recollection of verbal explanation and focus attention on the essential messages. Extravagant, speculative claims should be avoided. They may goad a sceptical client into dissent.

Text may be used in any drawing – including perspective views, in which it can add a brief and useful commentary and suggest an invisible vertical plane that accentuates the receding perspective.

Before the advent of computers, and except for a small minority of designers with impeccable handwriting, applying text was a time-consuming process that involved stencils or rub-on transfer lettering. Consequently,

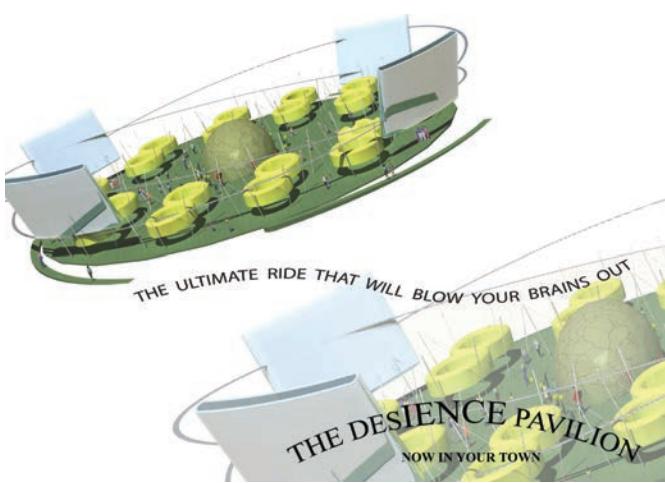
Right

Letters may be shaped and toned to respond to the composition of the image.



Below

A line of text is appropriately distorted and connects the two versions of the same drawing, of which the desaturated lower version acts as a backdrop for the more significant text that names the project with a more assertive font.



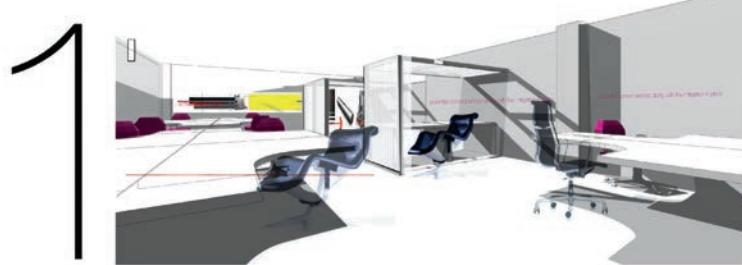
written information tended to be strictly factual, confined to the identification of floor levels and the naming of rooms. Now it is as simple to add words as it is to draw lines, and while this may encourage verbal excess it also offers the potential to make drawings more accessible.

Before computers, text tended to be black on white. Now options exist for infinite tones and hues. Size and colour of letter may be adjusted. Fonts may be changed. Styles may be varied. This presents fascinating possibilities but demands editing, not only to keep text brief but also to create hierarchies of information. The most important information should be visually assertive. The impulse to use too many colours and fonts is potentially dangerous, randomly coloured text and a plethora of fonts is difficult to read. Different colours and different fonts may be used for emphasis and punctuation but the strategy must be clear to the reader and adhered to by the designer.

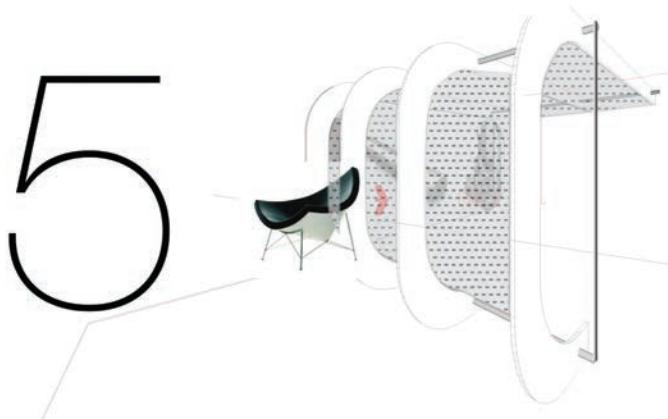
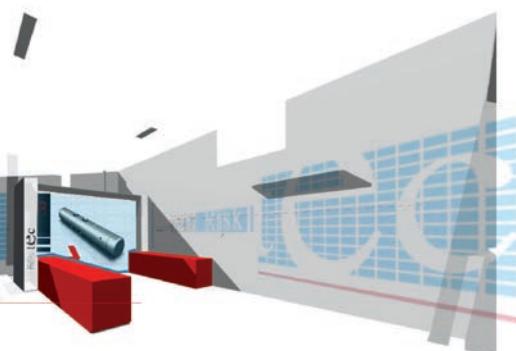
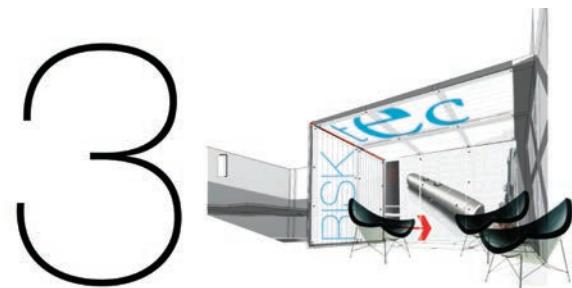
Successful text will be an integral part of a drawing and compatible with the style of the interior proposed. Most clients will feel comfortable with words and more confident about criticizing them than about questioning the content of drawings. Crude grammar and inept spelling will inevitably undermine a designer's credibility. Always use spell and grammar checks, then read the text again to be quite sure it is convincing.

**Left**

Text explains the conceptual intention.

**This page**

Prominent identifying numbers act as a clever visual feature of this sequential client presentation.

2

Designing the final presentation

A final presentation to a client may be perfunctory, the last in a series of discussions, structured around drawings which may be loose or roughly assembled into something resembling a book. When there has been less regular contact between designer and client or when the proposal must go for approval to a client group who will have a discussion amongst themselves about the proposals merits it is important to compile a presentation document that encapsulates the strategy and tactics that shaped the final outcome and a comprehensive representation of that conclusion, a document that provides a permanent record of the verbal presentation. It serves to remind clients of what was said and allows them to examine in their own time things about which they had doubts or that they did not initially understand.

The document should be beautiful to look at and elegantly put together. It makes the first impression. For most projects, there is no need to make big drawings. A3, often A4, sized drawings will support as much information as a client might be expected to assimilate without the punctuation of regular page turning. It is easier to discuss smaller sheets than large boards around a table, and much easier to carry them through the streets on the way to a presentation. It is also likely that an image, or collection of images, which work at A3 for a group presentation will also be legible in A4 format if left for individual perusal after the meeting. The computer

is a drawing tool but it is also the tool of desktop publishing and simple specialist programs make it easy to produce ordered, elegant layouts. Odd drawings that need be bigger than A4 can be included as 'fold outs'.

A presentation should be the 'story' of the development of the project and, usually, it makes sense to start at the beginning and proceed logically to the end. It is normal to put more than one image on each page of a presentation – if they deal with the same area of the project. The order in which pages should be presented is usually self-evident – as is the issue of how images should be located on each sheet.

Each page needs to be composed. When images are organized methodically they tend to end up on a regular grid, which makes it difficult to establish meaningful connections or to get a balance of size and visual weight. A better rule of thumb is to identify the key image for each sheet, to locate that centrally – or just above or below the centre – and place supporting images around it, aiming to establish a balance by the manipulation of their relative sizes and distance from the central image. Like all rules this should be broken when events demand it

Images grouped together should complement each other. A perspective view might give an impression of atmosphere, but related plans and sections can contribute hard, practical information that will support and validate the aesthetic intention.

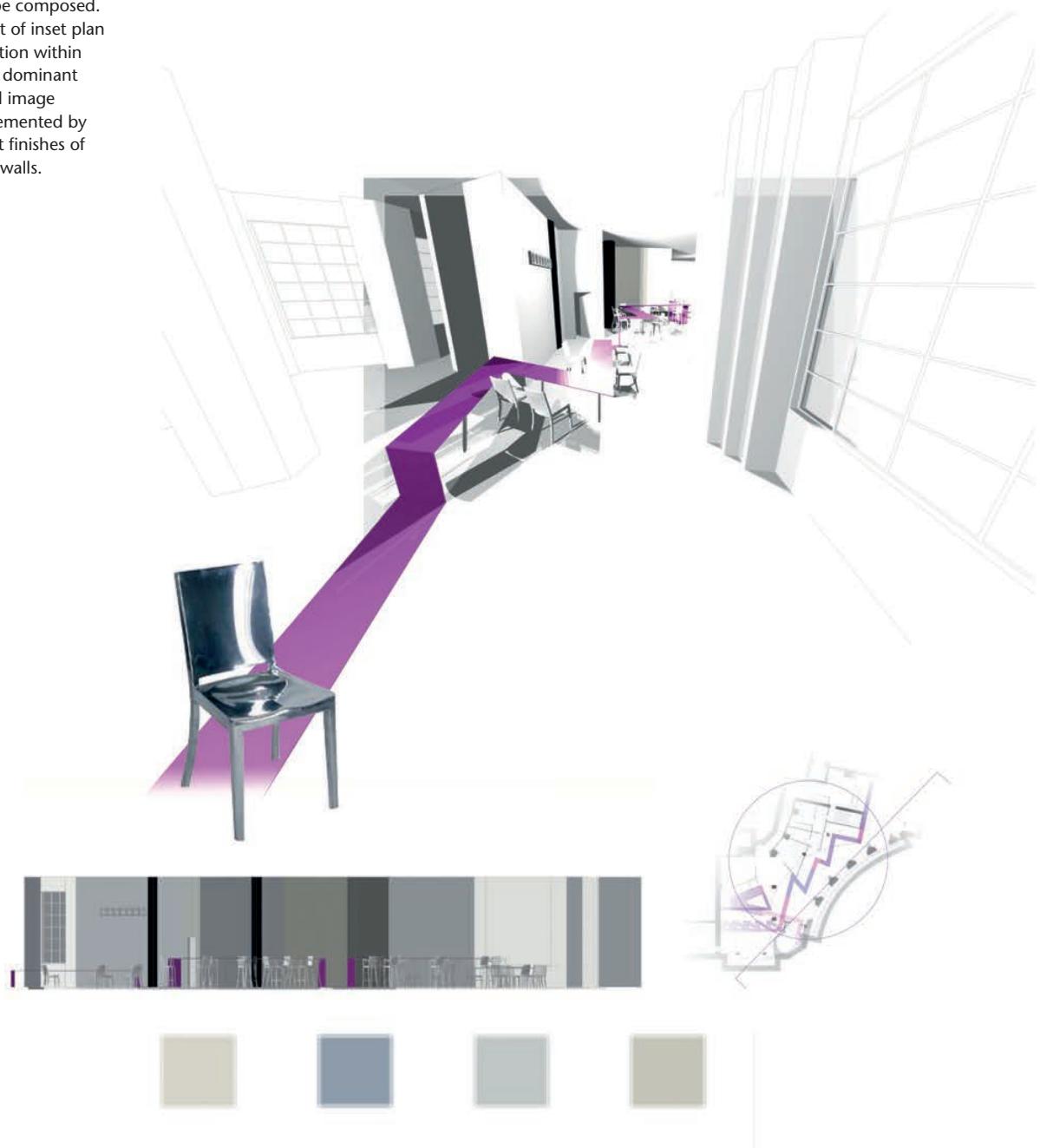


The closeup view in the circular inset at the bottom of this perspective explains the stair balustrade detail.



This page

Each page must be composed. Here the fragment of inset plan identifies the location within the project of the dominant three-dimensional image and this is complemented by information about finishes of new and existing walls.



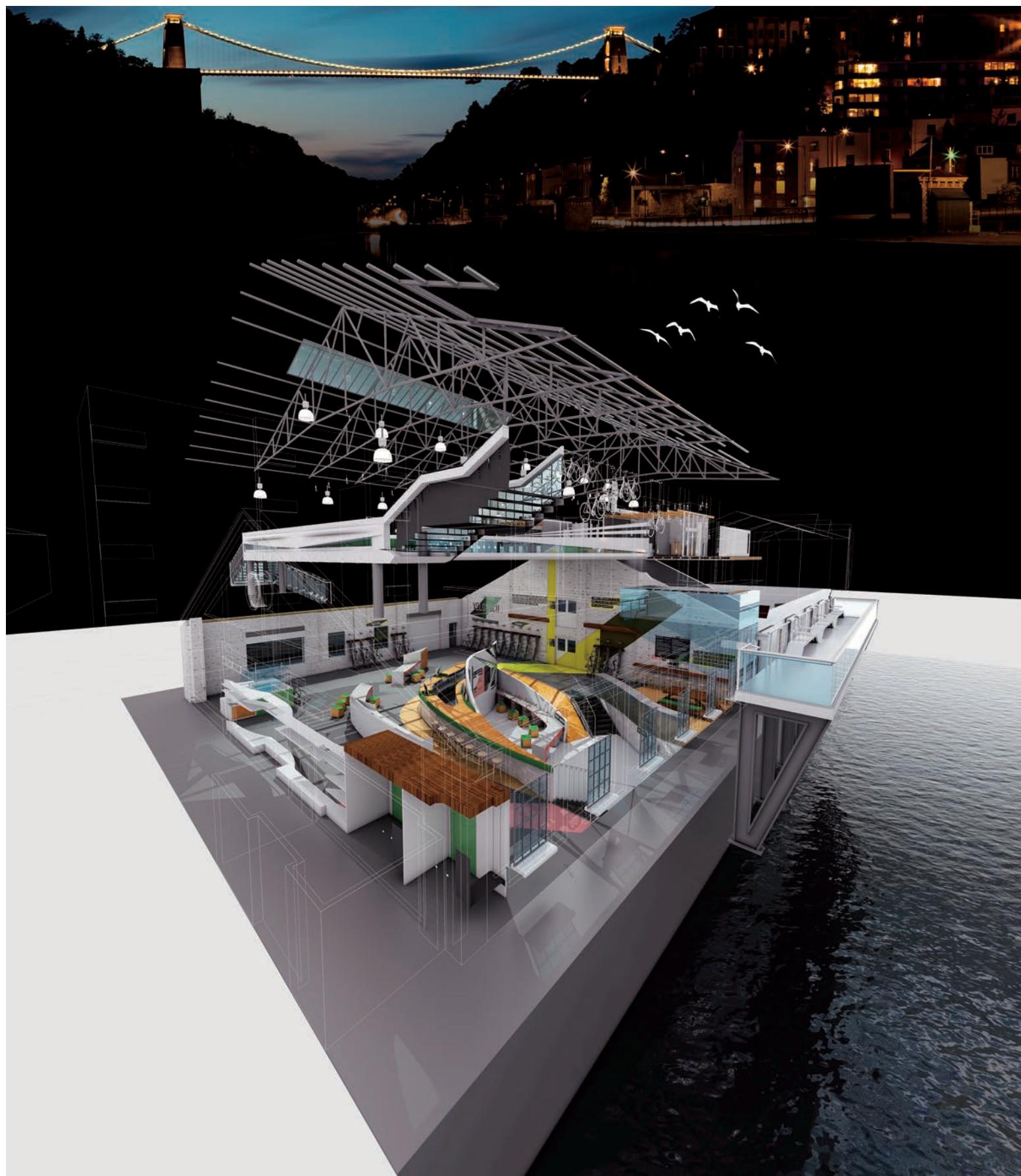
While it is often important to provide physical samples of materials, it is also logical – and, with computers, increasingly easy – to scan in images of materials and artefacts that complement the drawn information. Scans of finishes should be located close to the areas to which they relate and repeated close to every area in which they appear.

Comprehensive evidence, in image and text forms, eliminates the need for superfluous embellishments. Decorative logos and emblems are more likely to confuse than to clarify, and an elaborate and repetitive titling of each sheet is pointless and visually redundant. It may, however, be

diplomatic to feature a client's corporate identity.

The pages that follow, which have been selected from much more extensive presentation sequences for each of the featured projects, illustrate particular approaches to the presentation document's mission to explain.

The illustrated projects demonstrate how each designer brings distinctive personal style to presentation techniques and image making that complements the spirit and intention of their proposal.

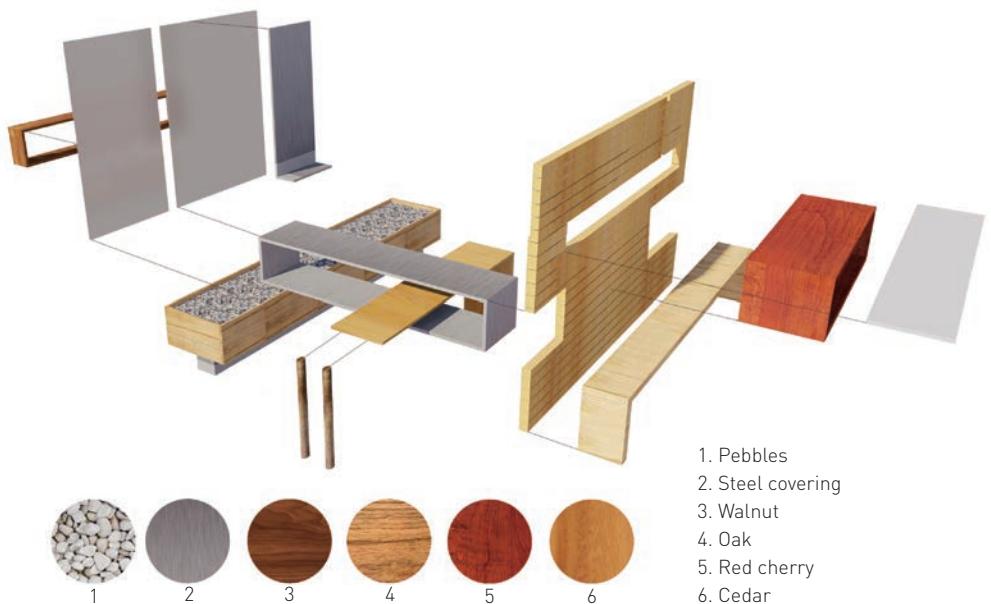


Opposite

This 'exploded' perspective view exploits the computer's capacity to make complicated and intricate forms to give a detailed description of the core area of the project. The floating roof structure and the water offer convincing reminders of the context.

Right and below

The 'exploded' top image here identifies and describes the individual elements that make up the complex display system that occupies the centre of the perspective below it.



Case study Linking levels

The ground-floor plan and isometric describe this proposal in purely factual terms. The plan demonstrates layout. The isometric extrudes the ground floor and relates it spatially to the upper level and its lowered ceiling and light fittings.

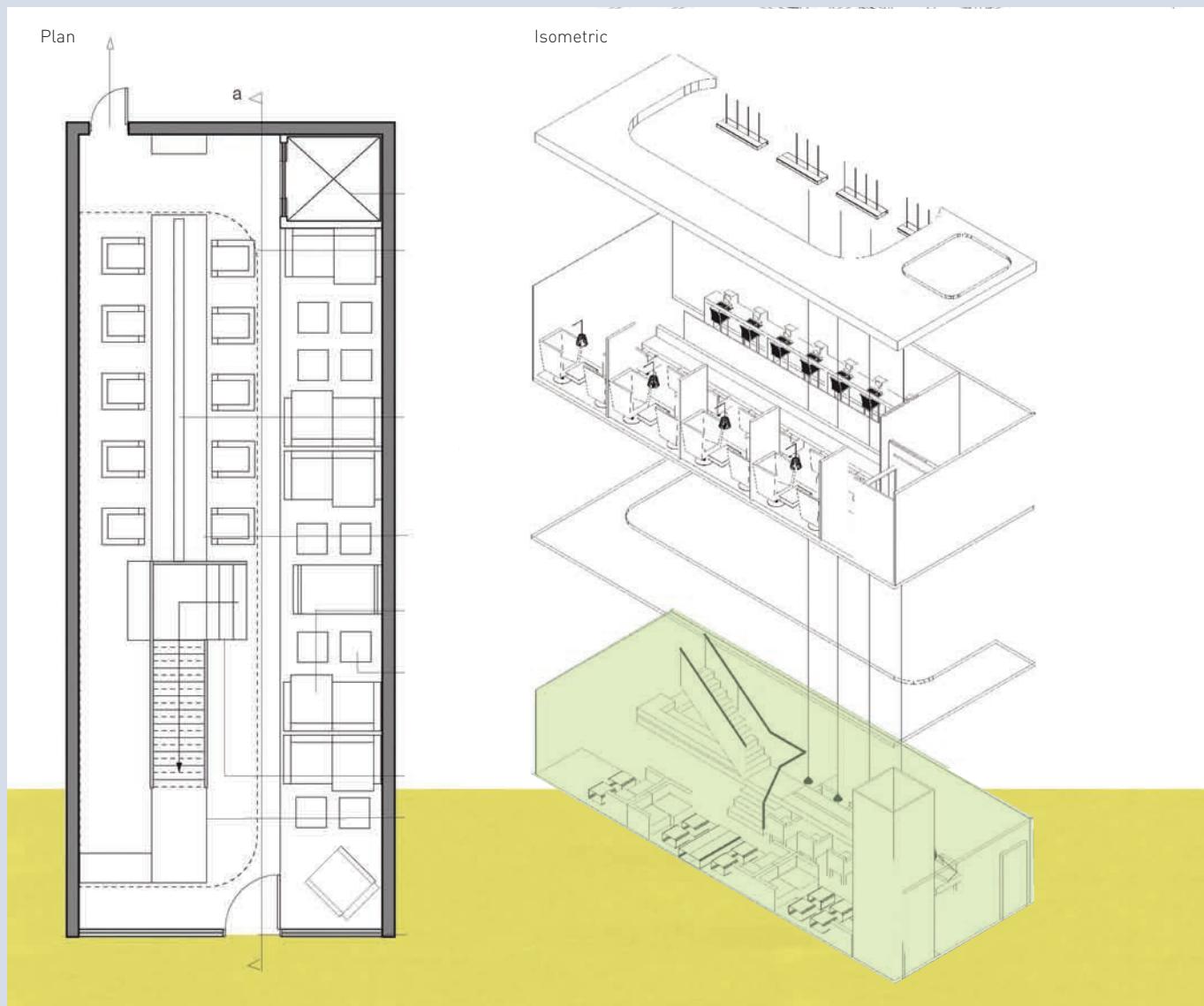
The perspective view explains, in a deliberately selective and mannered fashion, the atmosphere created by materials and lighting – and this is complemented by the scanned images of materials and fittings, set out formally and objectively at the bottom of the presentation.

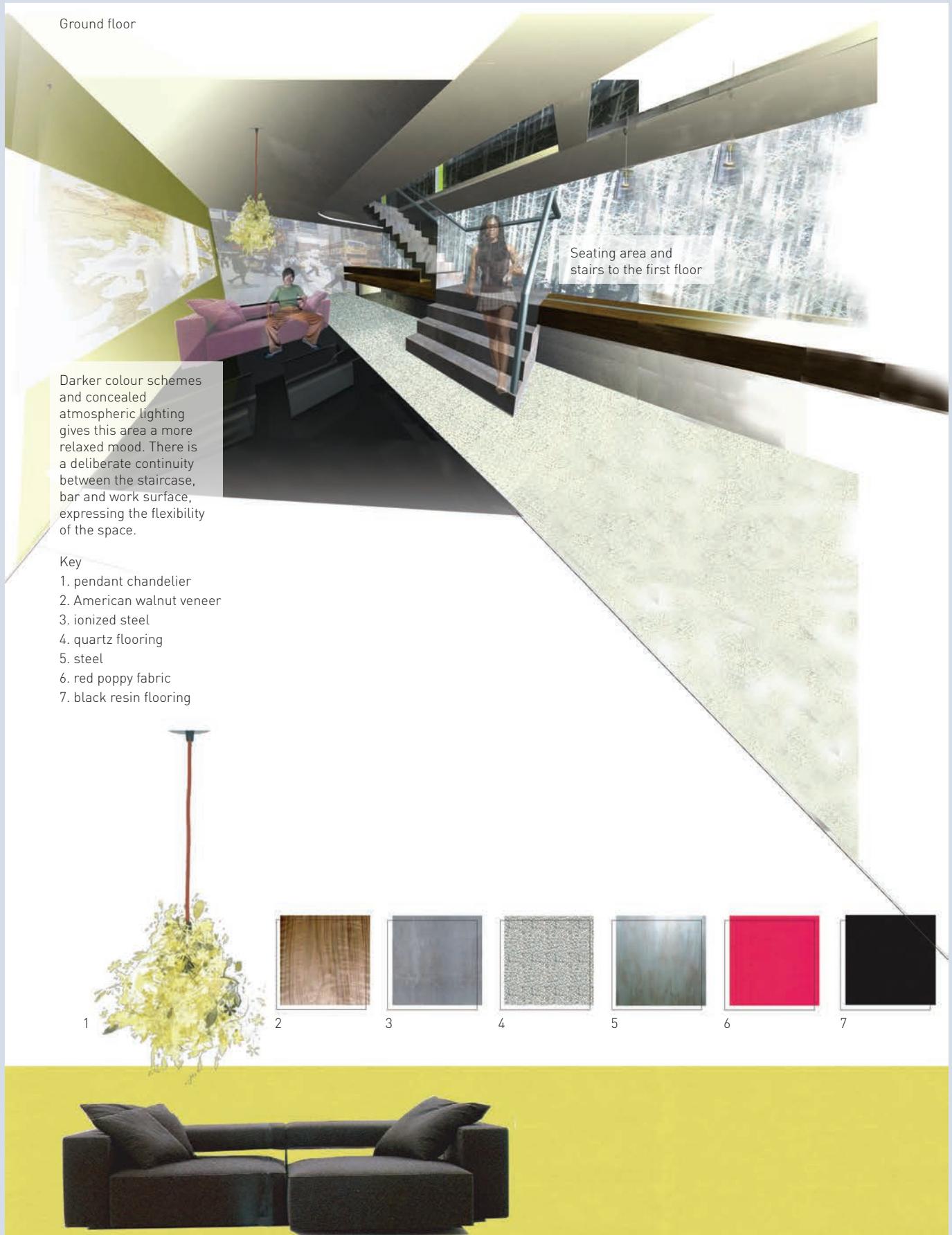
Below

The isometric view explains the relationship of the lower floor plan, on the left, to the upper floor.

Opposite

The three dimensional view and material samples complete explanation of the lower floor.



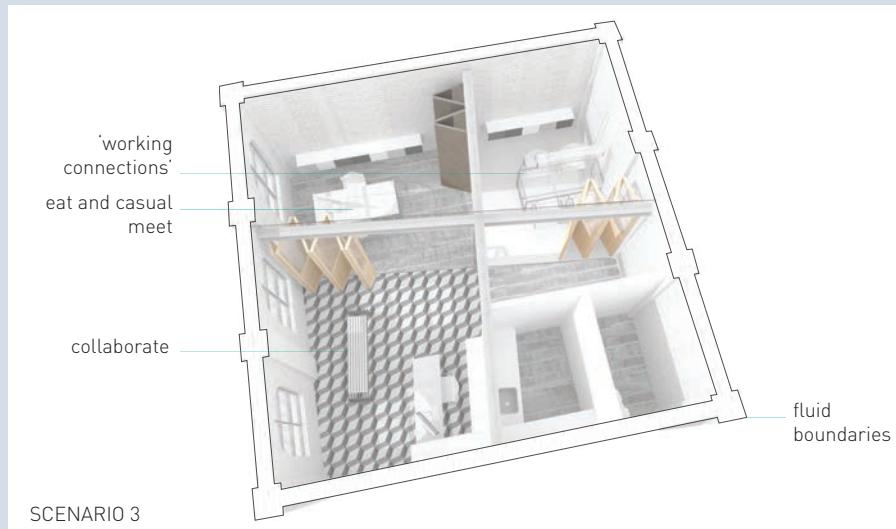
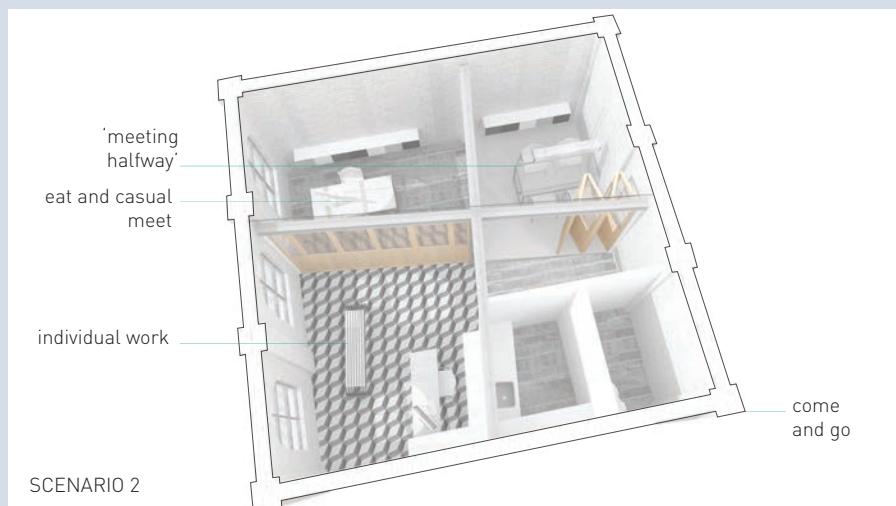
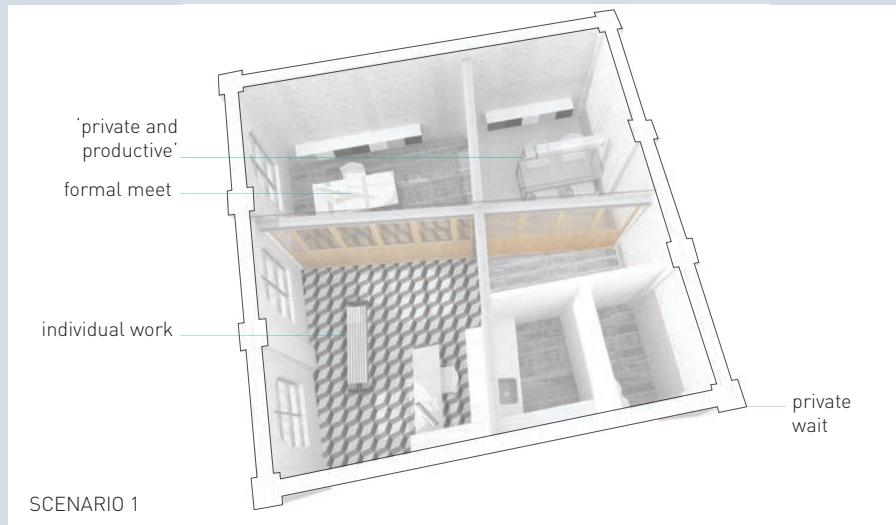


Case study Explaining flexibility

Complex proposals may involve options for layouts or, as in this project, the use of movable partitions. For both a series of drawings, illustrating the range of conditions, is the clearest way of explaining things.

Right

Extruded plans show the three options and text identifies functional strategy for each.





VIEW FROM OFFICE

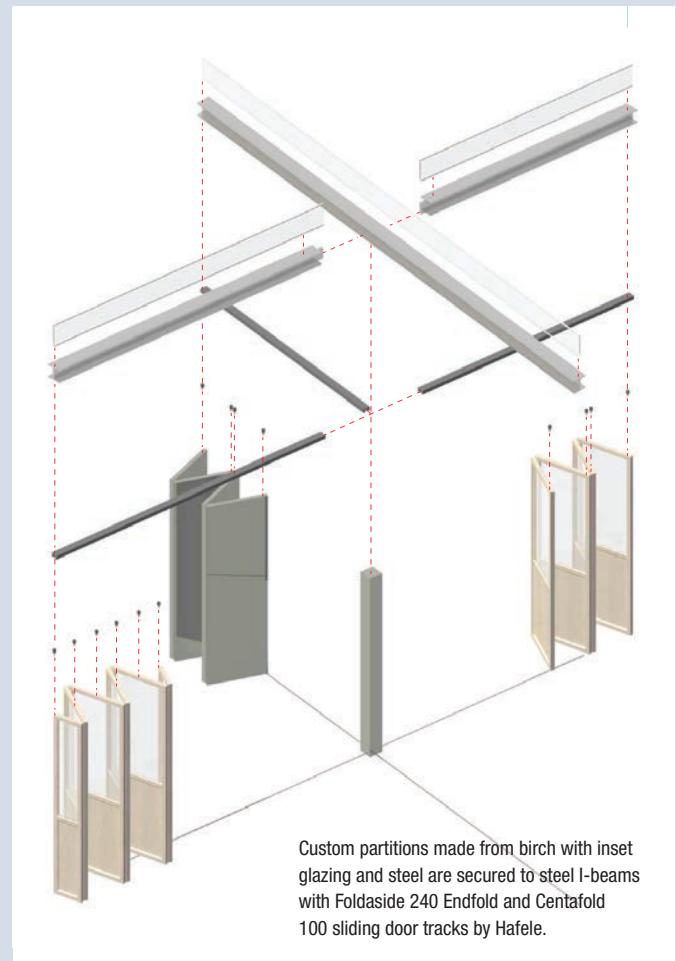


VIEW FROM RECEPTION



VIEW FROM OFFICE

Left
Views amplify the explanation.



Custom partitions made from birch with inset glazing and steel are secured to steel I-beams with Foldaside 240 Endfold and Centaifold 100 sliding door tracks by Hafele.

Above
A diagram illustrates structural principles.

Case study Context and content

A good presentation will explain a proposal from the very general to the very particular. Three drawings here illustrate the range of images necessary to describe a complex physical solution, within a complex existing building shell, to a complex brief.

Below

Location maps explain the geographical context and a photograph establishes the character of the existing building, drawing attention to the large window that defines the interior organization.

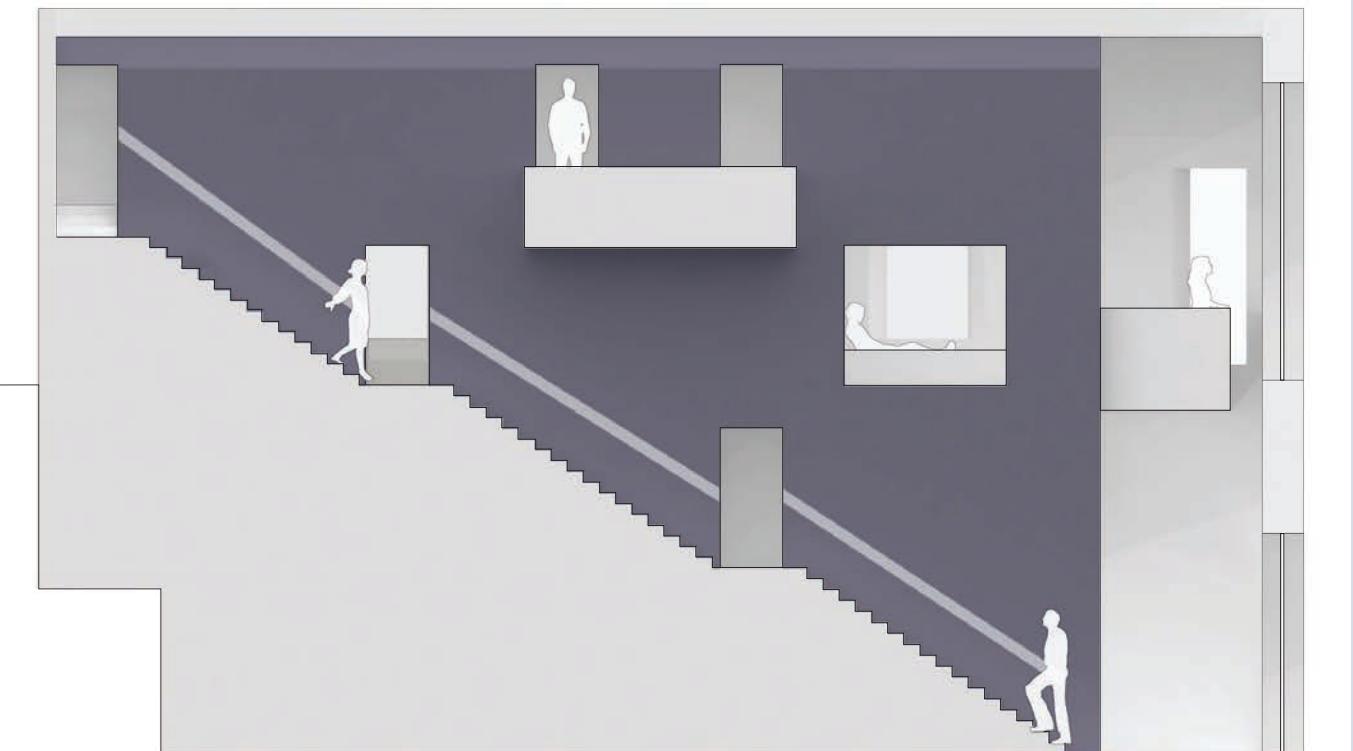
The residence is located in Inverness city centre, along the banks of the River Ness, with close connections to the city's services as well as the surrounding community. Potential clients (between the ages of 18 and 25) would require continued support throughout their adult life and would be unable to live independently.

Space is provided for two live-in carers who, with the potential help from additional day staff, provide 24-hour support.

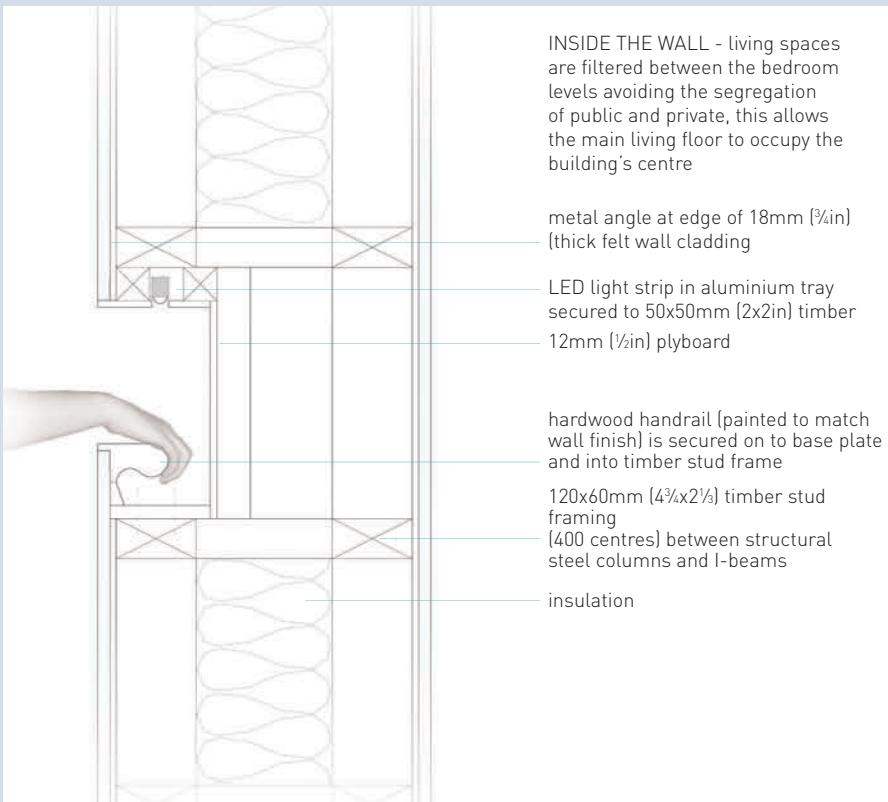
The home is a social hub for the group, encouraging the building of a network of friends. Each individual finds their purpose and role within the small community, with their care network helping to equip them with life skills throughout their long-term stay.

The chosen site is currently home to the Highland Print Studios in Inverness. The long and narrow plot reaches to the river, with the front facade's large arched windows giving views of the river and hills beyond. At the back of the site, there is a private walled garden that is level with the main living space.

THE WALL living sections



OUTSIDE THE WALL - Visual connections are created between extruding balconies and the main circulation route, giving people a sense of activity and movement outside of the space they are occupying.



INSIDE THE WALL - living spaces are filtered between the bedroom levels avoiding the segregation of public and private, this allows the main living floor to occupy the building's centre

metal angle at edge of 18mm (3/4in) (thick felt wall cladding)

LED light strip in aluminium tray secured to 50x50mm (2x2in) timber 12mm (1/2in) plyboard

hardwood handrail (painted to match wall finish) is secured on to base plate and into timber stud frame

120x60mm (4x2 1/2) timber stud framing (400 centres) between structural steel columns and I-beams

insulation

Above

A diagrammatic section illustrates how a stair rises through the building and balconies allow residents to look into the stairwell and across the void through the existing high window to the river.

Left

Detail of the handrail set into the thickness of the stairwell wall. This could be treated more diagrammatically with rendered colours and materials, but this drawing illustrates the principle and provides a means to draw attention to refinements of construction that might be lost in a rendered image.

Case study Sharing the creative process

This proposal for the flagship store of a mobile phone retailer demonstrates the analysis of the brief and the principles behind the solution. The key feature here is a 'paint wall', and this colour theme is carried throughout the store. The featured colours are those of the mobile phone casings on offer, and the colours are also used

to represent the different downloadable apps that are available, updated sales for which are projected on to the store wall as a bar chart.

Below

The design encompasses the customer experience, and sets up a clear process for using the store.

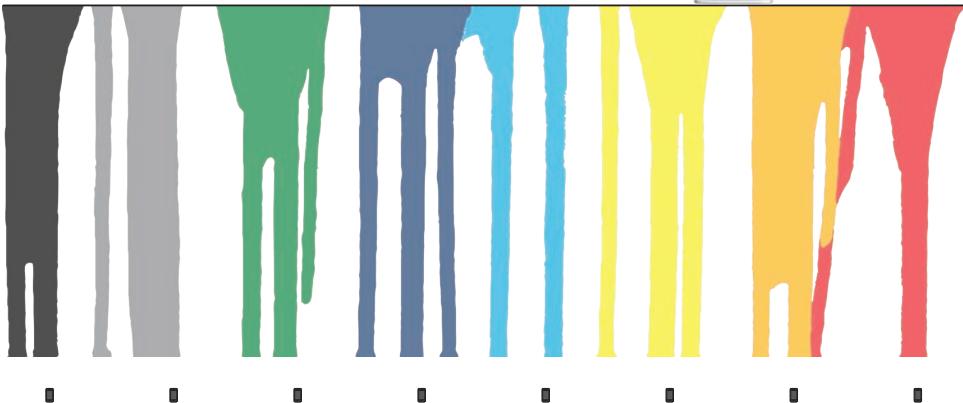
Opposite

The photographs demonstrate how the colour cascades were created in modeled facsimile. The digital image shows how the colour wall would look in situ.

STORE PROCESS: MOBILE PHONE SHOP

STEP 1

- Select Applications
Using the touch sensitive screen customers can drag the selected application onto the phone.
- Select Price Plan
Customers then select a price plan to go with their phone.
- Place Order
Once the customer is happy with their selection, they can place the order which can be collected in the basement level.

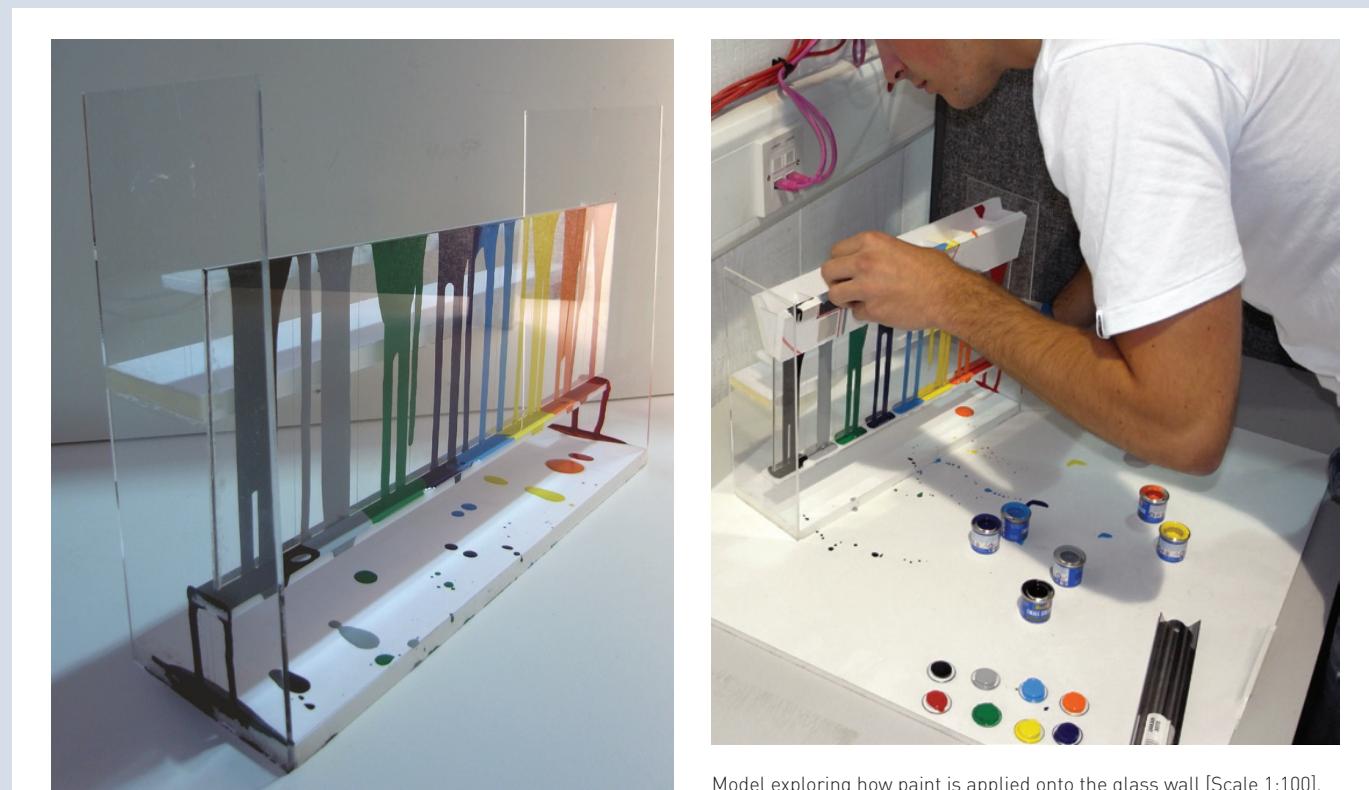
STEP 2

- Choose Handset
Once the customer has customised their applications and price plan they can select the model of phone they want.

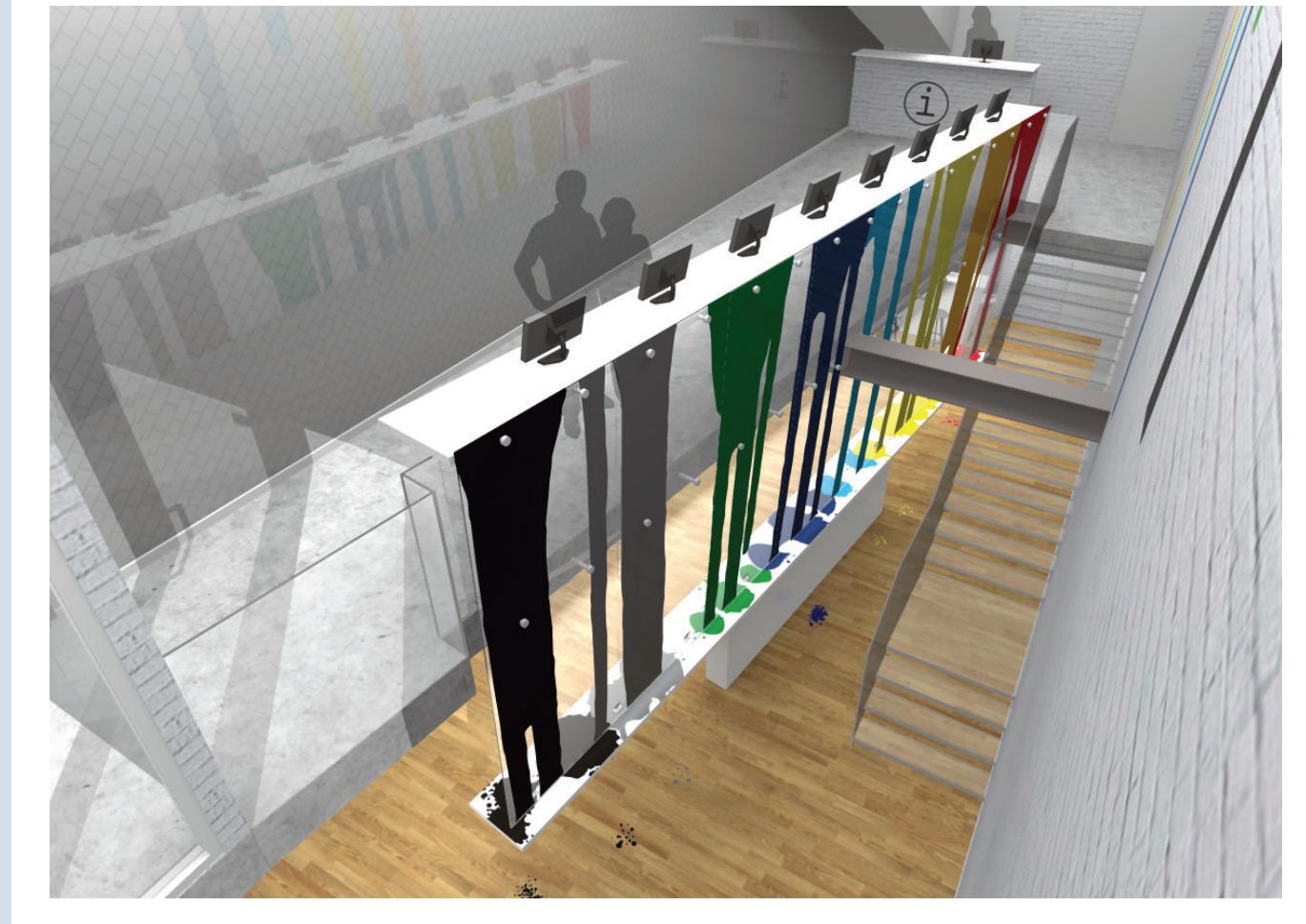


STEP 3

- Choose Colour
The customer then chooses the colour of the handset
- Make Payment
Once happy with their choice, the customer makes a payment to a sales assistant, and once activated, the phone's customised features will be updated via download.



Model exploring how paint is applied onto the glass wall [Scale 1:100].



Case study Explaining the hypothetical

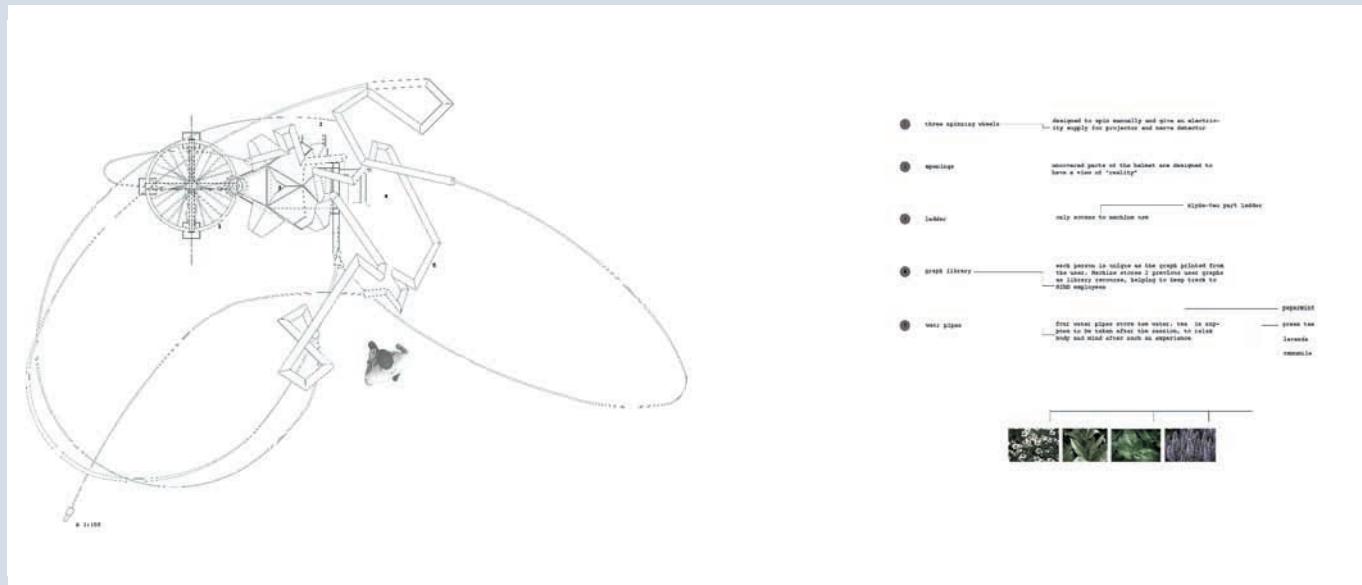
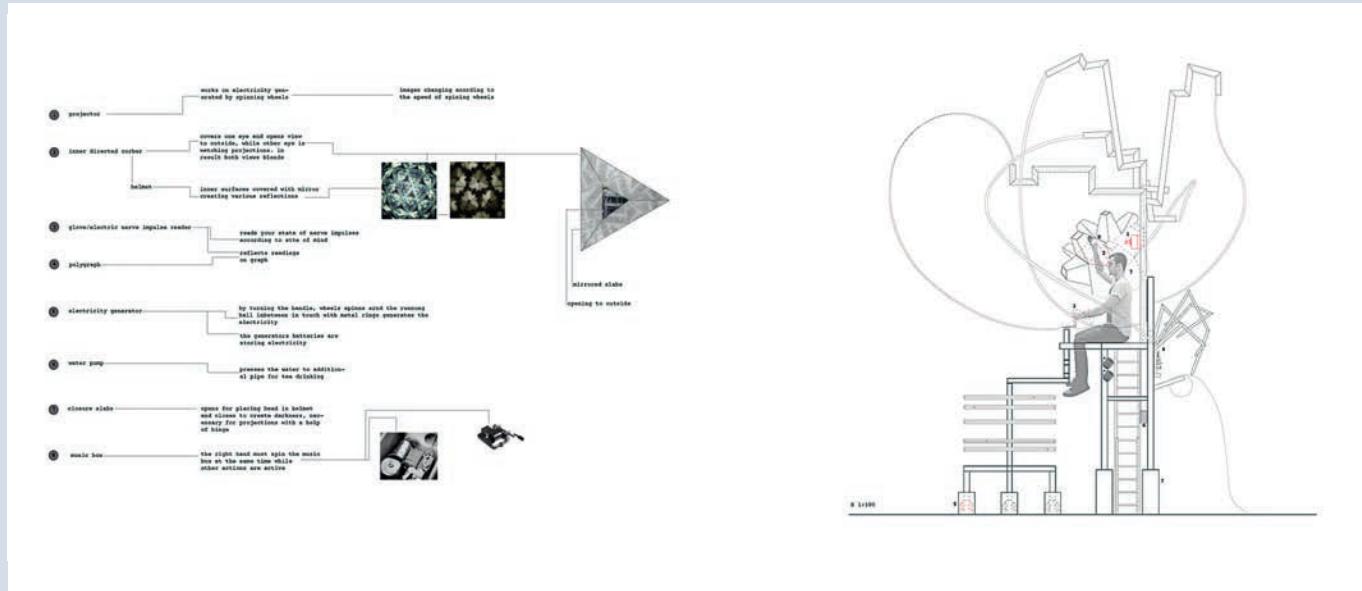
These drawings illustrate devices to increase public awareness of schizophrenia. Light drawings and small text on generous white background suggest a scientific objectivity and the monochromatic perspective views show a similar restraint.

Below

Drawings of the proposed device, with text describing its features and functions. The layout includes photographic materials samples to break up the flatness of the page.

Opposite

Stark black and white photographs retain the detachment from the everyday.





Case study Factual underpinning

Expressionistic renderings are given credibility by detailed rationales and analyses that are given equal weight in this presentation.

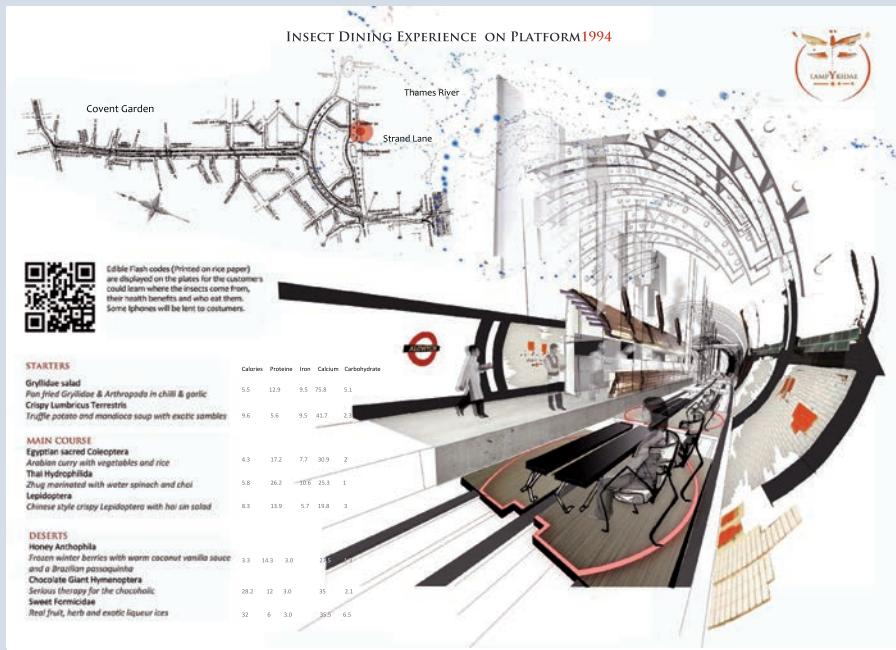
The proposal is for a restaurant serving insect cuisine in a disused tube station. The fantastical elements are given validity by the judicious use of factual information, structural data and technical drawings.

Right

Site plan and perspectival drawing alongside an unusual menu.

Below

Compelling facts and explanatory text provide gravitas.



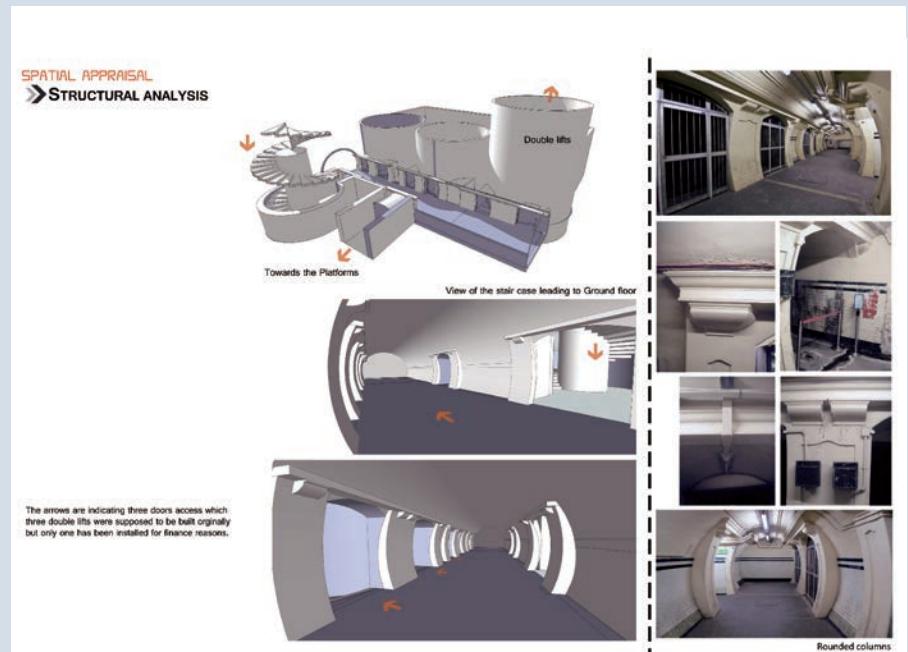
Eating Insects

- Environmental Benefits:**
 - Farming insects is a better farming technique by raising insects at home
 - Only small spaces are required for insects growth as an economical resources, and this could save forests which might help the development of new species
 - It can provide a valuable food source during droughts, floods and other emergencies as suggested by the FAO.
 - Could help to feed poor countries with a different type of natural resource
- Health Benefits:**
 - Insects are rich in protein and some minerals - eg crickets, caterpillars and grubs are lower in cholesterol than beef and pork
 - Insects are not a replacement for meat, just a supplement.
 - 80% of the World's population eat insects as part of their regular diet
 - There are over 1900 species of edible insects to eat in the world

Not Eating Insects

- Our existing agricultural systems consume enormous tracts of land and quantities of water.
- Food production will have to increase by between 70 and 100 per cent, while the area of land given over to agriculture will remain static or even decrease as a result of land degradation and climate change' (Steve Connor, 2011).
- Future overproduction and the cost of producing so many animals for food, could be devastating for the environment, the animals and our bodies.
- The FAO suggests that eating less meats and dairy products could greatly improve health, the environment and animal welfare.

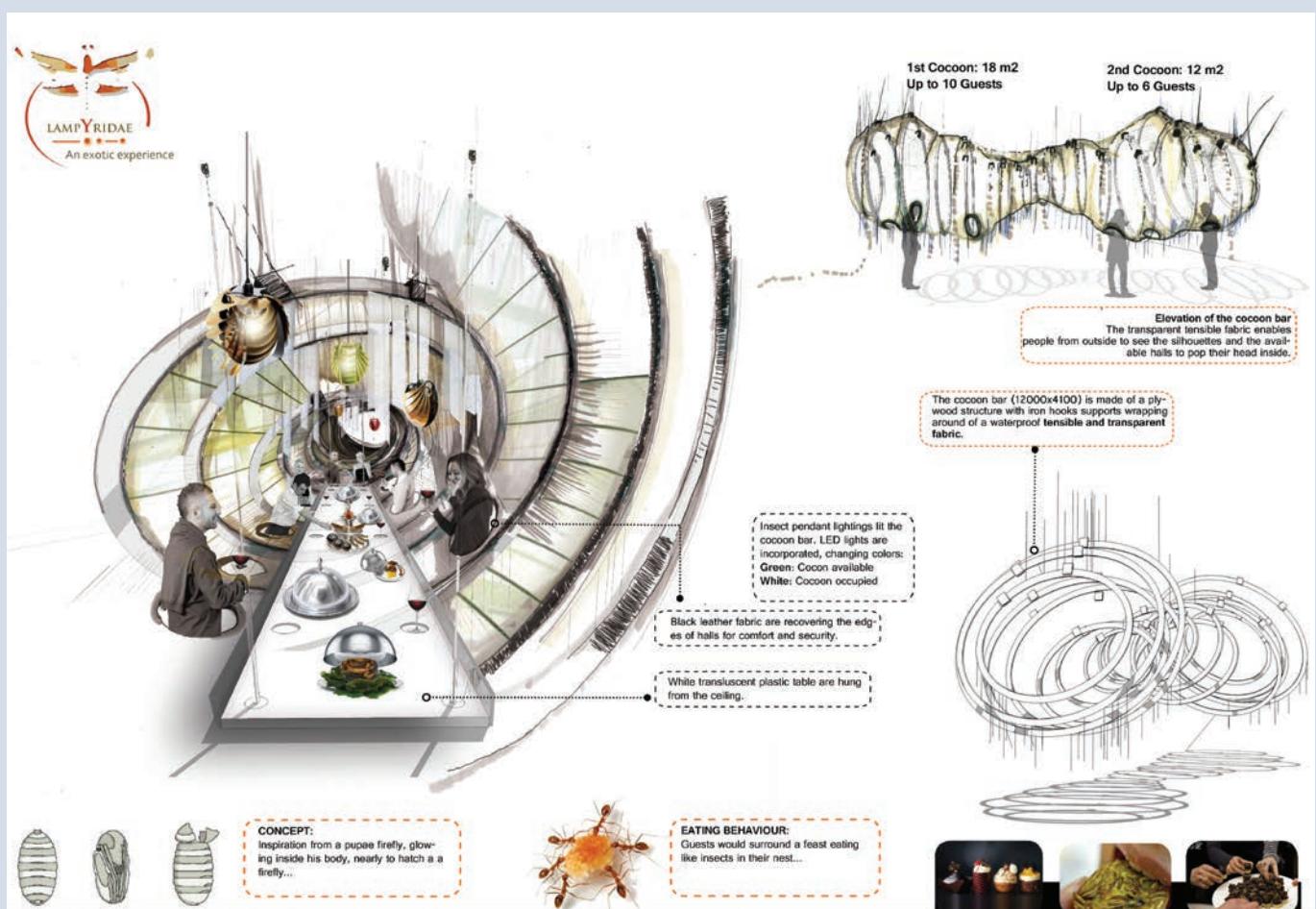
The Brief

**Right**

Structural analysis of the site along with infographics and detail photographs ground the project in reality.

Below

Conceptual renderings alongside sectional drawings and conceptual information.



Case study Focusing attention

These drawings relate to the more complex image featured on pages 14 and 15 which illustrate steps in the process of digital rendering, and to the details on page 13. The more linear versions illustrated here emphasize the contours of the principal elements, their separation and interaction. While such details will be clearly visible in reality their impact may be diluted at the smaller scale of the rendered drawing.

Below

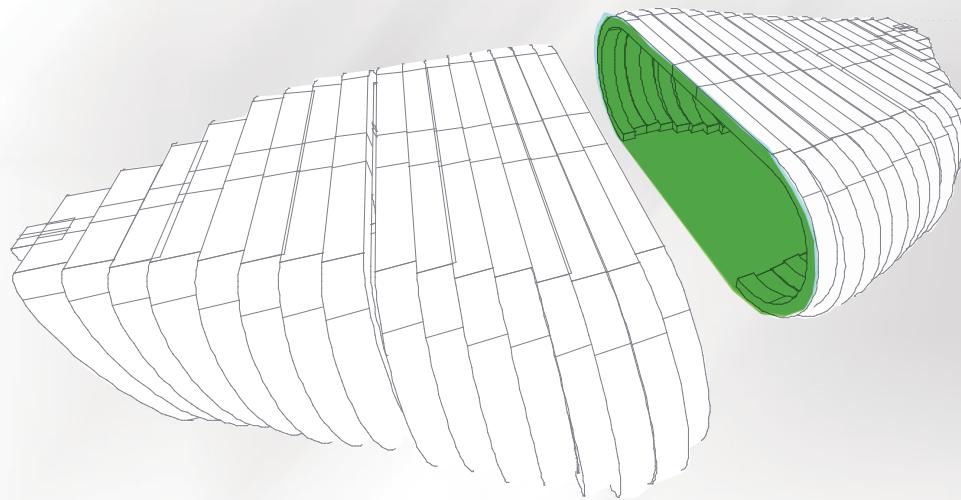
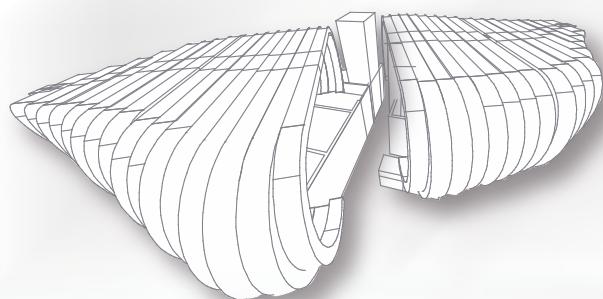
Two images, floating against a grey background tint, define individual ribs and their component pieces. The flat green tint identifies a glass wall.

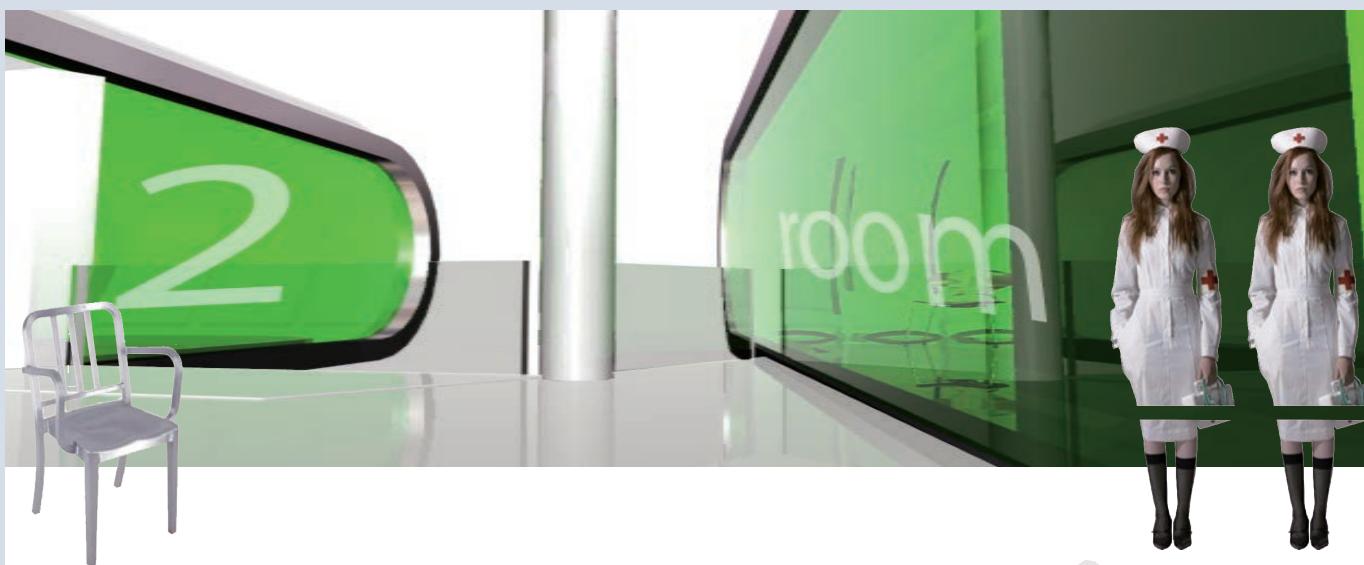
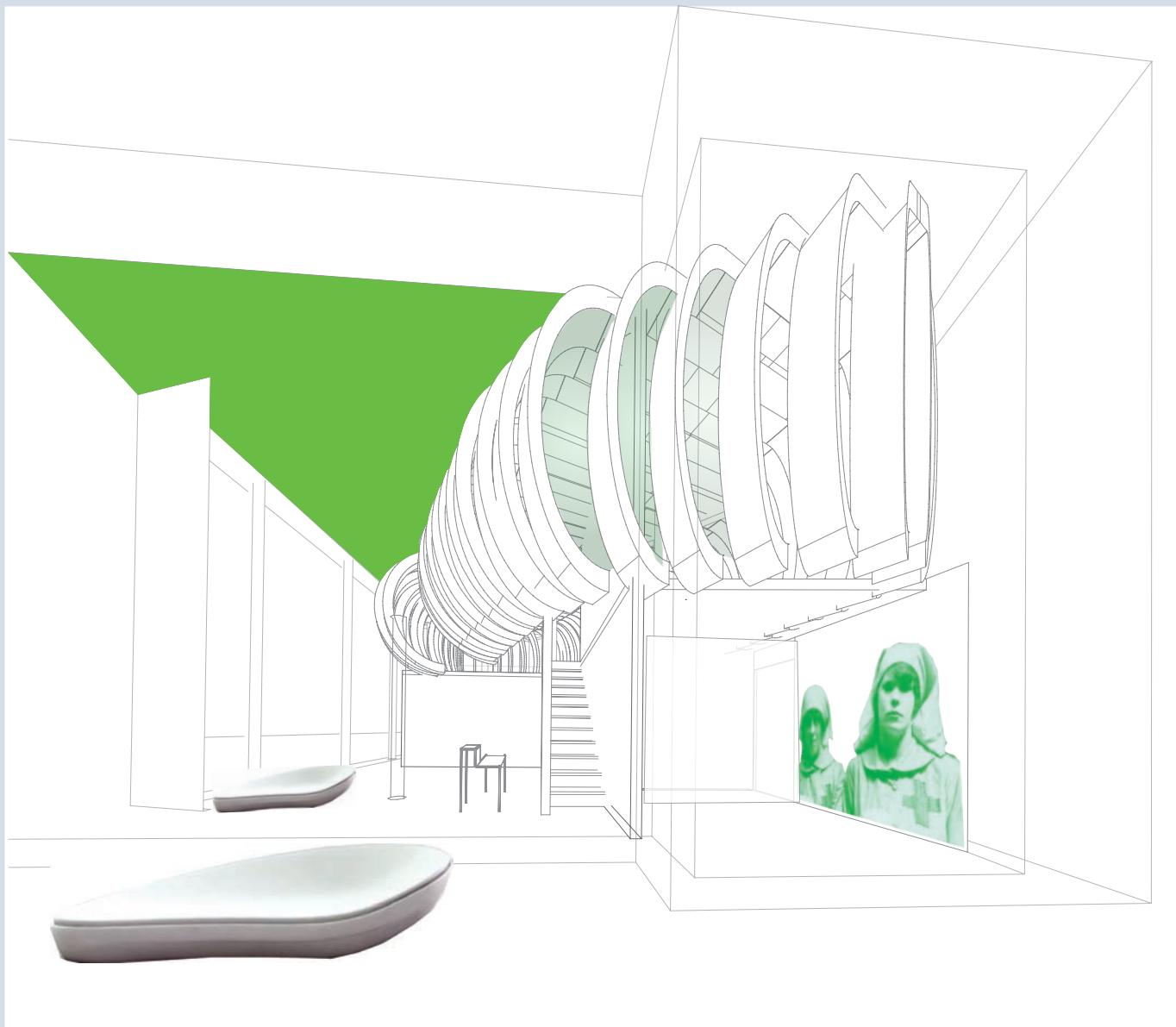
Opposite top

Linear diagram gives way to linear perspective illustrating more clearly the separation of components and the nature of the internal space. Familiar elements, the stair and table, give scale.

Opposite below

This diagrammatic perspective image introduces materials, graphics and furniture and adds surface reflectivities and transparencies.





Case study Hard-edged thinking

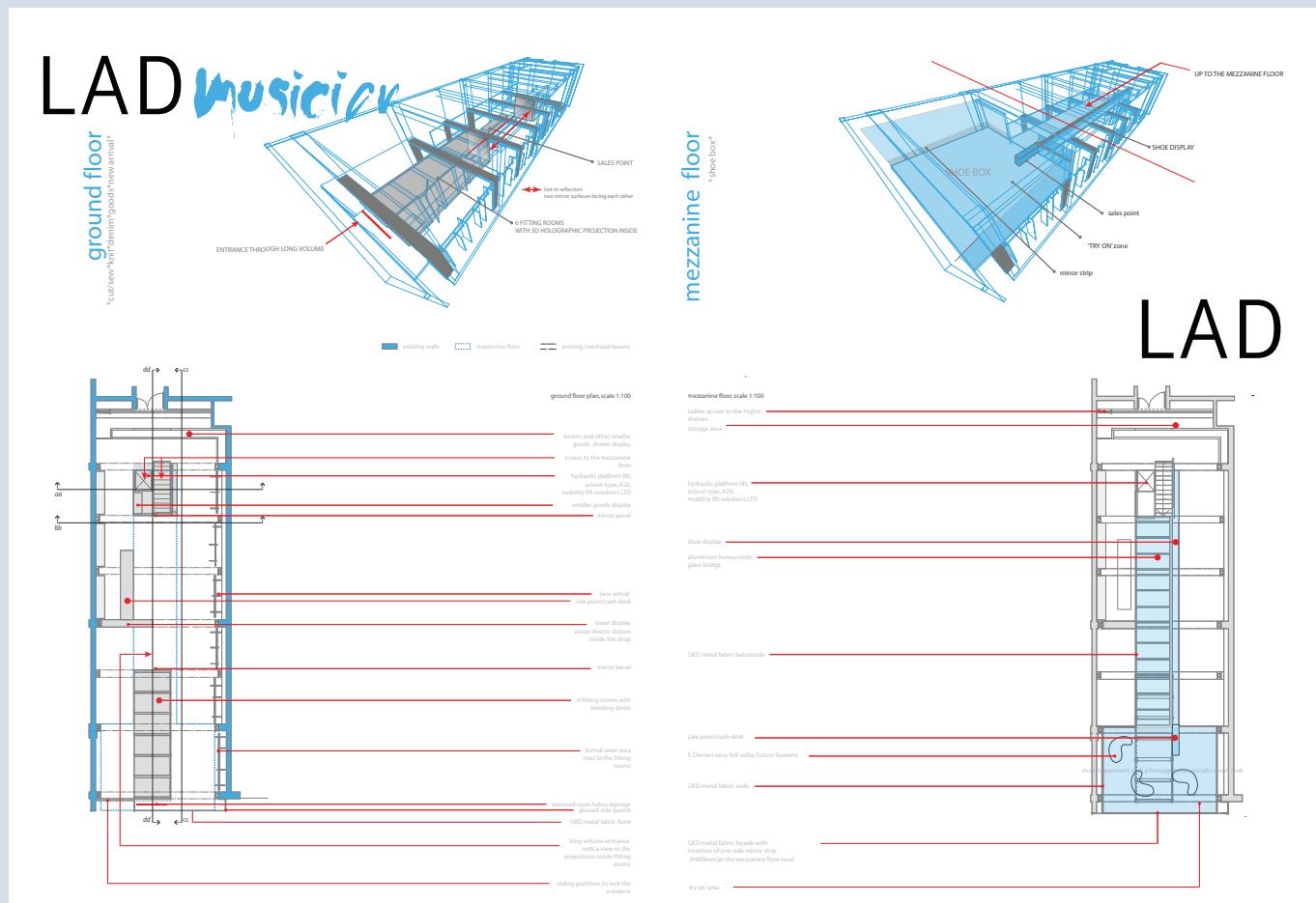
These examples, selected from a more comprehensive set of presentation drawings, demonstrate how complementary two- and three dimensional, line and rendered images enhance understanding of a small but complex volume. The style of drawing is fine-tuned to suit its content.

Below

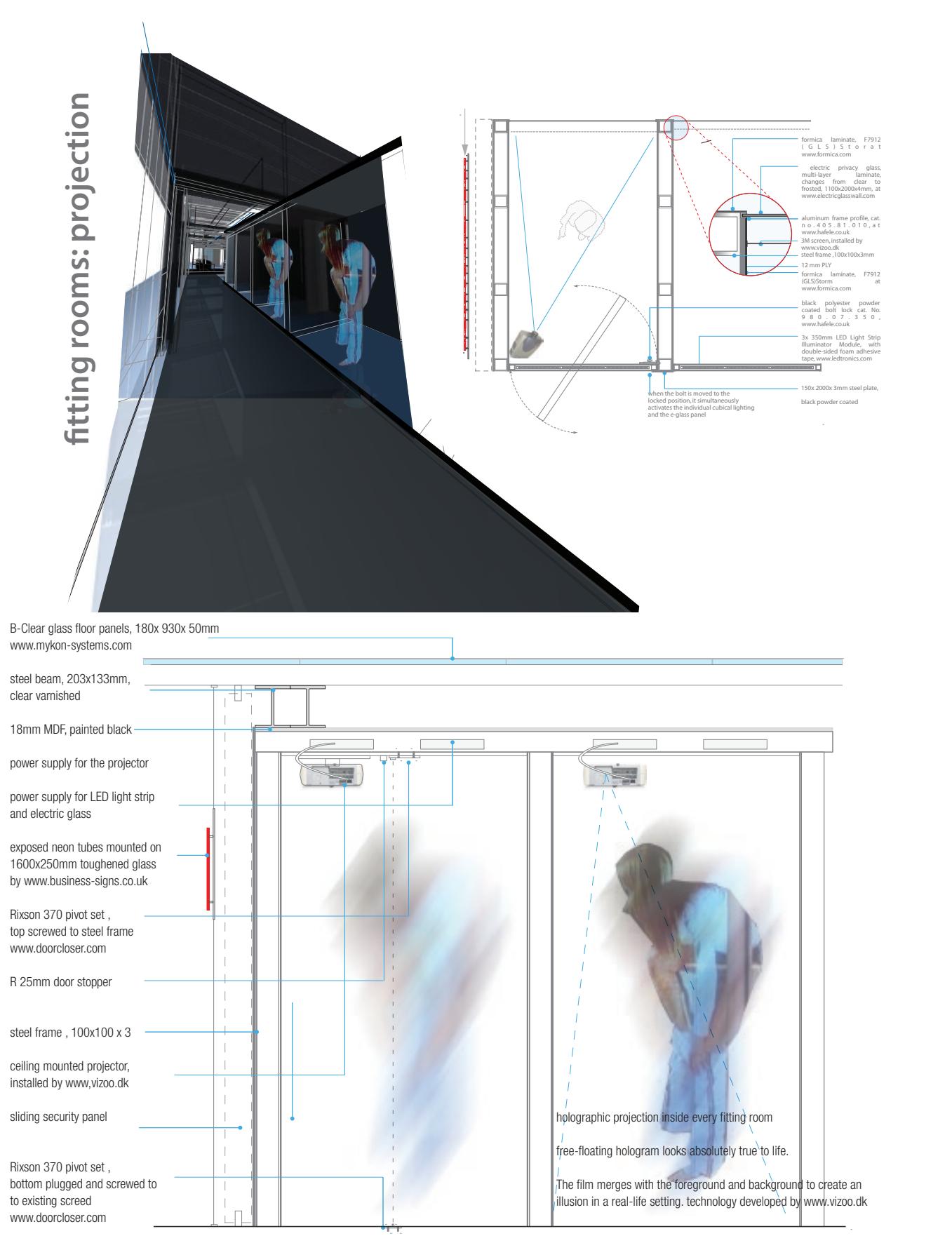
The blue three-dimensional images identify solid and void elements and locate principal activities within the building shell. The position of secondary elements is detailed on the plans which also establish the location of section cuts.

Opposite

The details provide enough information about materials, equipment and assembly techniques to enable a builder to construct the changing booth. With a proposal as particular as this it also makes sense to describe the aesthetic intention so that the builder is clear about the intended outcome. While the drawings provide a client with more technical information than they might wish, they make clear that the proposal has been well considered and its aspirations can be realized.



fitting rooms: projection



Case study Towards abstraction



As designers refine and become more intensely involved with the development of a project, so the nature of the drawings they make to describe it often take on a particular identity that strays from the strictly factual but is singularly appropriate to the underpinning concept. Such drawings can be the most effective way of communicating, perhaps subliminally, the spirit of a project to a client. These two drawings demonstrate that creative and practised use of computer imaging allows the designer to deploy, with equal facility, distinctly different drawing styles, inspired by – and complementary to – the spirit of the project itself. Both are intended to explain the concept that underpins each project and their distinctive vigour suggests a creative confidence that has grown from an immersion in the design process that has taken the designer a long way beyond the obvious and the familiar.

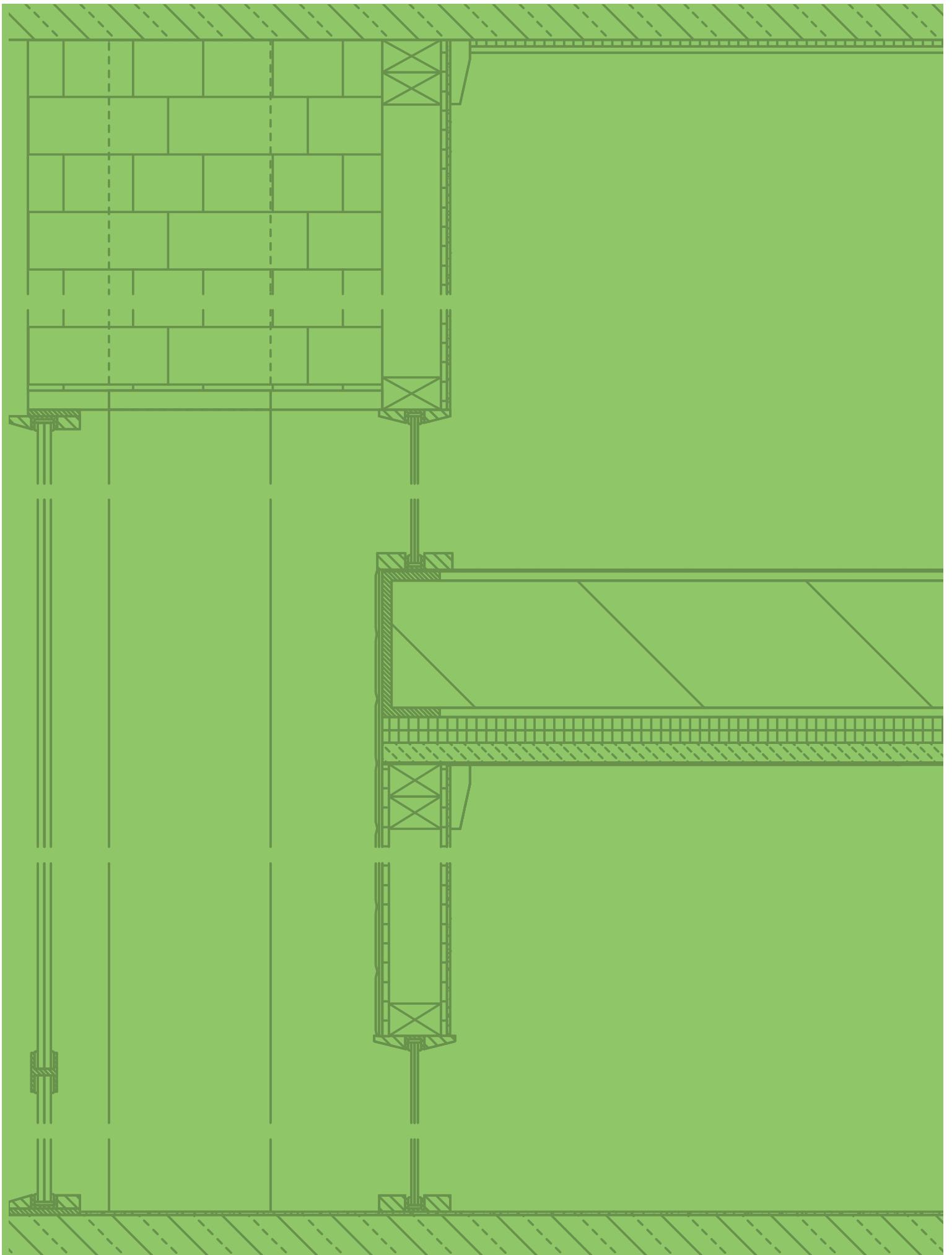
Left

The same trompe l'oeil pattern used on the ceiling of the lower level and floor of the upper, dominates the image as it would the built interior. Single-point perspective is employed independently on each level, but the combination of two viewpoints adds ambiguity to the image and greater significance to the illusion. Each level demonstrates variations on shared themes: star patterns on similar but different padded backgrounds, the hemispherical chairs, resting on the floor above and hanging from the ceiling below, the silhouettes of animals and birds. The stars floating on the edges of the drawing repeat an important decorative motif and help give the illusion of depth. Black and white figures emphasize the mirroring of planes.

Opposite

The conceptual essence of the project again determines the nature of the drawing. The interior of a simple cellular structure is made extraordinary by an eclectic collection of elements, all of which, including wall finishes, are crucial in establishing the character of each level. Each object is set, with equal status, against a black background to establish its character. The colours of the figures, which give scale and explain function, complement and augment those of the levels they inhabit. The image of the moon relates to the building's function as a predominantly nocturnal place. The word 'perspective', which is itself in perspective but describes a drawing which is not a perspective, confirms a provocative wit determined to provoke reaction and encourage speculation.





CHAPTER 4 PRODUCTION

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The designer's role

After formal presentation, and once the client has approved the final design drawings, it is the designer's job to produce a set of 'working drawings' or 'production drawings'. The number of these will vary from project to project, but their function remains the same. They will provide the building contractor, and anyone else involved in the construction process, with a comprehensive description, in drawings and words, of the full extent and quality of the work necessary to complete the project satisfactorily and this information will also become the basis of the contractual agreement between client and builders. The designer must provide plans and sections of the complete project and of every element within it, to describe in detail the materials to be used, the sizes of components and the method for their assembly. Words are as important as drawings at this stage. The two are mutually supportive. The words, and numerical dimensions, will describe materials and methods of fixing components, large and small, that make up the finished elements. Plans, sections and elevations, provide the means to link written notes with the items and areas to which they refer. Most projects also require general notes about the standard of work and quality of materials that apply across the job and these may be added to a drawing or, if extensive, treated as a separate document.

It is usually desirable that a designer also takes responsibility for the supervision of work on site if quality is to be assured and the unforeseen difficulties that often come to light during construction are to be dealt with successfully. Almost inevitably with any interior project, particularly one in an older building, conditions will be discovered in the course of the work that require changes to the designer's original intention. It may be a structural problem that demands additional work or the uncovering of an extant element that is worth incorporating into the new. If discoveries require extra work then the contractor is entitled to be paid for that. If, as occasionally happens, the volume of work is reduced then the client is entitled to a reduction. If disputes arise it is the designer's role to act as an arbitrator to ensure, on the client's behalf, that the extent and quality of the job matches that quoted for; and, on the contractor's behalf, that payment is made for completed work and for extra, unforeseen work that may have become necessary during the course of the contract. While this may be the result of site conditions that were not apparent during the initial surveys, which are necessarily completed before it was possible to carry out exploratory demolition it may also result from changing requirements on the client's side. Occasionally, it may be the result of designer error, and, although it may be painful to admit shortcomings, it is usually sensible to do so since

it will be fairly obvious who is to blame, and stubbornly maintaining innocence in the face of contradictory evidence can only lead to a loss of credibility and trust.

A completed set of production drawings will allow a builder to estimate the cost of the building work and produce a 'tender', which is an estimated cost of all necessary work, including labour and materials, and the total sum for which the builder is prepared to carry out all the work. Sometimes clients will nominate a contractor, usually on the basis of a previous successful collaboration, and it will then be the designer's job to advise on the fairness of the uncontested tender. This has the advantage of allowing the designer to discuss costs during the development of the project, and so control the budget. If the client and contractor have a well established relationship and mutual trust then the nature of the designer's role changes slightly and some of the responsibility for maintaining quality is reduced. It is, however, more usual for at least three contractors to tender for a job, and for the one offering the lowest price to be given the work. It then becomes the designer's responsibility to check that the successful contractor is capable of carrying out the work to a satisfactory standard. This applies particularly if the tender is lower than anticipated, which can suggest that the contractor has miscalculated or is over-anxious to get the work and may not have the reserve resources to deal adequately with complications that arise in the course of the contract, or, at a more fundamental level, to pay initially for materials and labour.

Designers should not expect to know everything. As the individuals ultimately responsible for the success of a project, it is more important for them to be able to bring an intelligent, critical eye to bear on its development and to control the interaction between aesthetic intentions and practical priorities.

It is often difficult to estimate the cost of an interior project accurately. When operating in new buildings the nature of the work may be clearly defined and easily estimated, and it is very unlikely that unanticipated work or significant amendments to the first contract will occur. With work to existing buildings, cost estimation is more difficult. Complications are often unforeseeable, emerging only as existing finishes are stripped back and problems are exposed.

It is also in the nature of interiors projects that the finishes and construction details that make up the bulk of the work will be unique to the particular scheme, and therefore an accurate price depends on the contractors' perception of the intrinsic difficulties involved in meeting unfamiliar demands. In large contracts it may be possible to have a quantity surveyor estimate costs but the scale

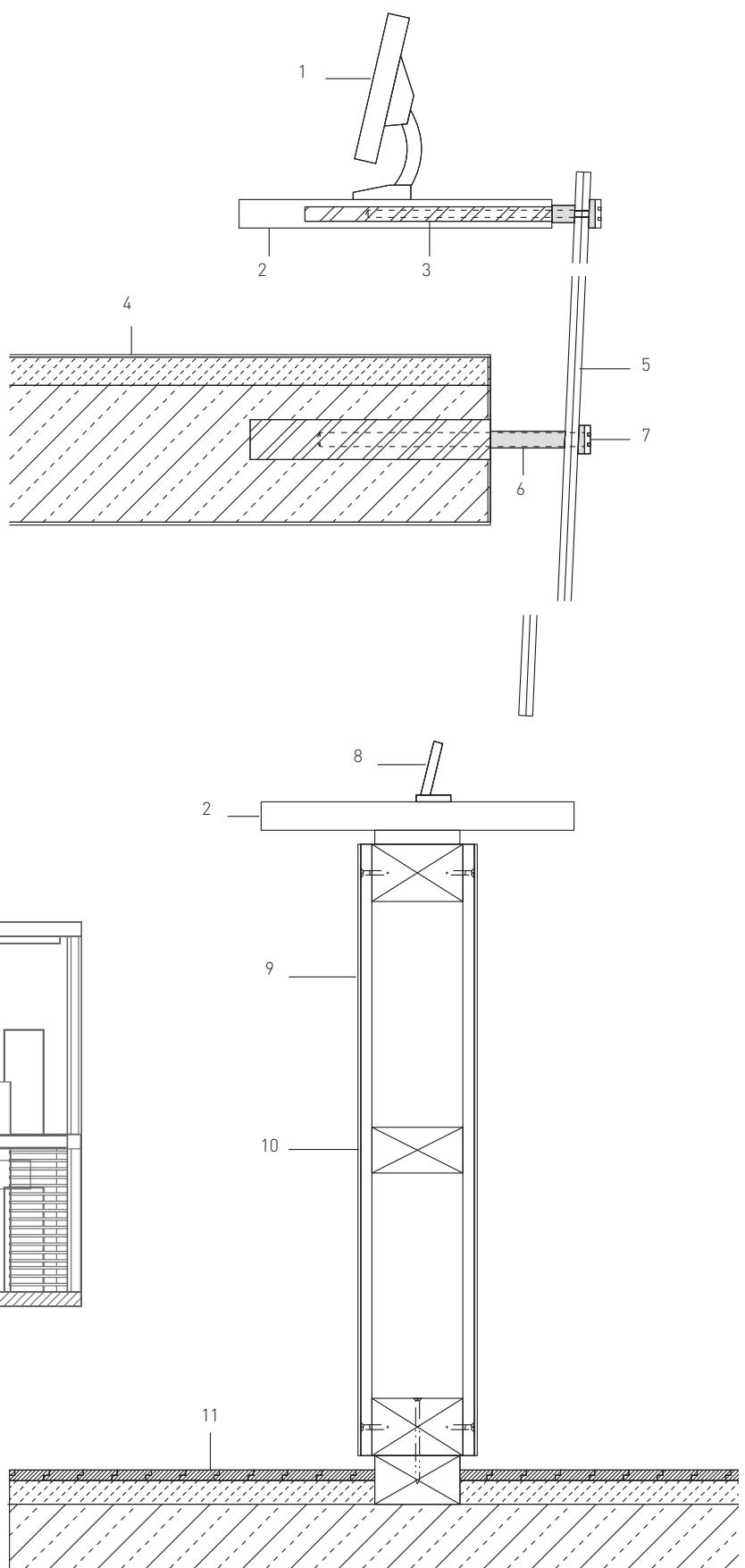
Right

This detail, for sloping glass panels, demonstrates the interdependence of written notes and drawing.

Vertical Section

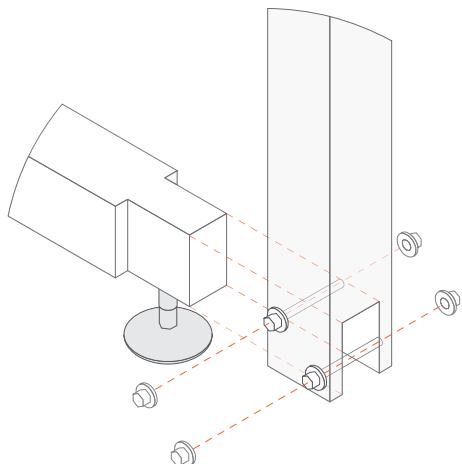
[Scale 1:10]

1. Touch sensitive LCD monitor
2. 50mm (2 in) solid acrylic shelf
3. Ø 30 mm (1½ in) steel fixing bracket
4. Floor construction:
5mm poured resin 'pearl
Grey' flooring finish by Teknai
50 mm (2 in) screed
240 mm (9½ in) reinforced concrete floor slab
5. Scott Amir an 10 mm (½ in)
laminated safety glass
6. Ø 30 mm (1½ in) rubber spacer
7. Ø 50 mm (2 in) pignose polished steel screwhead
8. Mobile phone display unit w. charging dock
9. 5 mm (⅛ in) white acrylic sheet
10. Plinth construction:
5 mm (⅛ in) acrylic sheet
20 mm (¾ in) MDF board
160/80 SW batten
11. Floor construction:
70/19 mm (9/16 in) ash boarding
50 mm (2 in) screed
245 mm (9¾ in) reinforced concrete floor slab

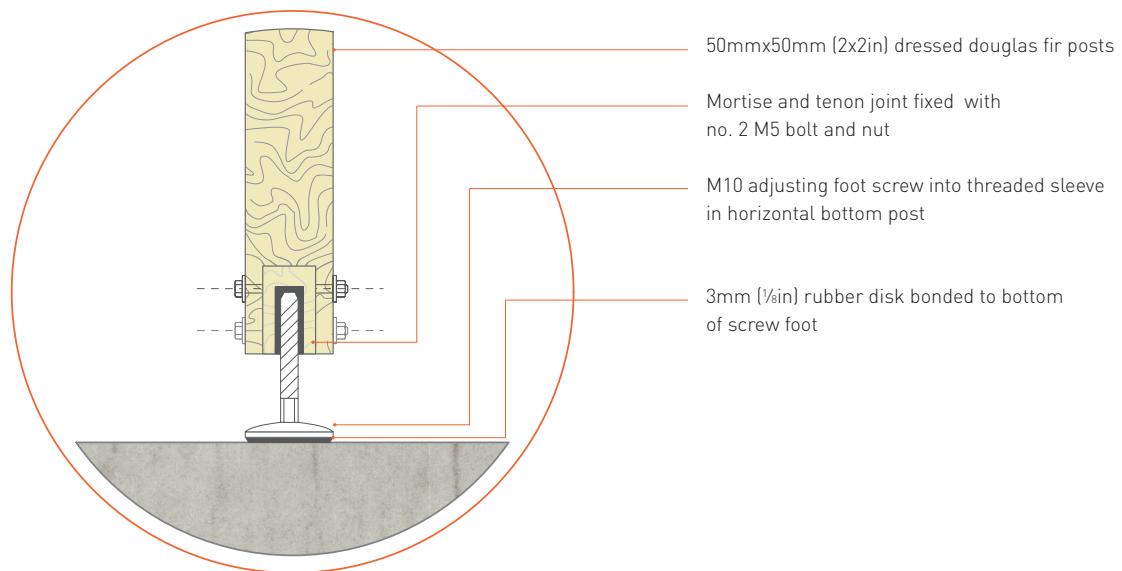


Below

An exploded isometric explains, visually, the assembly of a framing piece and helps understanding of the two-dimensional section, with notes that specify components.



Detail: Shelves 1



Detail: Shelves 2

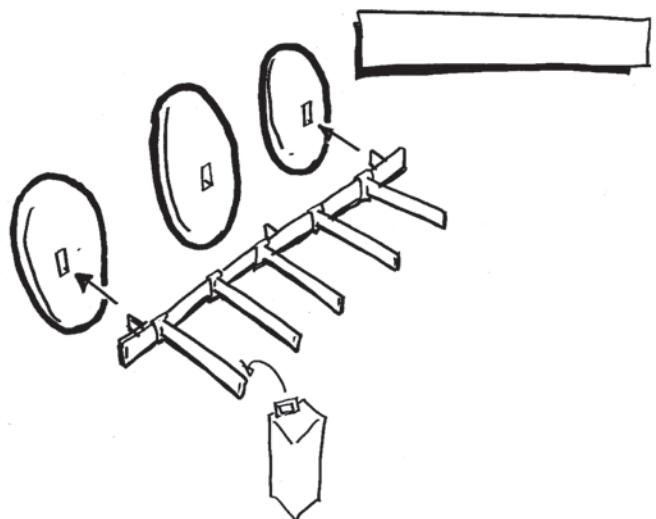
and speed and short building period for most projects rule this out. Contractors inevitably prefer to work with familiar materials and techniques and will submit an expensive quote for complicated work to ensure that undertaking it will be rewarded and unforeseen costs will be covered. A project that strays from the familiar will also require extra commitment from a client, who may be inspired to agree to an expensive option by a seductive presentation but whose initial enthusiasm will weaken if there are a succession of expensive, unanticipated or unacknowledged complications. It is normal, and logical, that the designer will be blamed for practical inefficiencies and overspending if creative ambition has contributed to difficulties. A designer persuading a client to commit to an ambitious or innovative project must be prepared to spend more time detailing and supervising its construction, for the same fee as a more conventional solution.

Clients always have a budget beyond which they cannot or will not go. While they often have some capacity to extend this, there is usually a point at which it becomes apparent that it will be necessary to negotiate with the contractor details of the work, whether to eliminate whole elements or simplify construction, in order to reduce the overall cost. The designer is crucial to this process because decisions must be made about how savings will least prejudice the aesthetic and practical efficiency of the finished work, and only the designer has the overview and knowledge to resolve such compromises successfully.

Developing detail

Normally the plans, sections and finishes for a project will have been finalized during the development of the design and been approved by the client, and an experienced designer will have considered, from early in the developmental process, the feasibility of constructing the more elaborate elements and visual impact of the likely detailing solutions. Often the first proposal for a construction detail, particularly if it uses familiar materials in a familiar context, will adhere closely to initial expectations and will be known to work. However, unanticipated problems, including necessary variations on well-tried solutions, will often emerge because the precise characteristics of each project are different, and aspects of the solution to one problem can very often have an impact on the resolution of apparently unrelated details. The admirable impulse on a designer's part to establish a stylistic compatibility between elements of a project will prompt a necessary variation on a standard and well-tested detail.

Detail drawings, like all others in the design process, begin with a designer's first thoughts, and, like them, are likely to be scribbled in a notebook or sketchpad. The process for developing them is also essentially the same. After initial, informed but unstructured thinking, the transfer must be made to scaled drawing in order to test ideas rigorously before producing the final version.

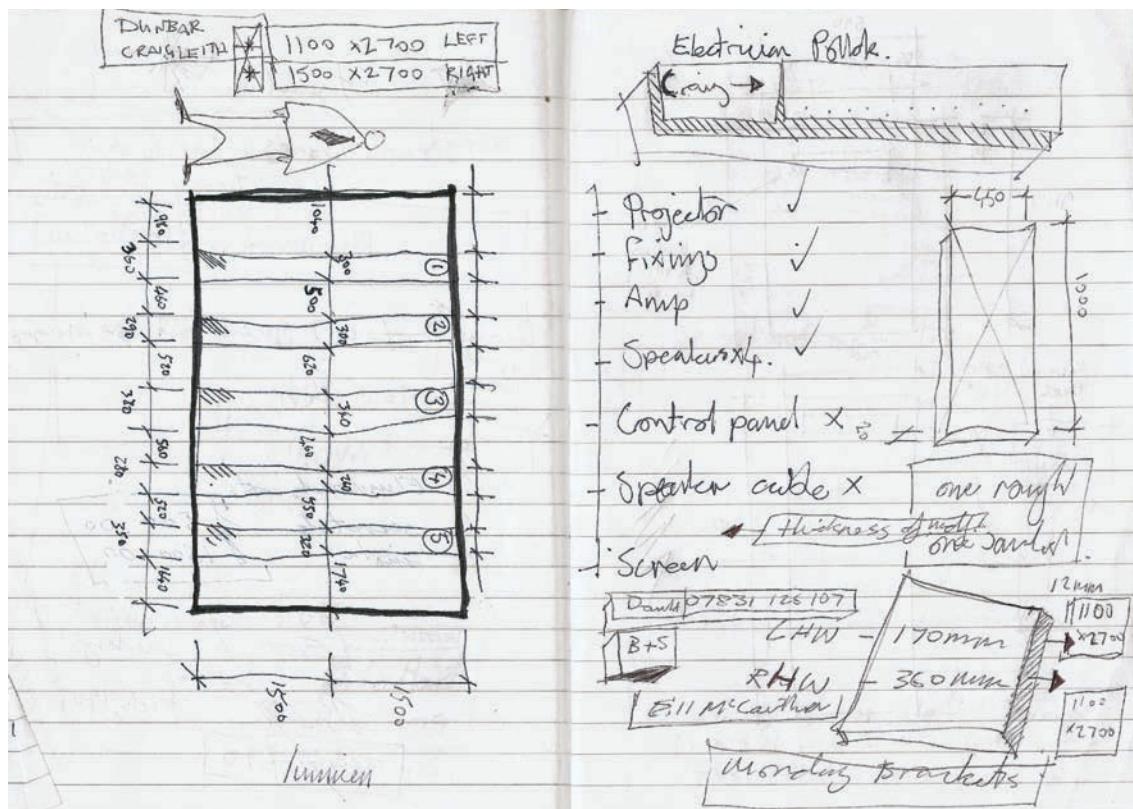


Above

A first speculation about bracket supports for wall-mounted shelving.

Below

First thoughts are likely to be made on any convenient scrap of paper. In this double page spread from a lined notebook calculations for setting out components and a list of equipment dominate the perfunctory sketches that are more about clarifying perception than finalizing an idea.

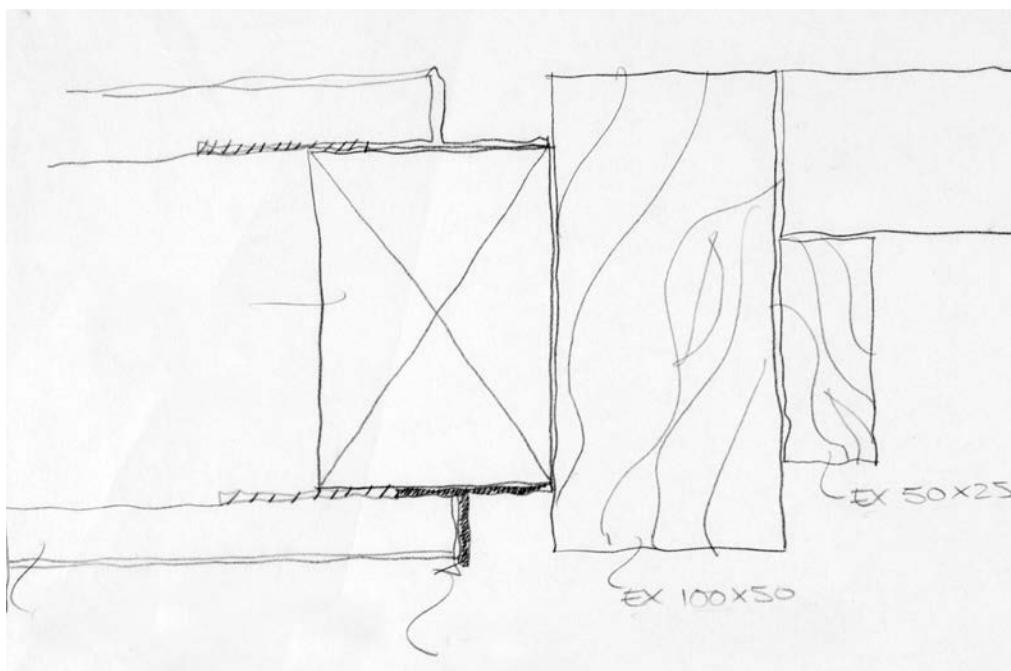


Accurate scaled drawings ensure an accurate perception of the relative sizes of individual components and their exact relationship one to another. While scaled drawings are sometimes still made by hand, on a drawing board with technical drawing instruments, normally they are now made on computer, which also allows the designer to magnify a drawing, which may eventually be issued to the contractor at 1:5 scale, to full size to get a more accurate understanding of the size of the finished detail.

While details, particularly those that will be visible in the finished building, must always be considered in three dimensions, it is standard practice to draw options and present conclusions, as two-dimensional plans and sections. This isolates and simplifies particular aspects of the problem and its solution, and so helps clarify thinking during development. It also presents information to the builder or maker in a more comprehensible form. It may be useful to add three-dimensional projections in order to clarify how parts relate, but unless the forms are very simple it is generally difficult to read dimensions and notes against three-dimensional images. The computer generates three-dimensional views much more quickly and efficiently than the hand, and those produced for earlier presentation work may be easily transferred to production documents in order to clarify the intended outcome.

There is perhaps an instinct amongst traditionally trained designers to be suspicious of the introduction of more accessible, superficially frivolous drawings during the production phase. However, if it is accepted that drawings made for a client should be as accessible as possible then the same should be true of drawings created for use on site. It was the difficulties involved in adding colour, tone and a third dimension – because of the drawing instruments and reproduction equipment available – that, until recently, have excluded them from the repertoire of production drawings. The computer makes their inclusion simple and their exclusion foolish.

It is obviously worth taking advantage of the advances and variations that the computer makes possible. Tones can effectively replace hatchings, which tend to be visually strident. Various coloured lines may be used because they are as easy to reproduce as a black one. However, it is important that the potential for variations is treated intelligently. Too much will result in incoherence. Differences in line thicknesses and tones must be readily distinguishable to the eye if they are to contribute to clarity. Probably a drawing should feature no more than three thicknesses, thin, medium and thick with clear differences between each.

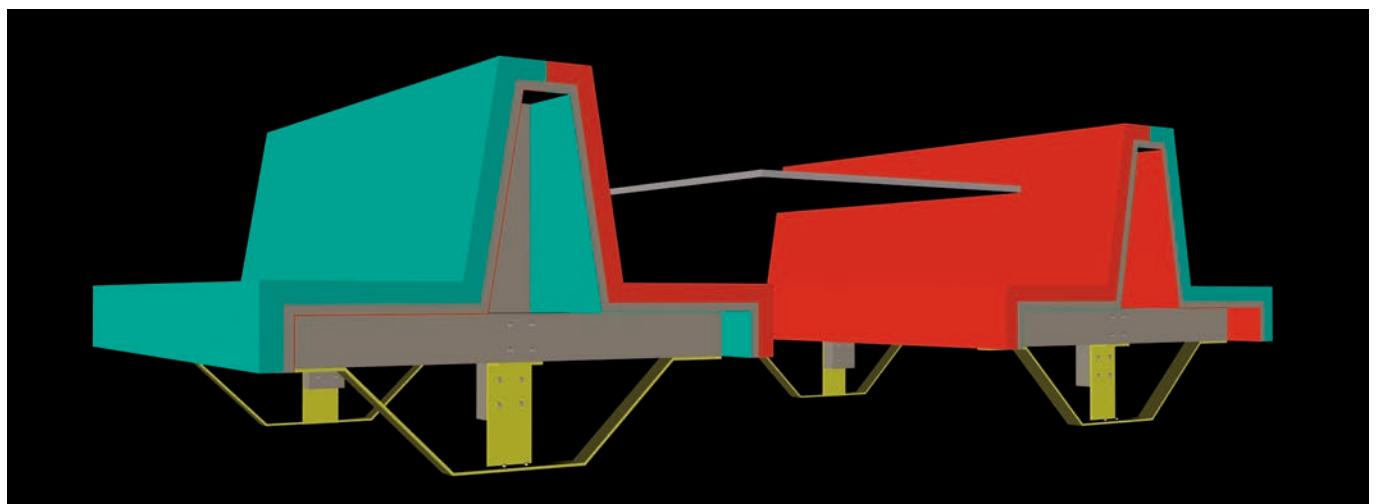
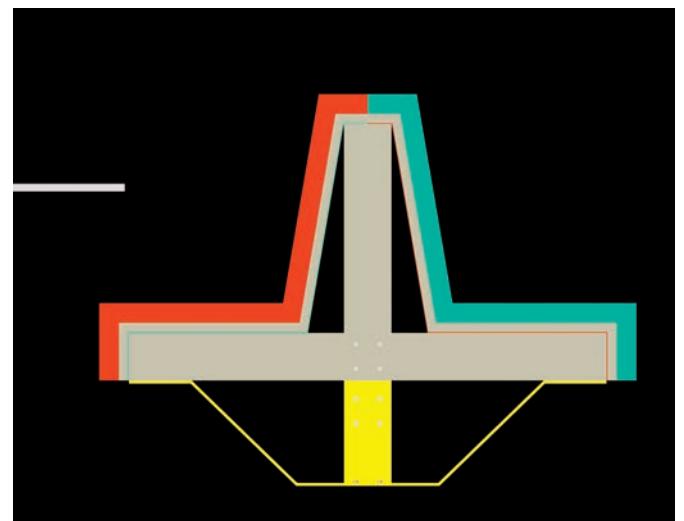
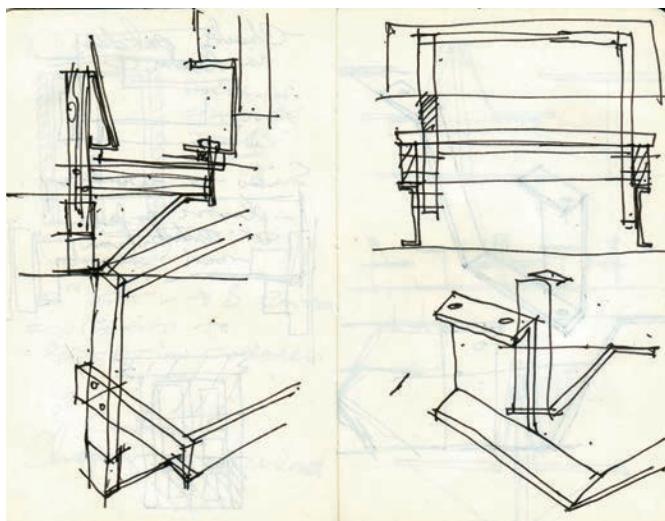
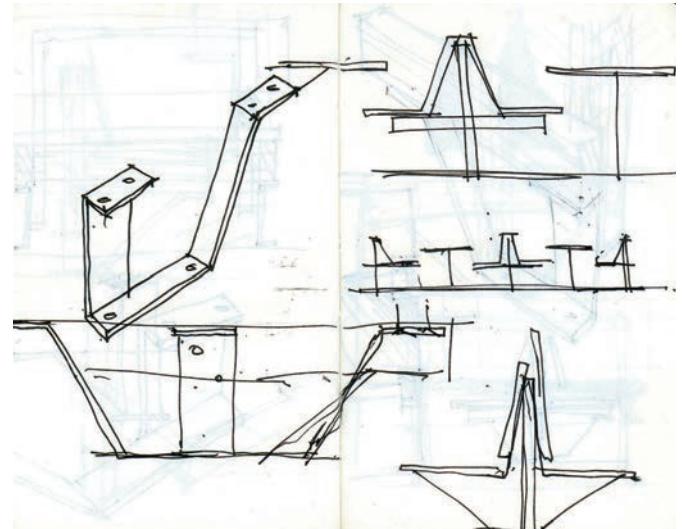
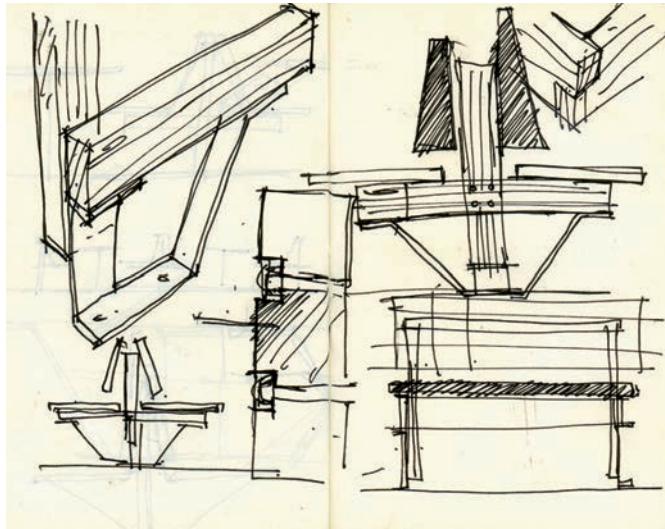


Left

Being able to draw a fast freehand detail remains a useful skill when discussing options with colleagues or instructing contractors on site for an unanticipated variation. This example, for a door jamb, was made roughly to scale with a pencil in an A4 tracing paper over an A4 gridded sheet that facilitated control of dimensions.

This page

A selection of notebook and computer sketches speculating about fixed seating units.



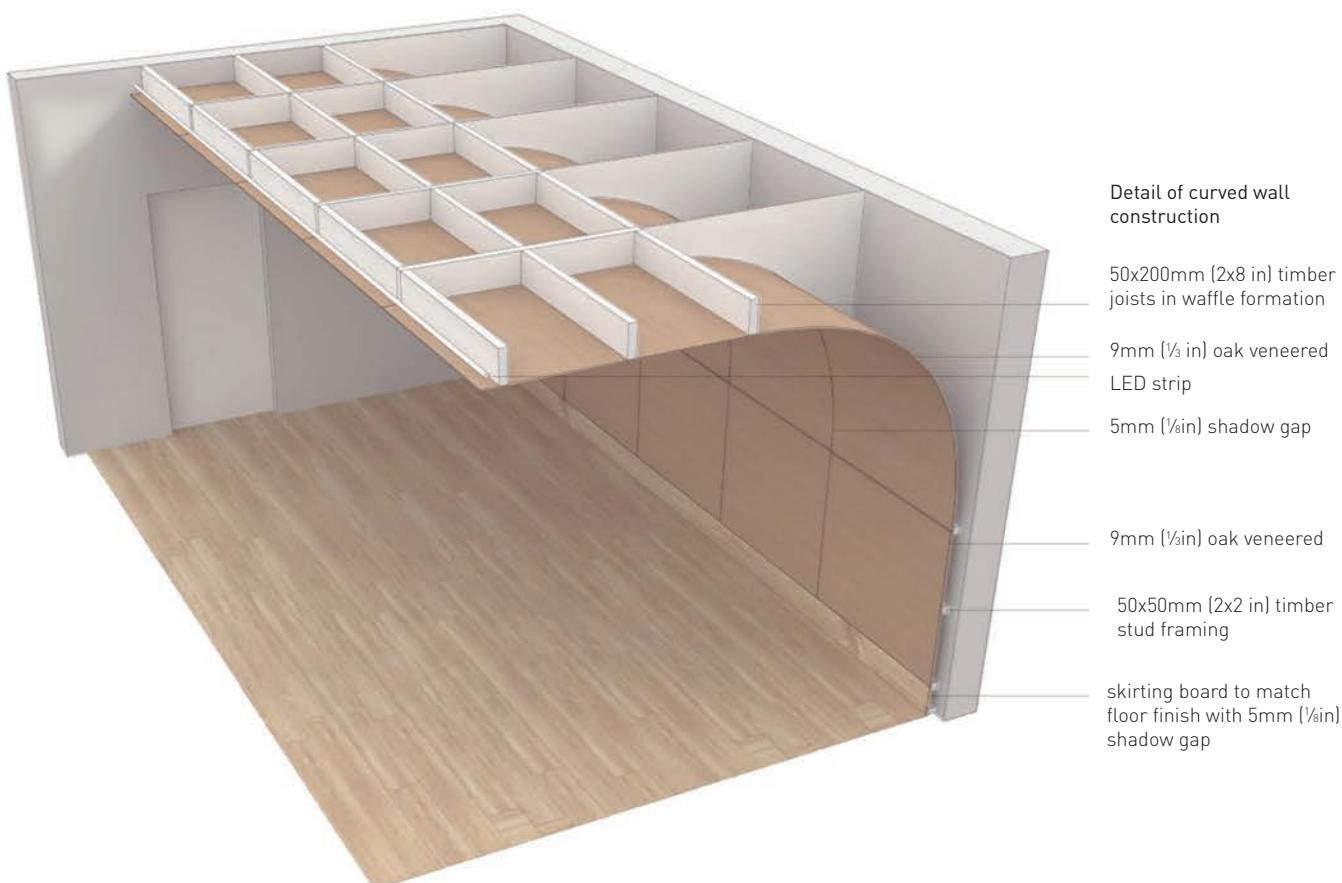
Collaboration

Contractors, particularly those responsible for highly specialist work, will frequently suggest simpler and cheaper ways of achieving a desired outcome, and if the designer is confident that the result will be aesthetically acceptable and will meet practical requirements, then there is every reason to accept the alternative offered. It is important under these circumstances to ask contractors to provide a guarantee of quality, and to agree, perhaps, to a reduction in cost.

With specialist trades, such as furniture manufacture, it is common practice to select a contractor on the strength of a quotation based on the drawings produced by the designer, which establish precisely the configuration and specification of finishes of the elements required but do not specify construction techniques. This is a recognition that a better and more economical job is likely to result if manufacturers are able to use the techniques most suited to their work force and machinery. Such specialists should provide what are, in effect, their

Below

The drawing and notes clearly explain the designer's intention and are enough to allow a conversation with the builder about construction tactics, such as the material and method of fixing for the curved ribs.



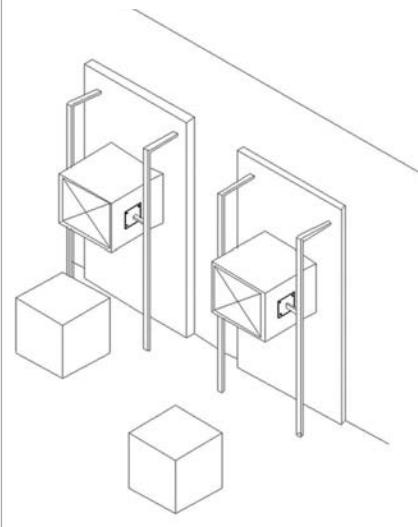
own detailed production drawings, and they should give these to the designer for approval before beginning the work. The designer will, in these circumstances, be primarily checking that there have been no changes that affect the aesthetic intention, because the specialists will have taken responsibility for practical performance.

It is a good idea to visit a factory or workshop in order to see and understand processes. Knowledge gained is liable to go beyond the immediate project and broaden creative horizons.

Manufacturers of fittings and materials, are constantly refining their products and it is obviously sensible to consult manufacturers for technical advice about performance and appropriate assembly techniques before making a definitive drawing. It is in manufacturers' interest to be supportive because it helps sell their products and many now provide precise and detailed digital drawings of their components, which may be downloaded and incorporated into finished production drawings. These also allow designers to design around the component – and give credibility to the drawings.

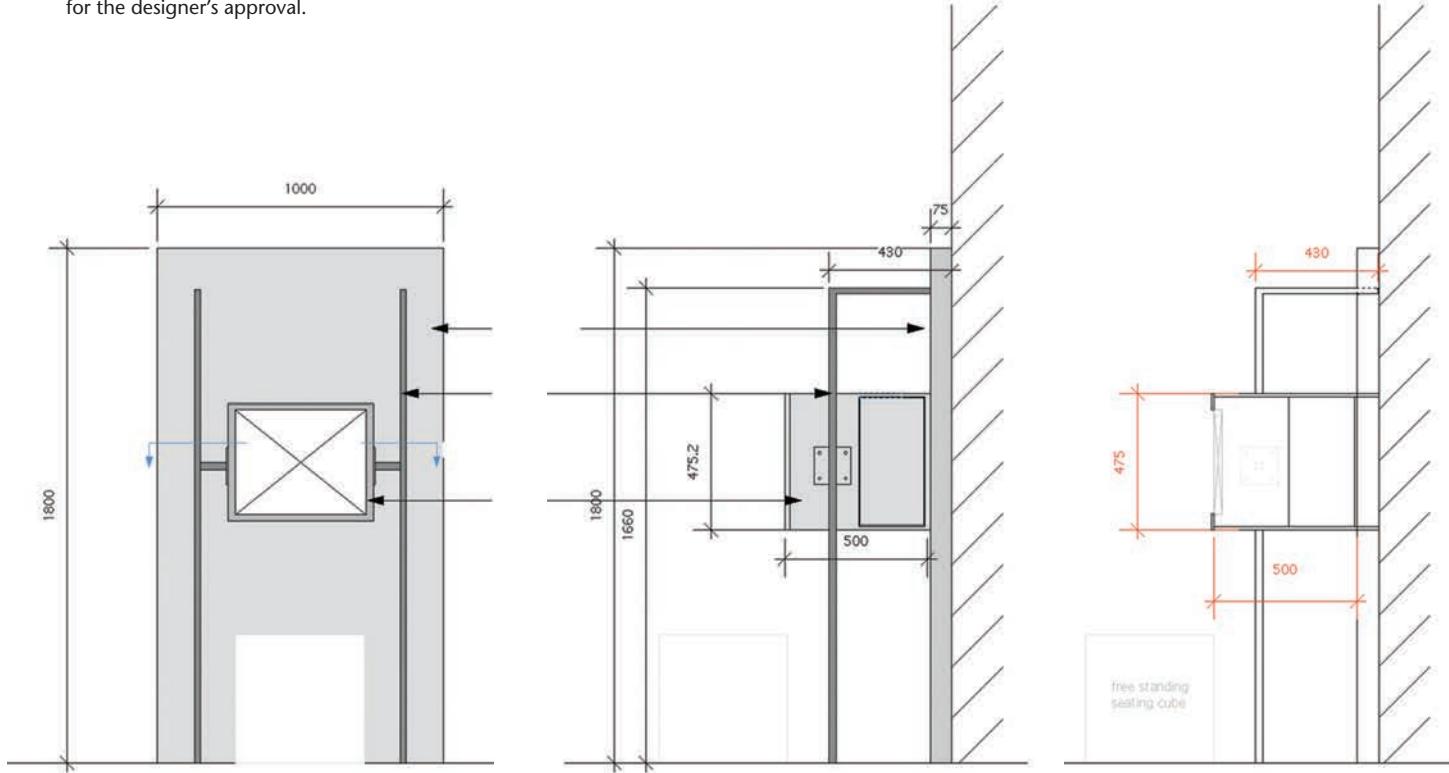
TIP THREE DIMENSIONS CLARIFY TWO

While dimensions are most effectively conveyed in two-dimensional drawings it will often help a contractor understand the nature of the proposal better if a supporting drawing, like this isometric, digitally generated from the two-dimensional data, is also supplied.



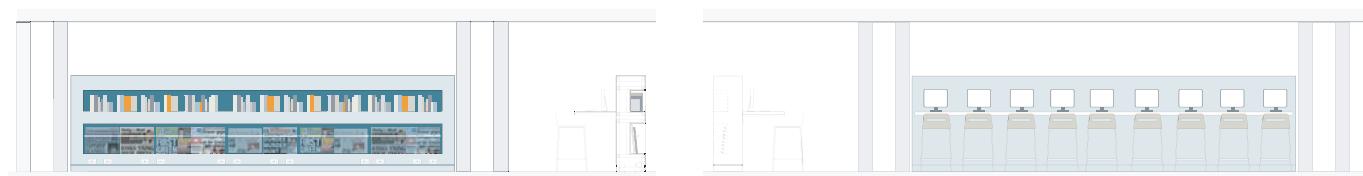
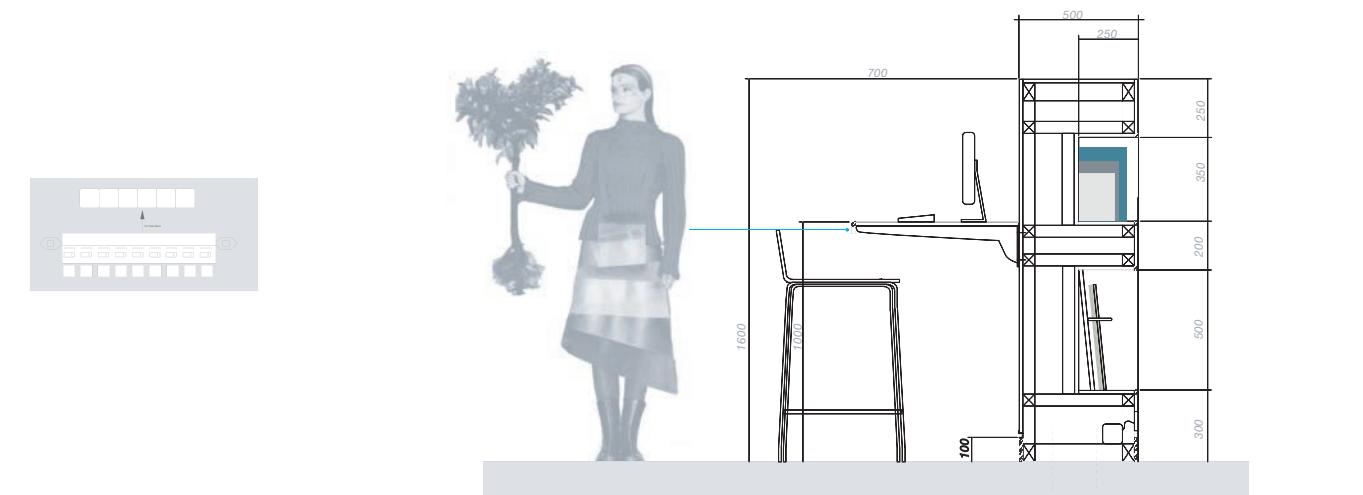
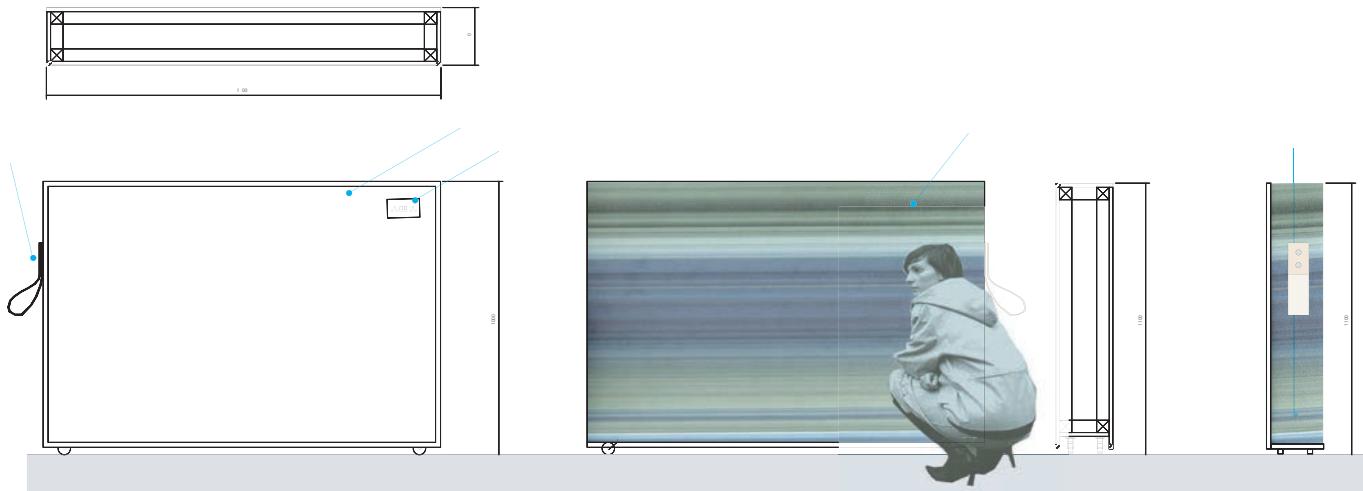
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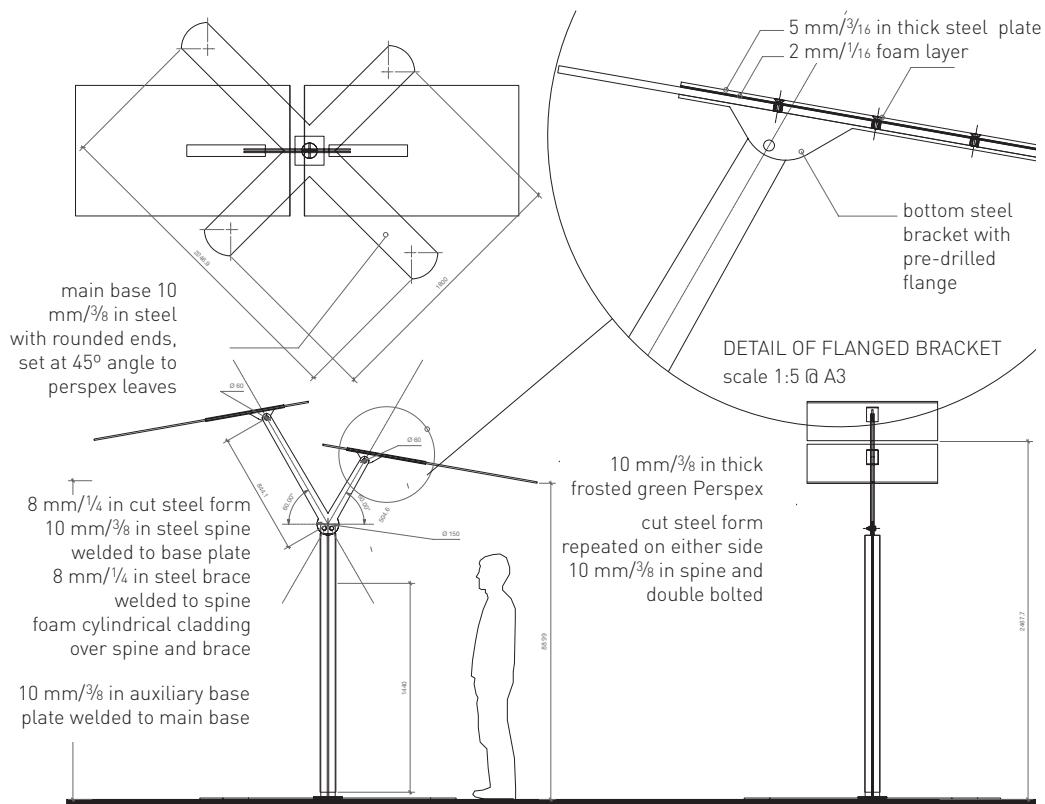
The drawings provide the fabricator with all the information about dimensions needed to create a drawing for the designer's approval.



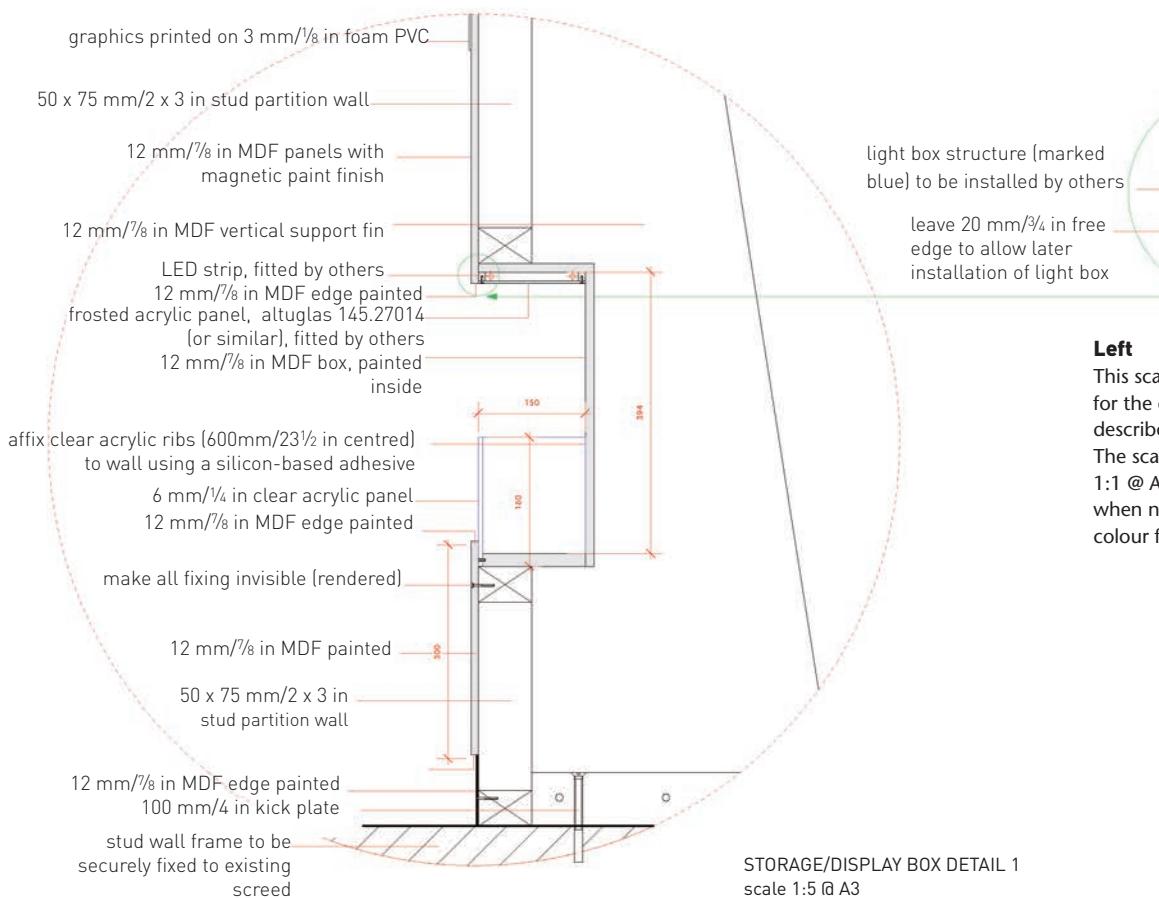
This page

These drawings, prepared by the designer and sent to the nominated subcontractor/fabricator, indicate dimensions of the proposed pieces, and the small scale section at the bottom of the drawing indicates their eventual location. Structural framing is indicated but this is as much to indicate hollow elements as it is to suggest a definitive fabrication method. The figures confirm scale and presumably served to amuse the designer and (perhaps) the contractor in the midst of otherwise serious work.



**Left**

While decisions about the construction and production of simple pieces of furniture and equipment may be left largely to the selected fabricator (with the proviso that they seek approval for those decisions), it is important when unfamiliar and possibly unprecedented objects are proposed that the designer draws and describes them in more detail. When possible, collaborative discussion with specialist suppliers and makers will still usefully enrich the process.

**Left**

This scaled drawings allows room for the detailed notes necessary to describe the most complex areas. The scale was further increased to 1:1 @ A3 (full size, above detail) when necessary, while tone and colour further increase clarity.

Making production drawings

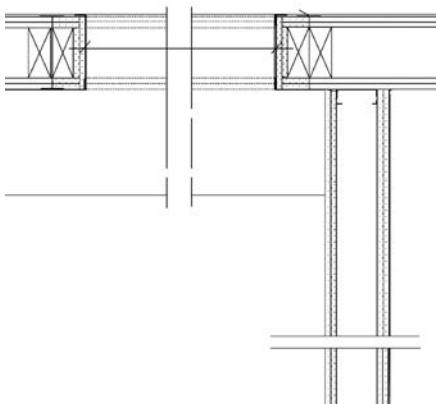
There is no room for ambiguity in production drawings. They should be clear and, as far as possible, simple. Even for the most complicated project, simple drawings will usually signify well-resolved thinking and an economical and effective solution, easily built and robust. While they should not set out to be complicated they must carry enough information to ensure that, with a number of contractors competing for the tender, the extent of the work and the quality of its execution is clearly stated, leaving no room for misinterpretation, no ambiguities that might lead later to disputes on site.

It is important to appreciate that, while drawings are produced in a comfortable studio environment with instruments designed to maximize accuracy, they will be interpreted and implemented in the confusion of a building site. They should therefore be as easy to understand as possible. Workers on site are not necessarily familiar with the potential of the materials specified and the techniques required to use them and need to be given support.

All project information can be distributed digitally, and this cuts out the delays and uncertainties that were previously an inevitable aspect of postal delivery. The advantages are obvious, in that delays that affect the price or completion times can be diminished. The disadvantage is that the designer is under greater pressure to respond quickly to unforeseen complications and, given that such revisions can have a significant and not immediately apparent impact on the whole project and its cost, it is sensible to agree a reasonable amount of time for consideration of each development. If a designer has given evidence of general efficiency, been sympathetic to the contractor's problems and is confronting an unforeseeable dilemma, then it is reasonable to expect understanding in return.

TIP BREAK LINES

When drawing details to a large scale it is often expedient to compress certain lengths to save space on a drawing. The solution is to shorten the length and acknowledge its truncation by leaving a gap, normally bounded by two thin lines, which show that the break is deliberate. In the example the important construction of the wall on either side of an opening is shown in full. The unimportant opening between them is condensed but the dimension confirms its real width.



Conventions

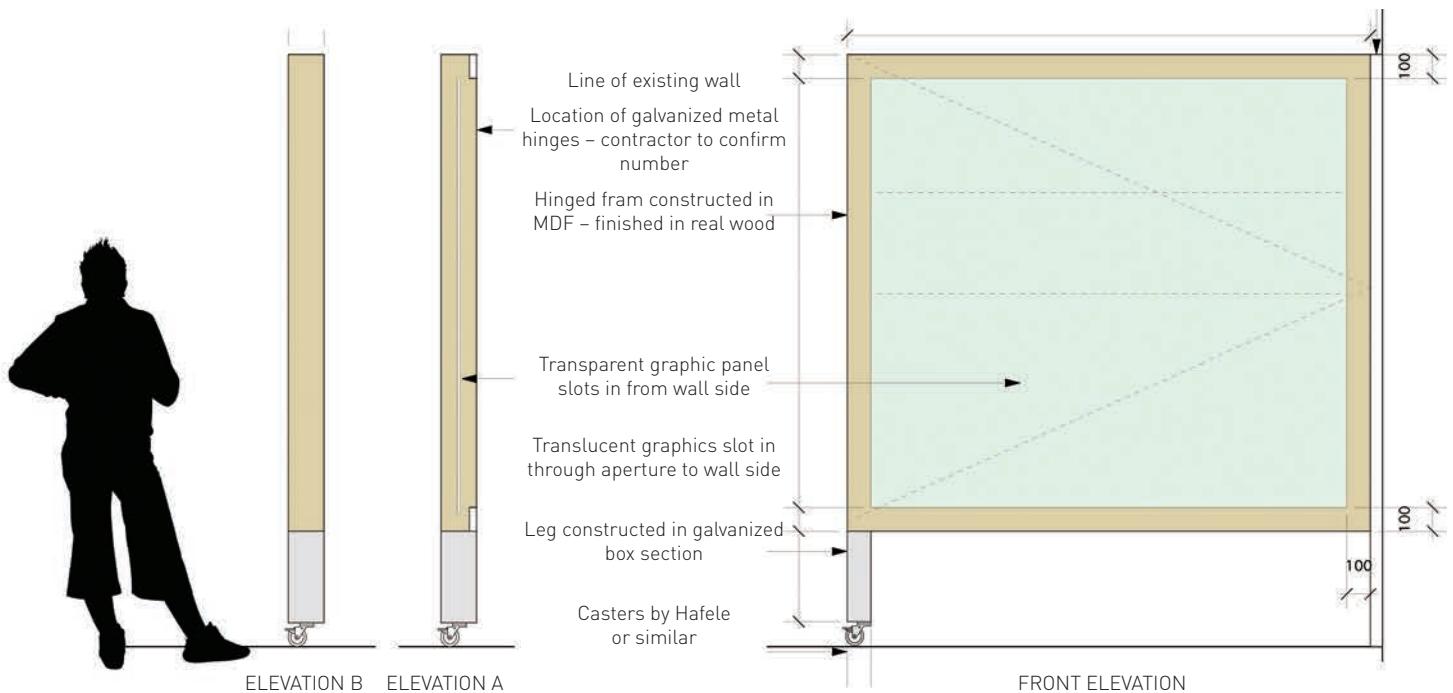
There are two distinct categories of production drawing: plans and sections, which are likely to be at 1:50 or 1:100 scale, perhaps at 1:20 for small projects; and details, which explain the construction of typical elements or which isolate and explain complex conditions. Details are likely to be drawn at 1:5 or 1:10, and sometimes full size or half full size – although the latter is considered potentially misleading because it is easy to confuse half with full size, and the misinterpreted drawing can then imply a more elegant solution than will be achieved in reality.

The scale of details created on computer may be inflated on-screen during development, to allow examination at full size – or larger, if required – in order to give an accurate appreciation of the sizes of the elements involved, and then reduced to a more concise scale for distribution. Written notes may be added at typing speed, without the clumsy complications of stencils or the potential chance of misinterpreted handwritten notes. Corrections to lines or lettering in corporate drawings may be carried out without trace whereas corrections, whether to pen or pencil originals, damages the paper.

Because computer drawings may be developed in separately saved layers, it is now more feasible to produce drawings specifically for individual trades and specialisms. While it was once expedient to use one drawing to communicate information about a number of separate activities, it is now as easy to produce a dedicated drawing for each and to deliver instructions with focused clarity.

Below

Pale tints colour code materials – brown represents wood and green represents glass. Silhouetted figures give scale. The wheels are downloaded from a manufacturer's website.



This not only reduces the likelihood of potential errors but, by providing a trade-specific drawing, eases the individual specialist's job and eliminates the uncertainty that can result from complex composite instructions.

While it is desirable that the nature of production drawings evolves in response to the improved capacities of the computer, respect for established drawing conventions is worthwhile. A shared visual language is vital if the complexity of construction information is to be communicated precisely to contractors and other building-industry professionals.

Graphic conventions evolved in response to the materials available for making them. When drawings were almost exclusively made with ink or pencil line on tracing paper, for reproduction by dye-line and photocopying, the articulation of components within the drawing was achieved by varying line thicknesses, hatchings and cross-hatchings. This process was time-consuming and, because the drawings were made in conformity with strictly established codes, it was viable and common practice to employ specialist technicians and 'tracers' to draft the volume of drawings necessary for the more substantial projects. These assistants tended to have responsibility for evolving and finalizing work initiated by the designers who led the team. They did not take responsibility for final decision-making, but often had valuable practical knowledge: the result of sustained involvement with technical detailing.

The switch to computer production reduced the need for repetitive hand drawing, and consequently the number of individuals engaged in the compilation of production information. The content of such drawings, however, has not changed much. Variations are small, but they have significantly changed the look of the final drawing. Lines, because specified into the computer rather than plotted by hand, are wholly precise. Quality of reproduction is standardized and perfect. Mistakes are now intellectual rather than manual.

Handmade drawings were invariably reproduced as black lines on white paper. The computer allows the use of colours and the colour printer allows their reproduction. This allows greater articulation of parts of a drawing, which can greatly assist understanding. It is particularly useful for identifying glass, areas of which were previously left blank or denoted rather unsatisfactorily by sloping broken lines.

Cross-referencing

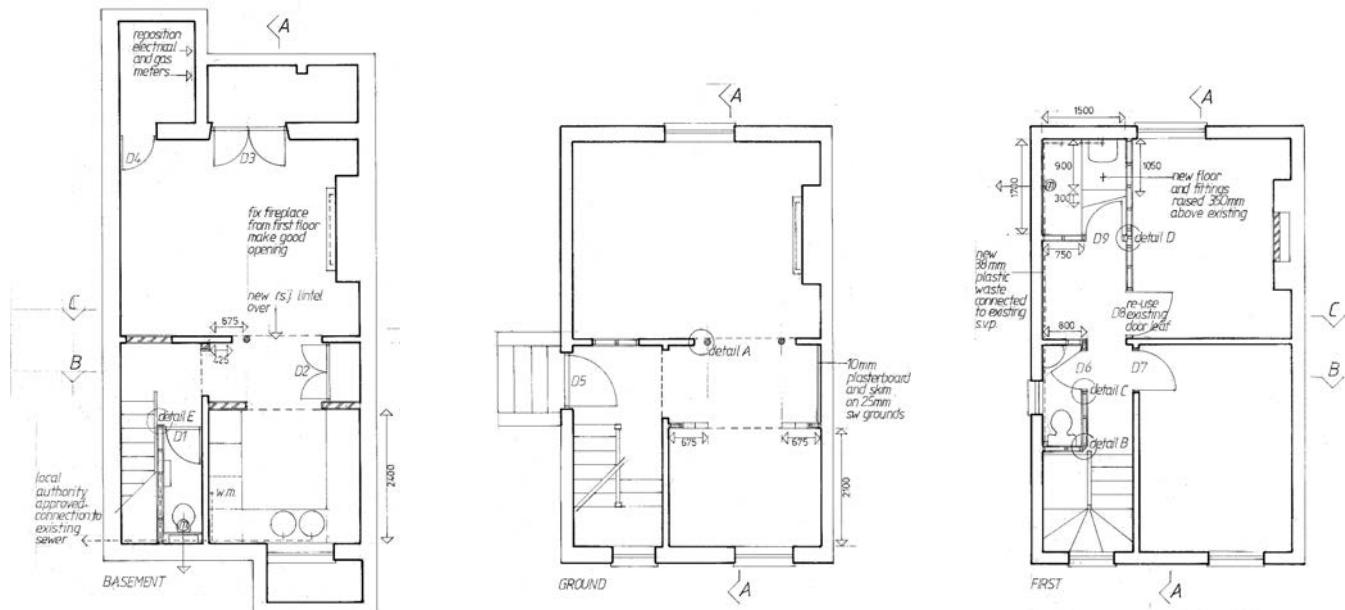
Production and detail drawings must be intelligently ordered, numbered and cross-referenced. Plans and sections constitute ways in which to communicate the overview of a project. They will show the precise locations and lengths of walls and other major elements in the case of a plan, and heights in the case of a section. When setting out dimensions, it is standard practice to relate measurements to significant existing points within the structure. Some generic specification information – such as materials for wall construction, and floor and wall finishes – should also be communicated on plans and sections. However, when very specific information about the materials and construction of, for example, a junction between a new wall and an existing structure, is called for, then this should be drawn at a larger scale – and probably on another sheet. It is then standard practice to identify the location of that detailed condition, and to cross-reference it by giving it a unique number and by citing the sheet number on which it will appear (for example: 'detail C, drawing 53'). Other details, such as those for skirtings and architraves, which may have an application throughout a project need not have their locations specifically cited, but should also be numbered for efficient referencing during communication between designer and site workers.

Opposite, top

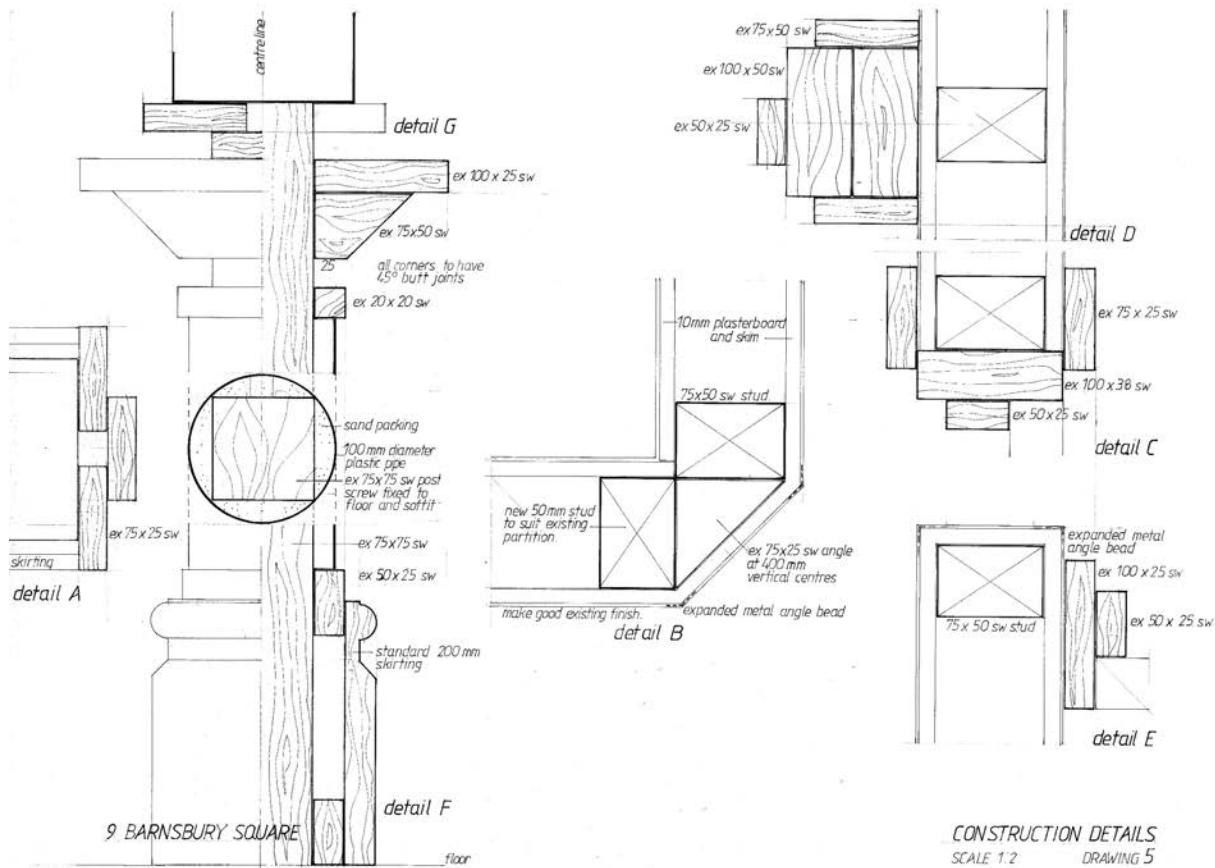
Hand drawn plans (originally A3 size) that give critical dimensions (and only critical dimensions), notes about materials and construction techniques (indicated by recognized graphic codes which are confirmed in the key on the drawing). Details that will be drawn to a larger scale are circled and given a reference letter (there is only one sheet of details for this modest project).

Opposite, below

Critical details, each with its identification letter, cover general and specific conditions. Notes describe the size of component pieces and, where appropriate how they are fixed.

PROPOSED PLANS
SCALE 1:50 DRAWING 2

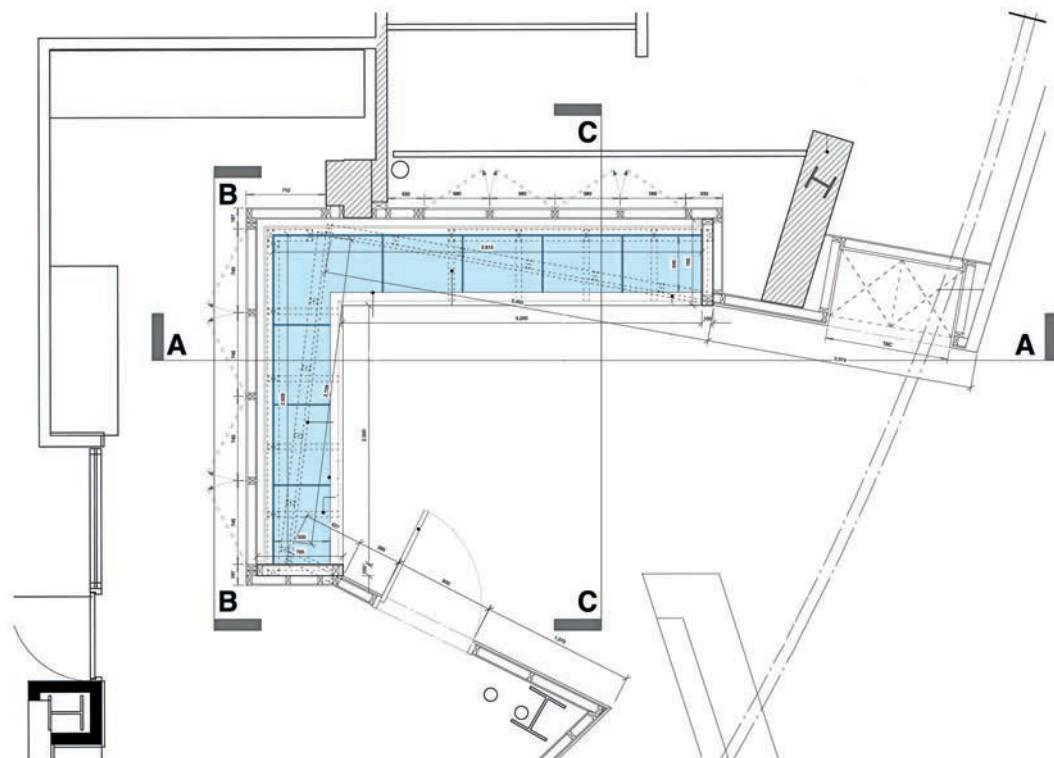
mechanical extract fan to discharge through 225x225 terracotta airbrick doors D1 D6 D9 to have 700x2100 structural openings
plaster on brick make good existing plaster 10mm plasterboard and skim on a 25mm SW stud to suit existing openings make good existing plaster

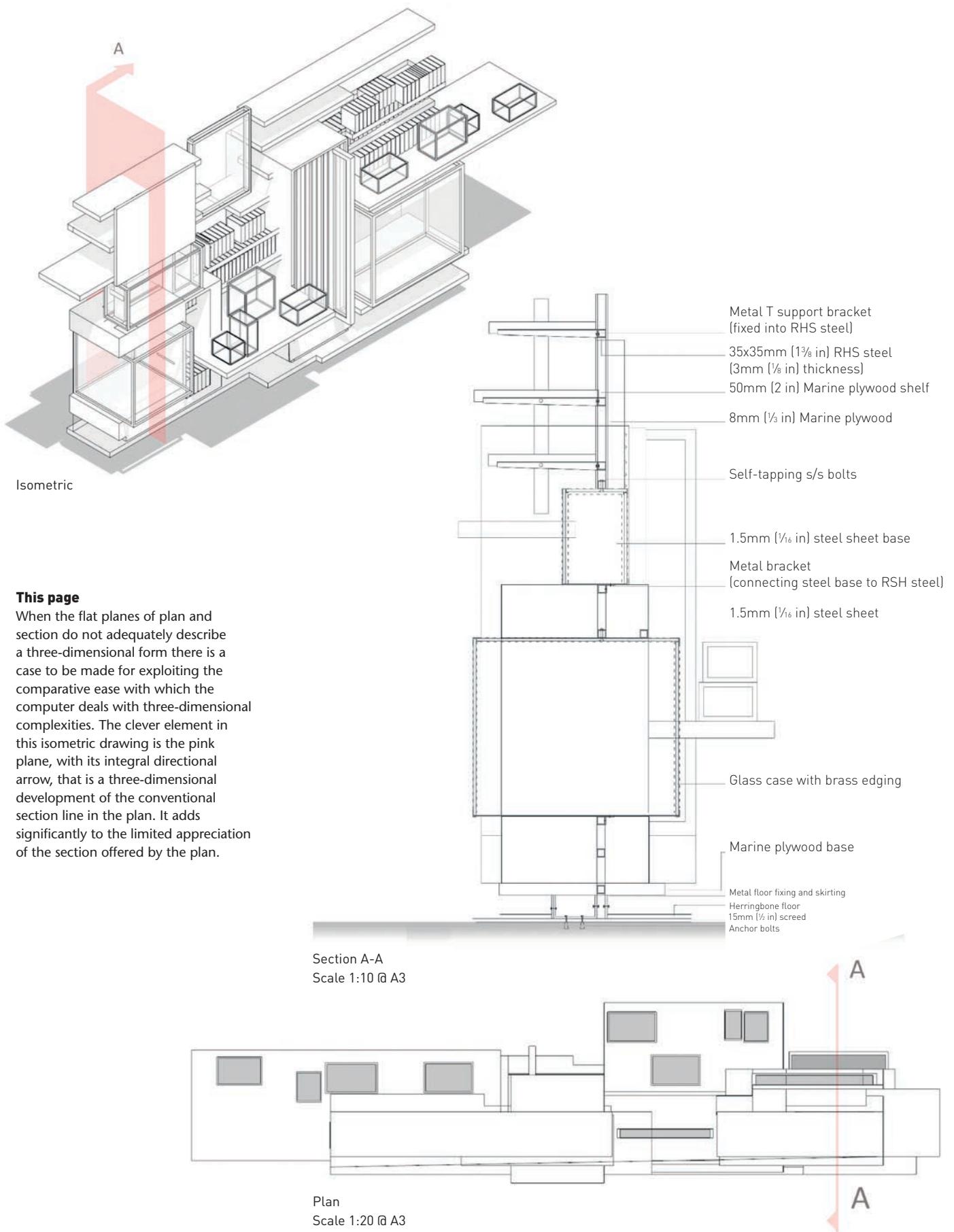
CONSTRUCTION DETAILS
SCALE 1:2 DRAWING 5

The computer generated plan and section shown here utilizes recognized conventions. The existing structure is hatched or outlined in thicker black lines to distinguish it from the new, which is drawn in grey and includes more detail, showing construction information such as the framing for the plasterboard clad partition walls. Blue colour wash indicates glass shelving and is intensified where it represents vertical glass supports. The location of section cuts are clearly indicated and the grey rectangle next to the letters explains the direction of the view.

This page

The fragment of section is that defined by the line AA on plan. The red circle locates a crucial element of the construction that was drawn separately as a larger scaled detail. The flat plane of the image does not – cannot – represent the angle of the right hand section of the plan.

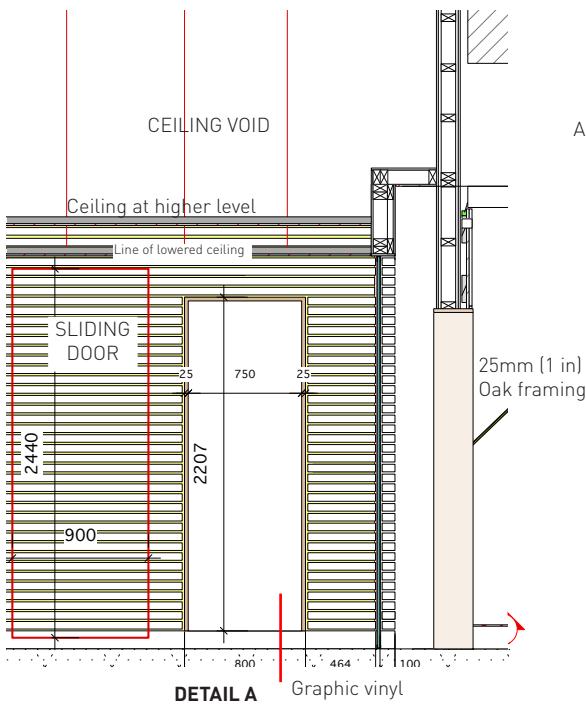




These two pages show some of the drawings necessary to explain fully the construction of a very small entrance space. While this example is further complicated by the angles of walls, it is broadly true to say that production drawings for small areas are more complicated than those for larger spaces for the simple practical reason that the same information must be conveyed in a much reduced drawing area.

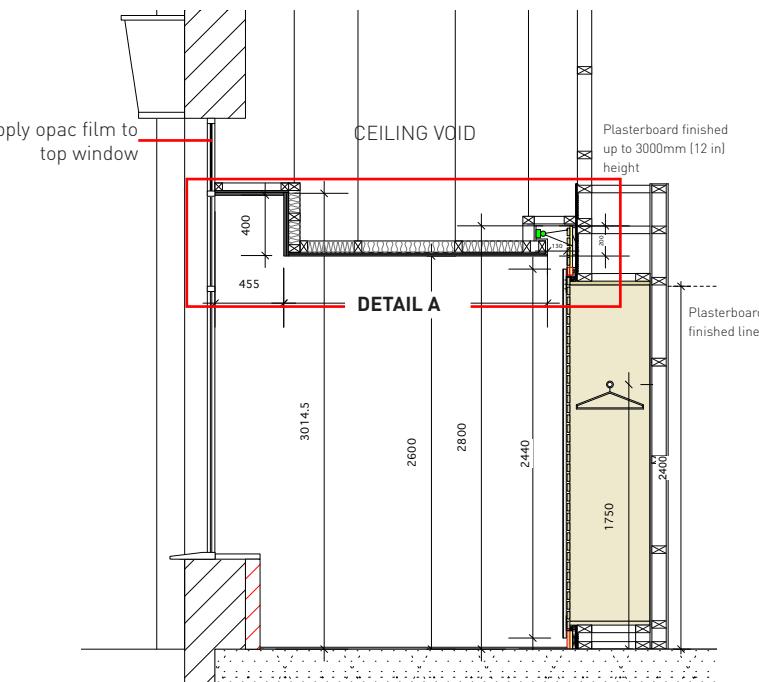
Below right

The section cut is defined by the cranked red line that joins the two letters B on the plan. This is a recognized convention where one straight line cannot efficiently take in crucial parts of the construction. It is important in this instance that the line is continuous to define the localized conditions.



FOYER ELEVATION A

Scale 1:20 @ A1



FOYER SECTION B

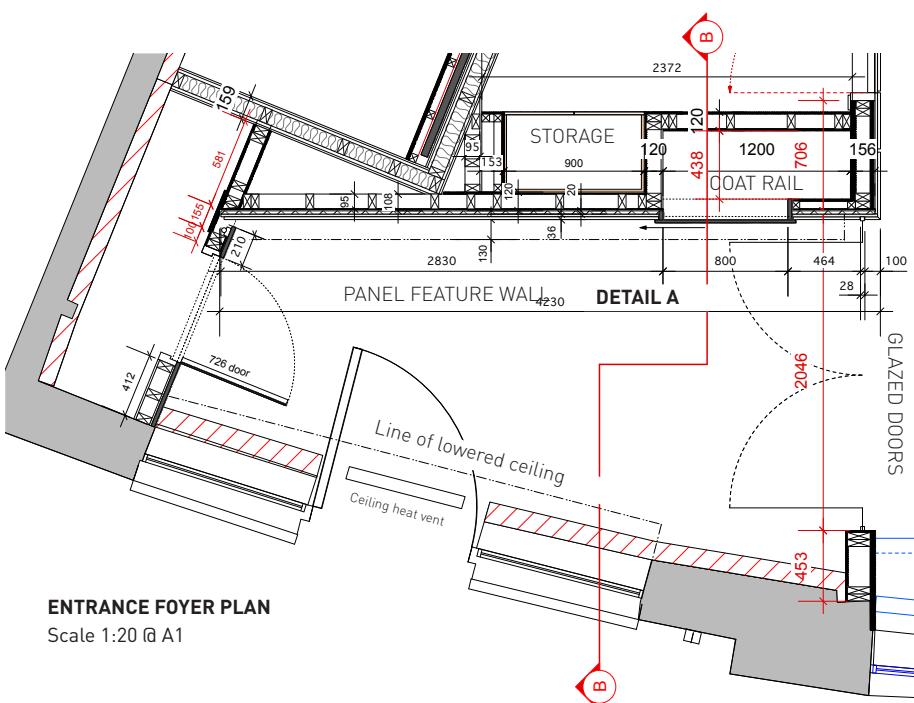
Scale 1:20 @ A1

Above left

The location of the elevation is identified on the plan by the letter A in the small circle superimposed on the solid triangle, the apex of which indicates the direction of the view.

Right

The plan is principally concerned with identifying areas and conditions (of the lowered ceiling for example) and the dimensions necessary for its setting out. Existing walls are indicated by solid tone. New walls are distinguished by the structural framing shown within them and this also explains which have an insulated core.



Below

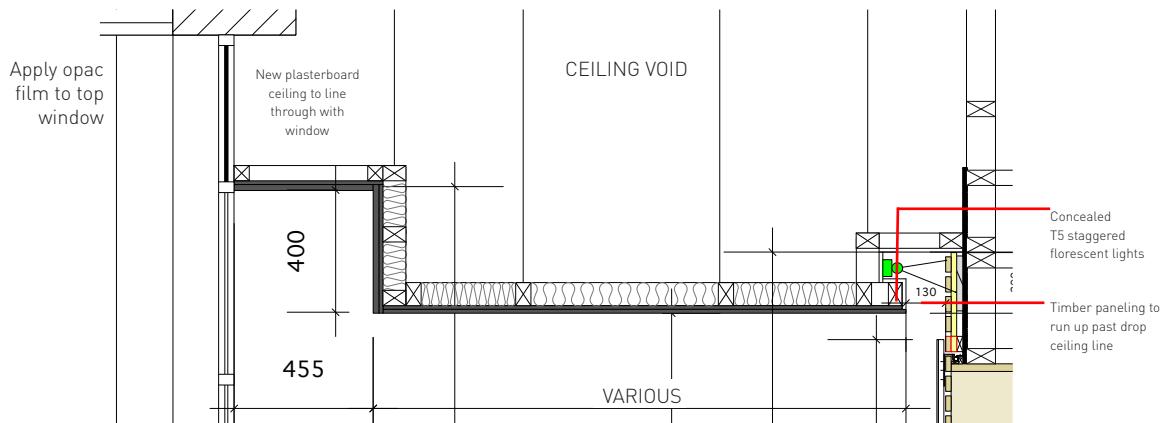
The red rectangle identifies the area to be drawn at the bigger scale.

Bottom left

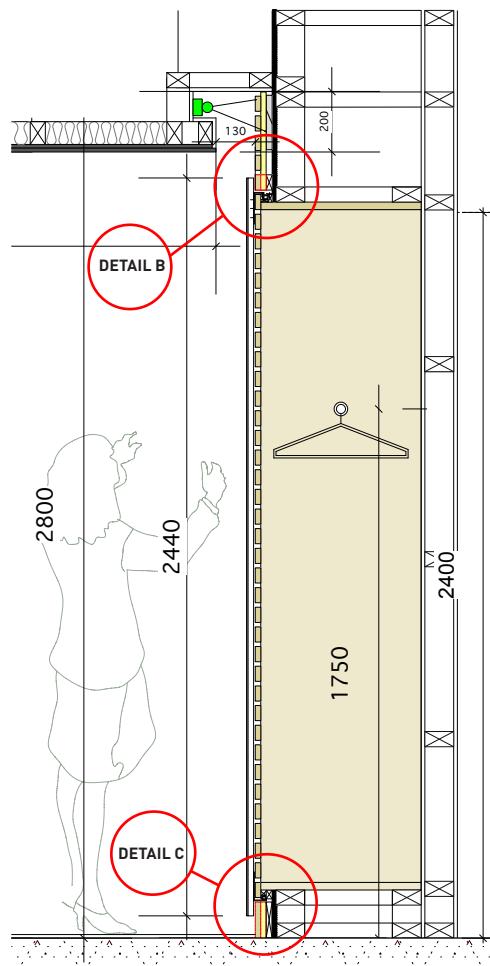
Section C shows the broad construction of the coat storage cupboard. Tone defines its interior and helps understanding of the drawing. The coat hanger symbol is an elegant alternative to words. The two circles identify areas that need to be dealt with at a larger scale.

Bottom right

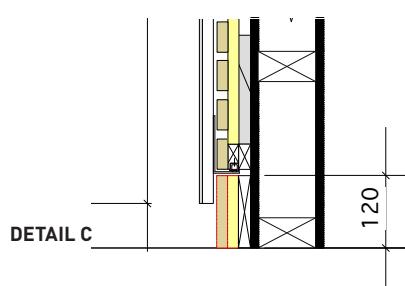
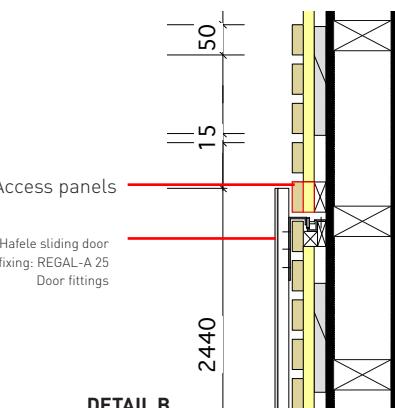
Details of the crucial door head and base conditions identified on section C.

**BULKHEAD DETAIL A**

Scale 1:10 @ A1

**CUPBOARD SECTION C**

Scale 1:10 @ A1

**CLOAKROOM SLIDING PANEL**

Scale 1:5 @ A1

Annotation

There is a vocabulary and grammar particular to writing notes on drawings that should be mastered and adhered to. Technical terms and phrases should be learnt, because using incorrect, 'unprofessional' words or lay terms can seriously undermine credibility on site.

Notes should be brief: they should be phrases rather than sentences, and purely factual. They are instructions to the contractor, and so should not be explanations of aesthetic intentions or anticipated effects. Generally, they need to make three factual statements: they should name the material or the object to which they refer, they should state its size, and concisely describe the method of

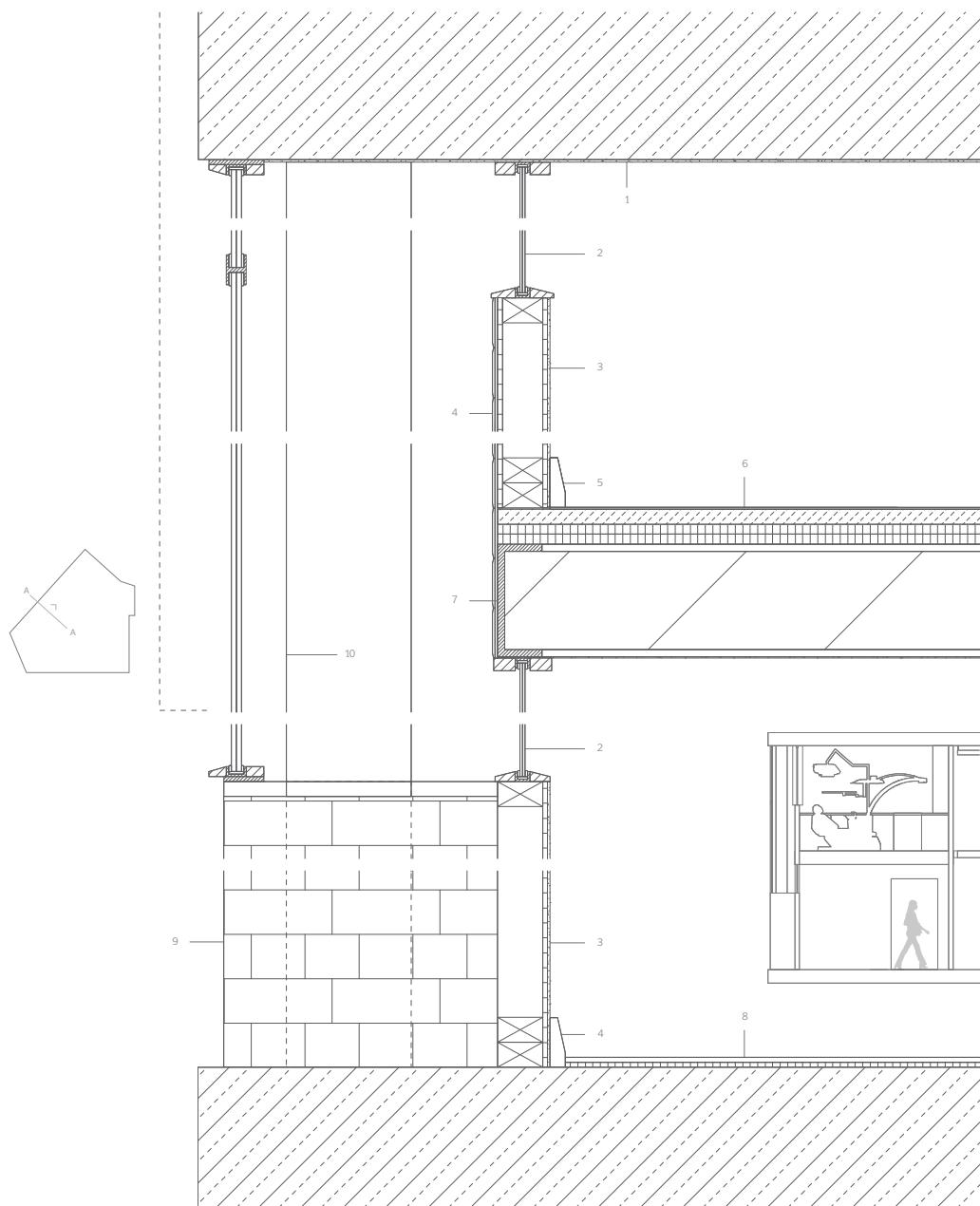
installing it (for example: '10mm ($\frac{1}{2}$ in) plywood screwed to 94 x 44 sw stud'). It is safe to assume that three such pieces of information should be added to every individual element within a detailed drawing. If one of them is unnecessary, that will be clearly evident and it may be omitted. If additional information is required, this is likely to be less obvious and, for all details, the designer needs to visualize the process of assembly and decide if it is comprehensively, but concisely, described in the notes. It should then be apparent if something needs to be added.

This page

This section shows details of the meeting of a new upper floor with secondary glazing above and below it. Break lines shorten the vertical elements to fit the drawing size. The notes describe concisely but comprehensively all components, materials, sizes and fixing methods. Its location is shown on the small plan and complete section.

Vertical Section A-A
[Scale 1:10]

1. 10mm ($\frac{1}{2}$ in) plasterboard w. plaster skim coat, painted white
2. 20mm ($\frac{3}{4}$ in) double glazing in cedar white painted frame
3. Wall construction: 80/50mm (2in) wooden batten, 20mm ($\frac{3}{4}$ in) MDF, 10mm plasterboard w. plaster skim coat painted white
4. 200/100/5mm black and white metro tiles
5. 70/20mm ($\frac{3}{4}$ in) SW skirting painted white
6. Floor construction: 3mm ($\frac{1}{5}$ in) poured coloured polyurethane finish, 30mm (1 $\frac{1}{4}$ in) screed, 20mm ($\frac{3}{4}$ in) impact-sound insulation, 20mm ($\frac{3}{4}$ in) polystyrene rigid foam, 14mm ($\frac{1}{2}$ in) MDF sheet, 197mm (7 $\frac{3}{4}$ in) timber floor joists
7. 225/89mm (3 $\frac{1}{2}$ in) steel channel
8. Floor construction: Carpeting, 20mm ($\frac{3}{4}$ in) insulation, existing concrete floor slab,
9. 1700mm (67 in) high brickwork sill
10. Ø 250mm (10 in) cast iron column

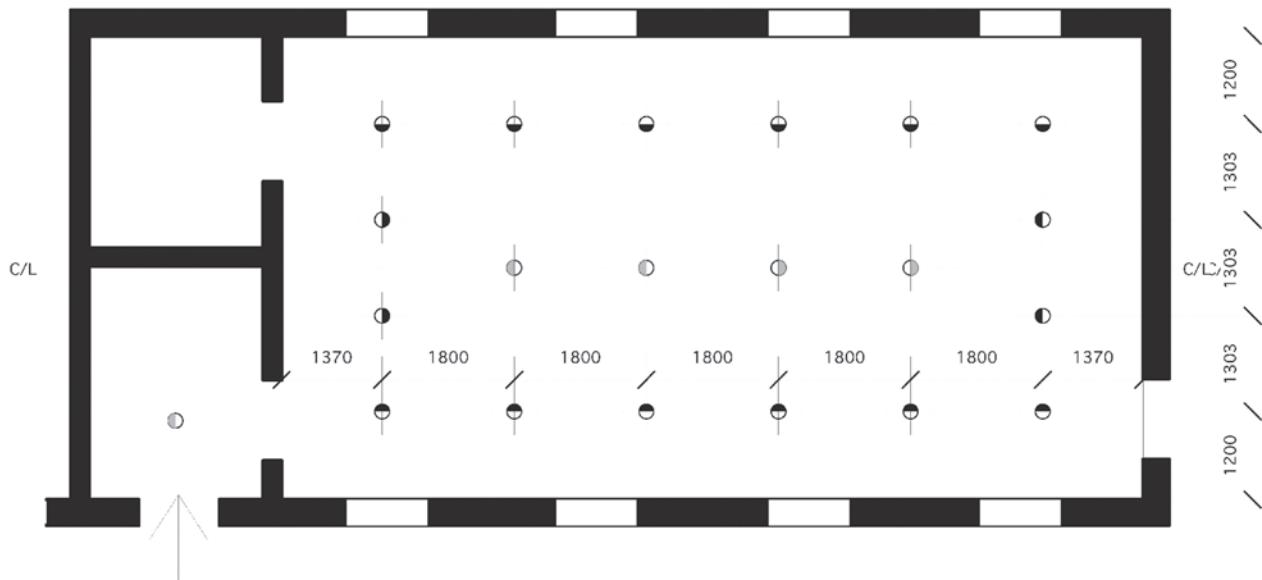
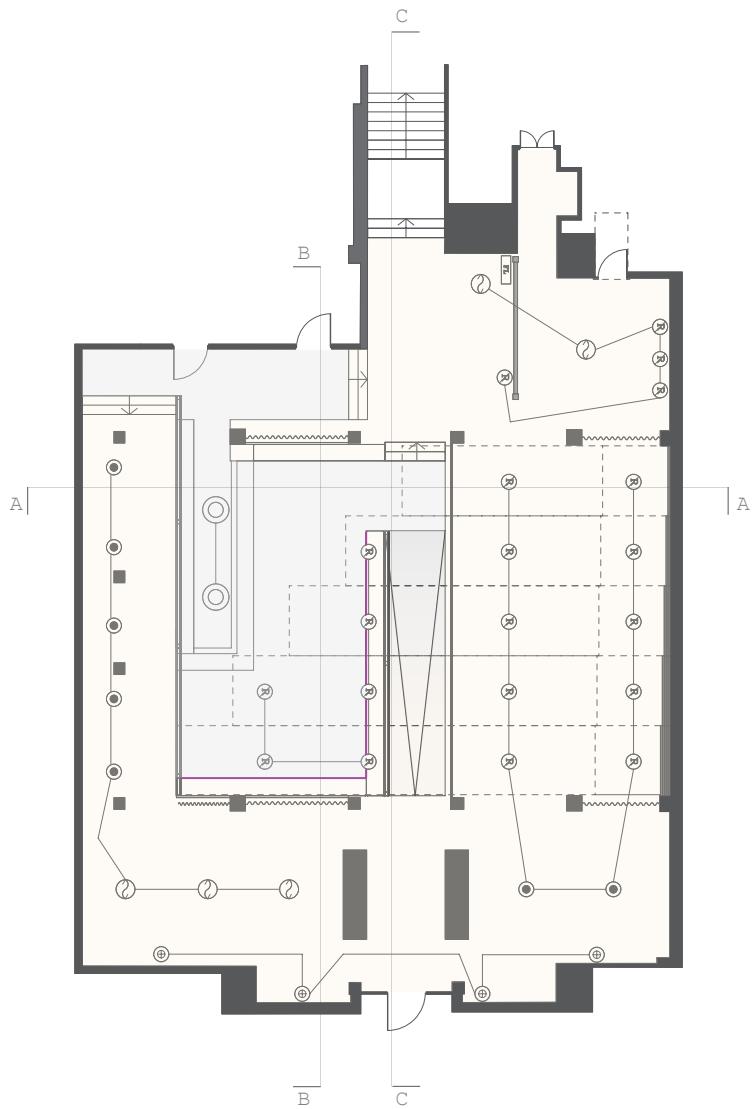


Drawings for specialist trades

It is good practice to provide separate drawings for each of the different trades that are involved in the building of a project. While the work of specialists, such as plumbers, electricians, heating and ventilating engineers, will be integrated with the work of all others on site it makes sense to provide drawings which deal only with the activity for which they are wholly responsible so that they do not have to extract the information they need from a much more complex general drawing. The computer's capacity to make a drawing in separate layers allows bespoke specialist information to be added to a general base layer that incorporates only the information common to all. The clarity of the specialist drawing reduces confusion and mistakes.

This page

The complexity of drawings depends on the complexity of the project – and a small project can be very complex. These two drawings, each for an electrical contractor, carry different degrees of information but each are very focused and clear on the layout of light fittings. The top plan shows the location for three different fittings, each shown with a different symbol and identified in separate specification notes, and links those on the same switch circuits. The lower plan deals with two different fittings and provides setting out dimensions. It is customary to use a ‘reflected’ ceiling plan, drawn as if the ceiling is mirrored at floor level, for all plans relative to the ceiling. By retaining the orientation of the floor plans correlation between ceiling and floor elements is kept simpler.

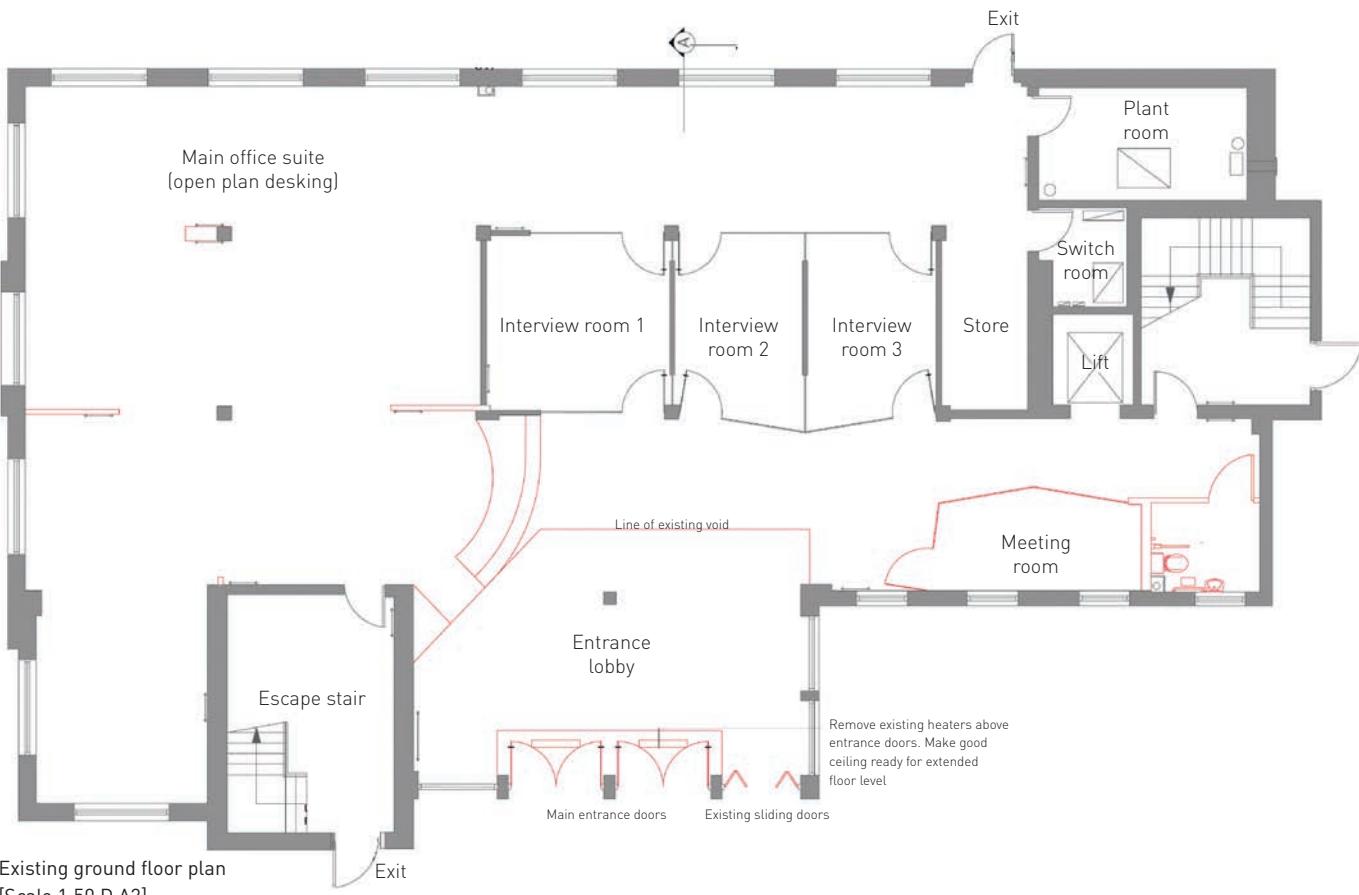


Below

Typical specification notes on the bottom of a sheet of plan drawings.

Specification

A specification is a written description of the quality and performance of components and the standards expected in their construction. It is written in purely factual language. For bigger projects, it may be issued as a self-contained booklet or, for smaller projects, added to a drawing. This example, part of a more extensive text printed on the bottom of a sheet of plans, offers a good model for appropriate language. It is normal practice to refer to local building regulations, trade standards and manufacturers' installation instructions in a general introduction as definitions of required quality.



Existing ground floor plan
[Scale 1:50 D A3]

General Notes & Specifications

All operations to comply with the Current Building Scotland regulations and all current amendments.
All electrical operations to comply with Part 4 of the Building regulations and be in accordance with BS 7601: 2001.
It shall be the responsibility of the client to ensure that Part 1 of the Building control Regulations 2004 and be tested and supported as per manufacturers written specifications.
If glazing to be in accordance with BS 6262, Part 4: 2005.
It shall be the responsibility of the client to comply with BS 6700 and Water Authority Regulations and bylaws.
All sanitary pipe work to comply with BS EN 12056-2:2000.
Insulation of pipes & vessels to be in accordance with BS 5422: 2009
Any & all services, ceiling, walls & floors to be insulated as existing, intumescence collars / seals or fire ampers to be fitted to new services / pipes / ducts or walls.
All structural steelwork retained as existing. Walls being removed are of non load bearing nature and no lintels will be required.

External walls

External perimeter walls to be insulated with 80mm insulated plasterboard.

Internal Partitions (Lobby Walls)

New lobby wall to be formed using 50 x 150mm dressed stud timbering at 600mm centres. Install 150mm insulation quilt and apply 18mm gypsum plaster to both sides with 12.5 mm adhesives. Refer to structural engineers drawings for detailed specification.

Internal Partitions (Toilet Walls)

New sound proof walls between accessible toilets and corridor formed using 95 x 50mm s/w framing at 400mm centres with 50 mm Crown GP sound insulation quilt. Partitioning to be taken above suspended ceiling level to the existing slab. All partitions to be finished with dryline finished either side with 1x12.5mm & 1x19.5 mm TE plasterboard lining with filled joints both sides. Apply matt emulsion paint to all new partitioning. Patch perimeter walls as required. Apply satinwood paint.

Glazed Partitioning.

12.8mm toughened glass silicon jointed floor to ceiling glazed partitioning and doors as indicated. Door sets to have minimum 100mm floor to hinge. All doors to have minimum opening of 850mm.
All glazing partitions to have film applied manifestations to client design and to comply with Part 4.8.2 of the building regulations. Glazing should be designed in accordance with BS6262 part 4.2.20 to resist human impact.

New First Floor Balustrade.

New 1200mm Ballustrade & part height partition. Refer to structural engineers drawings & specification.

Circulation

Circulation to escape route to be kept to a minimum of 1200mm.

New Floor Extension / Void

Form new structural flooring over part of the existing void with a new meeting room and first floor reception area. Flooring made from treated s/w joists at 400mm centres, floor lined with 22mm chipboard ready to take new floor finish. New flooring to be in with with existing. Refer to Structural Engineers drawings and specifications.

Windows

All existing window roller shutters to be retained. Where existing lobby doors have been removed and replaced with new windows, make good existing shutters.

Doors - General

New accessible entrance door to comply with 4.17 & 4.19 of the building regulations. Door to be powered by a motor sensor or by a wall mounted activation device such as a push plate. New internal doors to comply with 4.2.5 of the building regulations. Doors to have a minimum opening of 850mm. All new doors to have vision panels.

Access Facilities General

All access facilities should comply with the current Disability and Discrimination Act. All relevant doors to have a clear space 300mm from leading edge of door to the wall as far as practically possible contrasting colour to be used to distinguish between finishes and fittings.

New Reception

New reception desk to allow for wheel chair access and to comply with 4.10 of the building regulations.

Flooring - General

Existing floor to be retained. Lay new carpet floor tiles throughout new office.

Allow slip flooring within wet areas / kitchen areas.

All new floors to be laid in accordance with the manufacturers written specification.

Breakout / kitchen Area

Install new kitchen units and work surfaces.

Kitchen to have integrated dishwasher and integrated fridge.

Water & drainage: from kitchen appliances to connect into existing drainage system.

All walls to be filled and prepared ready to take new paint and site specific back finishes.

Install new slip flooring lay wood base throughout kitchen area.

Ceilings: (Refer to drawing BW (0) 002)

Retain existing ceiling grid and lighting, alter to suit new partitioning layout. Allow for additional & new lighting as required. Supply and install new ceiling tiles as necessary to patch existing.

Amendments

Once a drawing has been issued, whether before tendering or after work has begun on site, it is not unusual for some changes to be necessary. Making such amendments, or 'revisions' once involved laborious erasing of pen and pencil lines, and this invariably resulted in deterioration of the drawing surface. Now computer drawings may be changed leaving no trace of the original error, but all those involved in the building operation need to be alerted to the fact that changes have been made and be made aware of what they are.

When changes have been completed on all the appropriate drawings, they should be described verbally in an 'amendment box', usually a vertical column on the right-hand side of the drawing, be dated and given an identifying number or letter (for example: 'amendment C. relocation of office door').

The number of the sheet, or sheets, on which the revision appears should then take on the letter or number of this last amendment as a suffix. For example, a drawing numbered 23B, because it has already been amended twice (A and B), will take the revised number 23C when amendment C is added. It is normal and efficient practice to issue a copy of the amended drawing to everyone involved in the construction process. All involved must be made aware of every change because of the potential, sometimes unanticipated, impact on other activities on site.

Below

A table of amendments is normally integrated in the production drawing to which it refers. The letters in the left column identify the revisions made. The middle column describes the amendment and therefore identifies the relevant area, or areas, of the drawing. The right hand column records the date on which the revision was made and issued to contractors and other consultants, which may be important in later disputes about responsibility for delays.

	DETAILS	DATE
A	Site sizes applied. Feature wall amended. Fire escape reconfigured.	08 02 07
B	Fire safety symbols shown	21 02 07
C	Fire escape reconfigured. New furniture sizes shown. Builders' notes amended.	01 03 07
D	Fire escape corridor enlarged. Escape doors enlarged. Electrical note added.	30 03 07
E	Ramp between areas shown.	23 04 07
F	Fire door U valve and vision panel shown. Floor height difference accommodated.	03 05 07
G	Ceiling detail amended. Flooring rake relocated.	18 05 07
H	Dead end to fire escape reduced in depth.	23 05 07
J	Fire escape redirected.	01 06 07

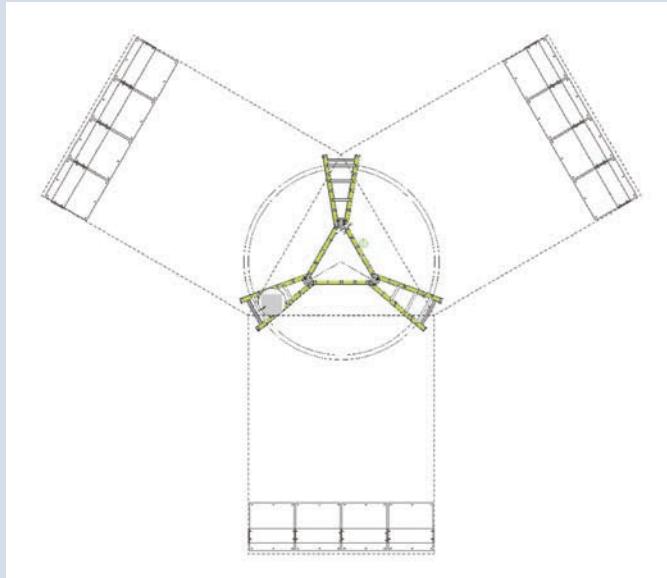
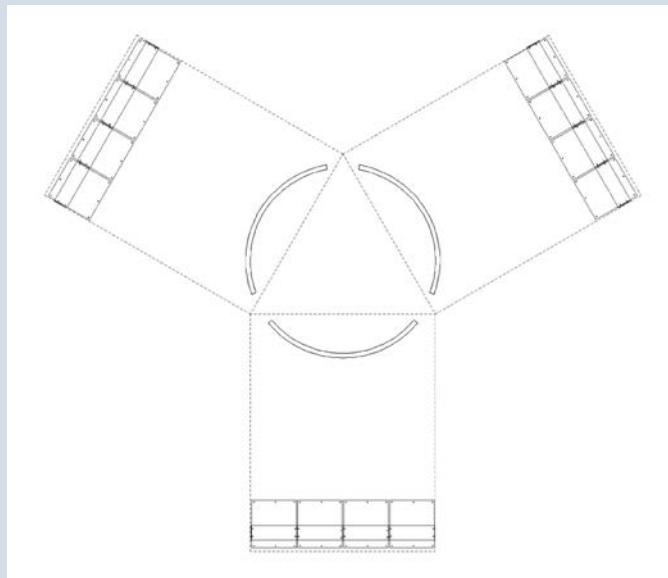
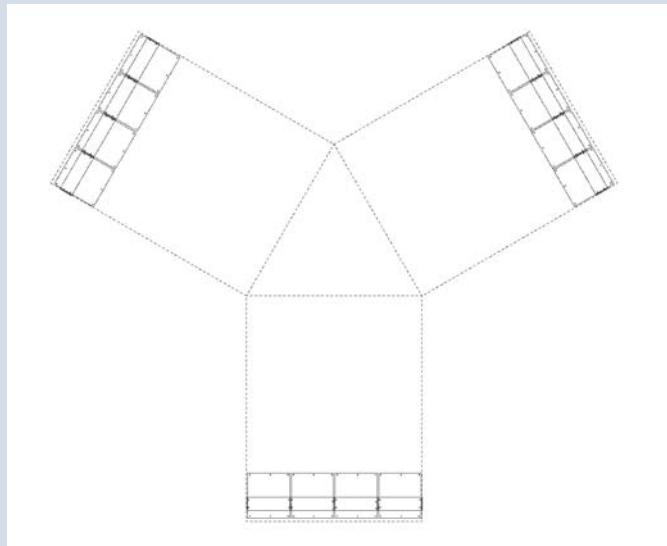
Case study Designing the drawing

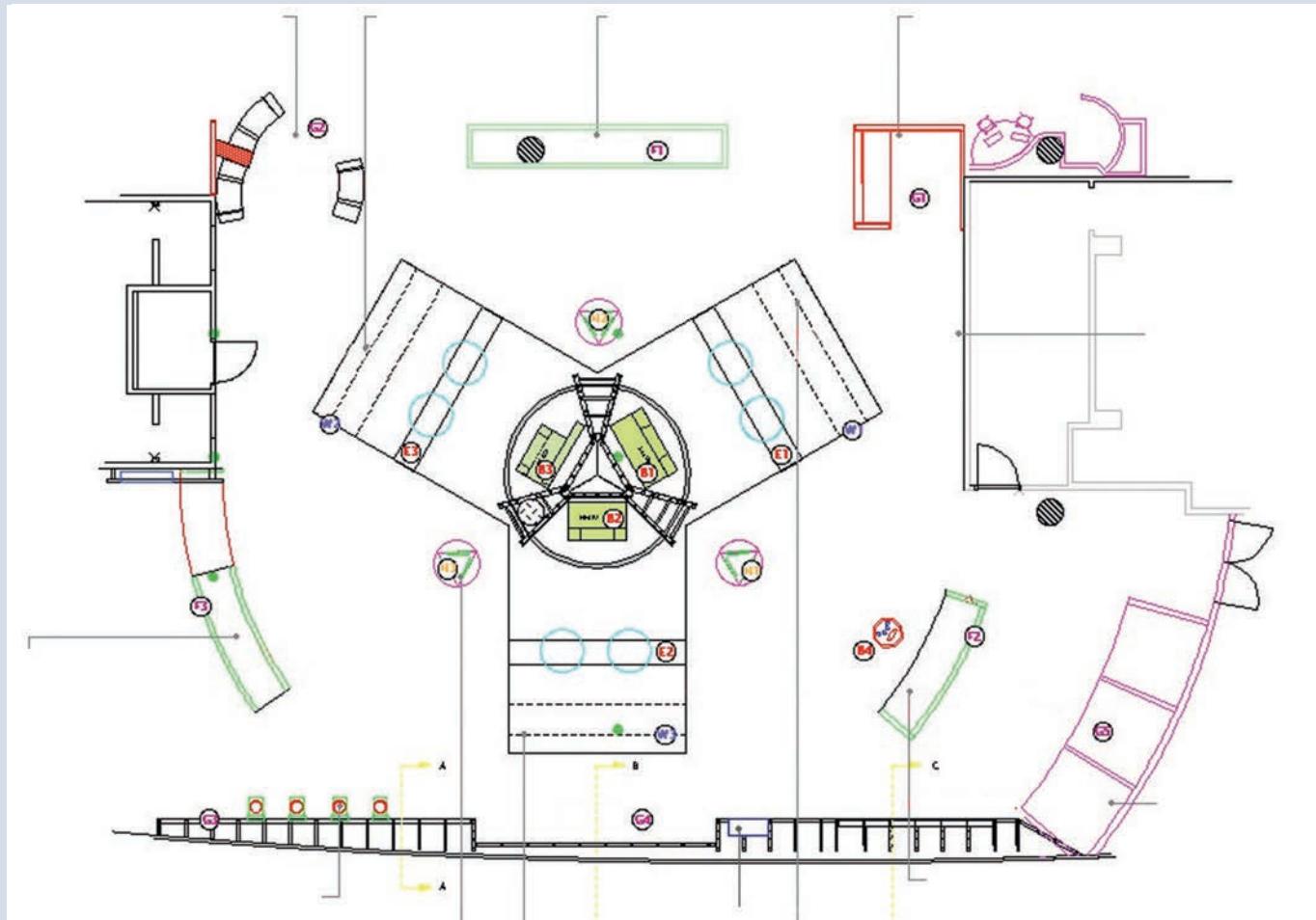
Deciding on the detailed plans and sections necessary to describe the construction of orthogonal buildings is comparatively simple, with proven precedents and, when made, such drawings are readily accessible to anyone familiar with technical drawing convention. Non right angles offer some problems but, because they are defined by straight lines, can be rationalized. A curved or circular structure poses more problems and requires not only analysis of how it may be constructed but also of the type and nature of drawings necessary to describe that process.

The following drawings were made in order to describe the construction of a display area within a museum. While analytical deconstruction of the visually complex whole identified a comparatively simple basic rib component it was also necessary to rethink the conventional drawing package. The plan became a series of plans that traced the build up of elements. Perspectives of the finished structure and its ribbed skeleton replaced conventional flat sections, which could not have dealt clearly with the foreshortening of angled components.

This page

The basic plan is explained in layers, which are overlaid sequentially to produce finished, composites, each of which present an aspect of the project in isolation.



**Above**

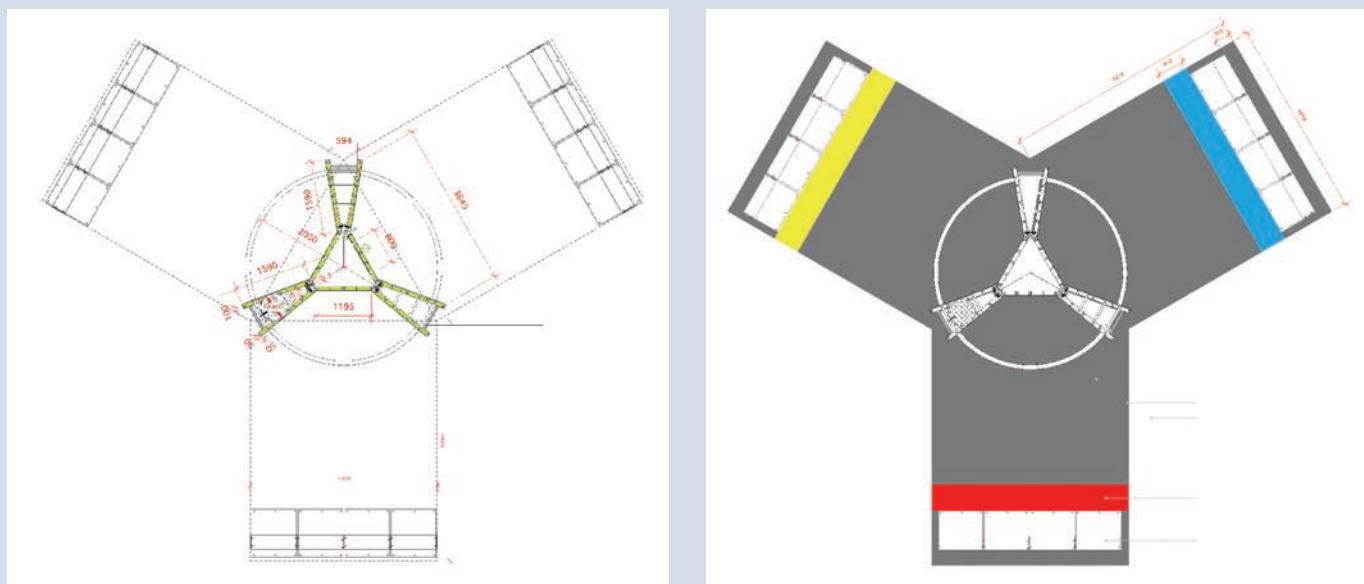
The three-sided element in the context of other exhibition structures.

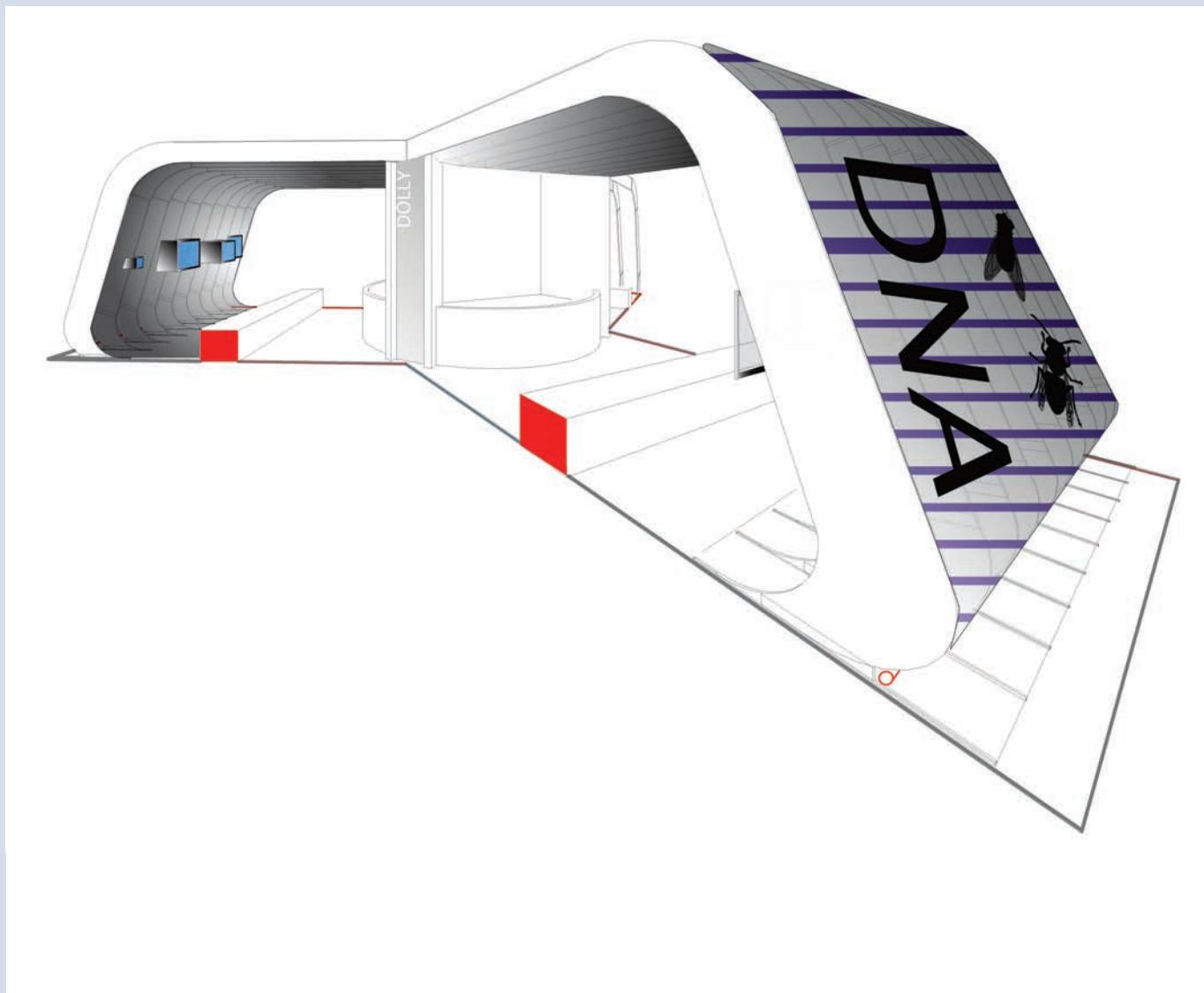
Below left

Critical dimensions for determining the footprint of the central structure.

Below

Setting out floor finishes. The simplicity of making a bespoke variation on the basic plan provides clear information for the flooring specialist, which would once have been communicated as notes on a much more complicated general plan issued to all contractors and subcontractors.



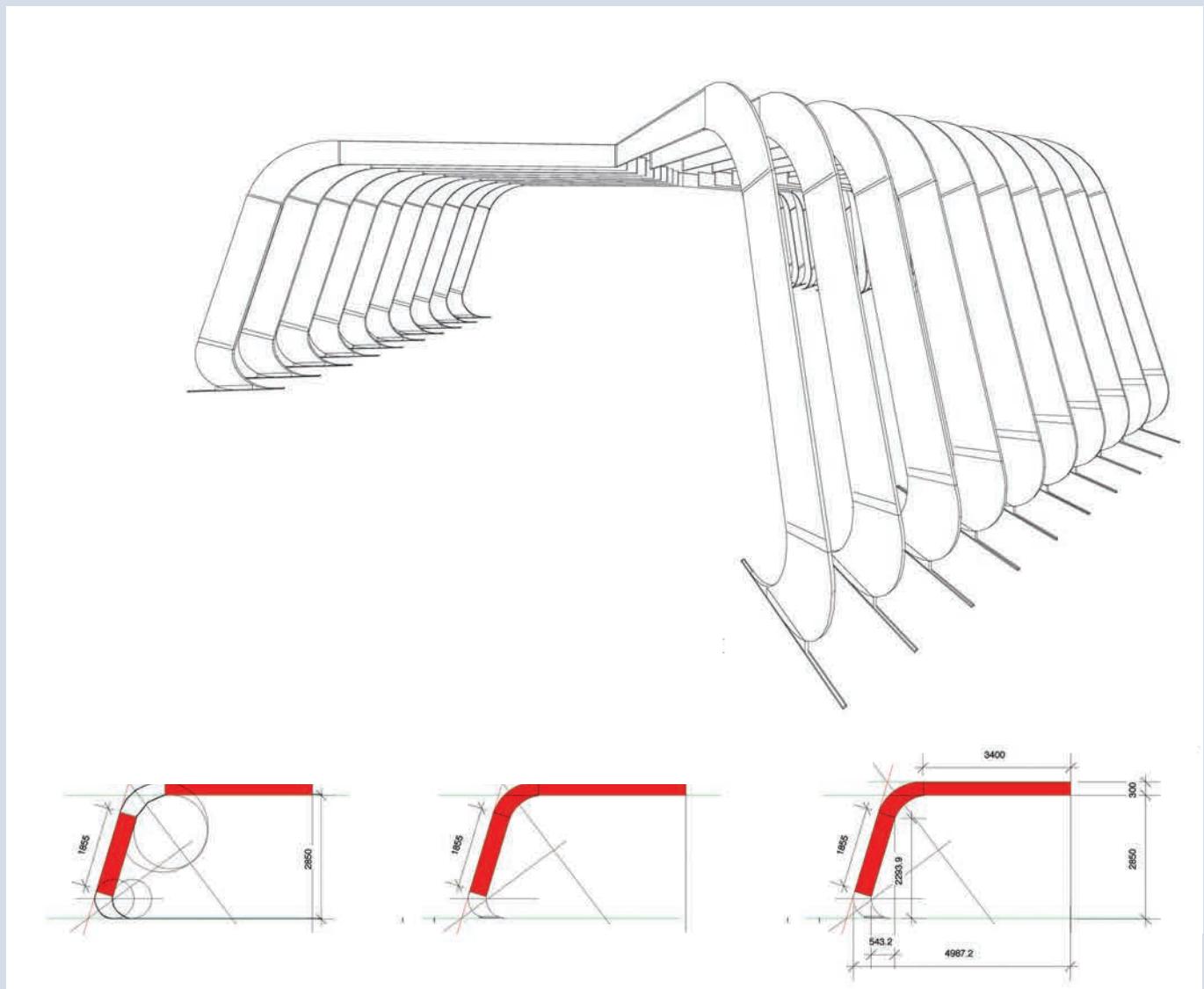


Once the three-dimensional drawing had established the nature of an individual rib it was appropriate to revert to two-dimensional rib profiles, as the clearest way of establishing dimensions and radii.

Had the drawings been made manually it would have been possible – indeed, essential – to provide the same information about profiles and construction techniques, but considerably more difficult and time-consuming to deal with the radiused sections. The three dimensional drawings would certainly have been prohibitively time consuming to make but without them even an experienced fabricator would have taken time to understand the intention. There would have been considerable opportunity for misinterpretation. The easy adaptation of digital drawings also allowed the tuning of base drawings to convey specialist information directly to the appropriate recipient,

to allow them to concentrate solely on the section of the work for which they were responsible. The breakdown of the complicated whole into comprehensible stages and components illustrated the comparative simplicity of the construction and encouraged lower tender prices.

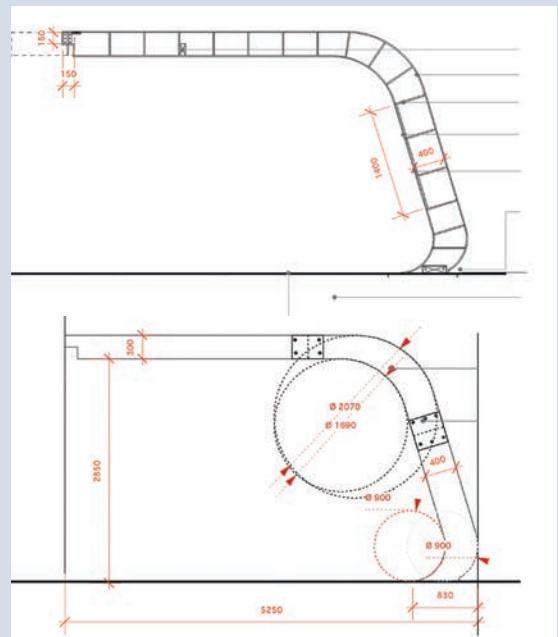
Above
One diagrammatic perspective introduces the end product.

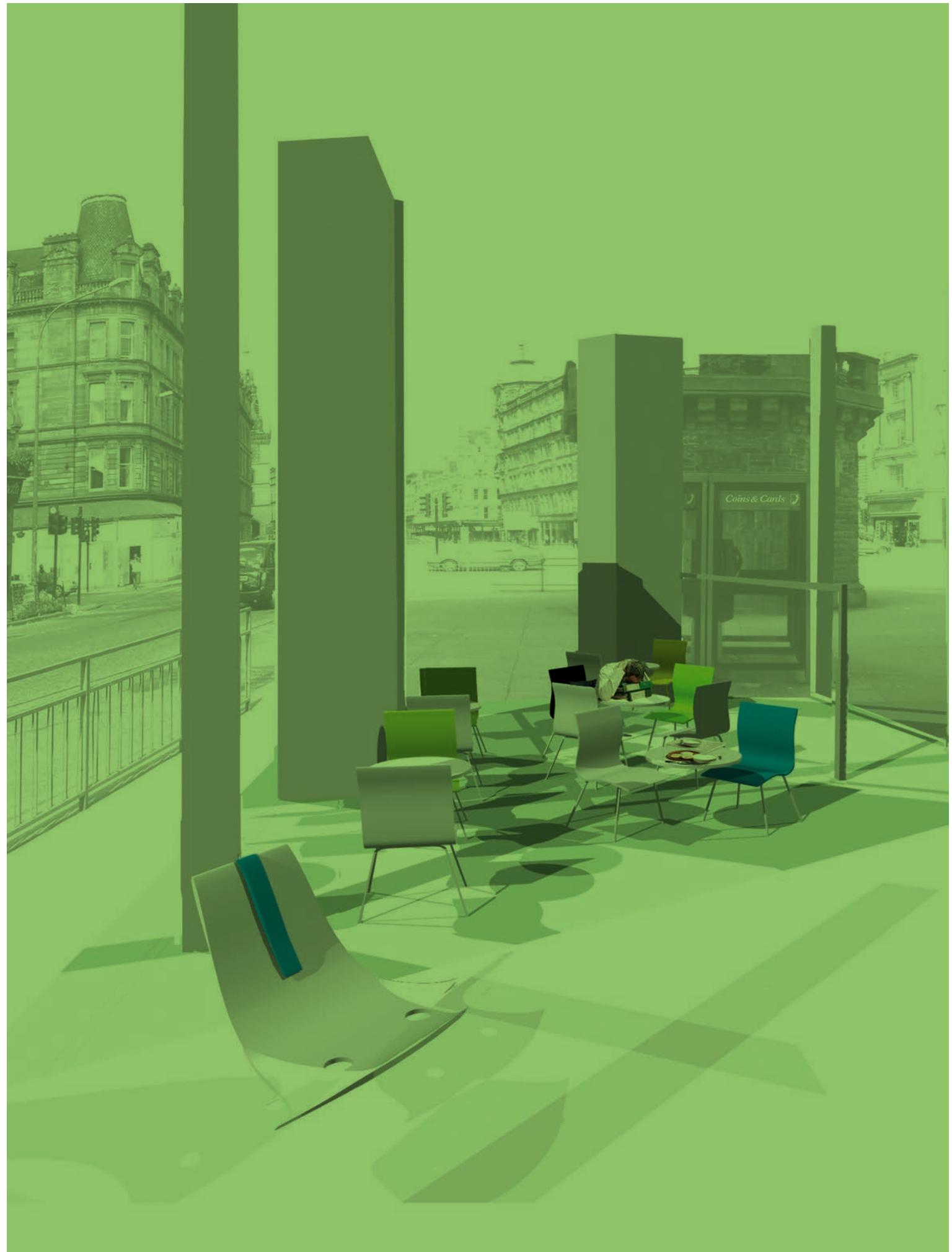
**Above**

A skeletal perspective reveals the rib structure and its joints and the red sections set out critical dimensions for straight lengths and angles.

Right

The upper section establishes spacings for cross ribs and the lower defines radii.





RESOURCES

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Glossary

There are a number of words relating to the practice of drawing within interior design that are more or less understood by everyone but are open – and vulnerable – to individual interpretation. Ambiguities are further complicated by words that have necessarily been imported from new technologies. For the sake of clarity, it is worth defining a few of the more crucial words and phrases used in this book.

Drawing

A dictionary definition of a drawing is ‘a picture or plan made by means of lines on a surface, especially one made with a pencil or pen a sketch or outline’. Such a definition held true for interior designers until the advent of the computer and more or less remains true if the computer is added to the list of drawing instruments.

The same dictionary defines the activity of drawing as *‘the art of making drawings, draughtsmanship’* and this applies very satisfactorily to interior design. So, while the word will continue to trail the idea of the hand-made behind it, it will serve very well to categorize the activities that concern us here.

The word ‘drawing’ can be used to describe everything, from a perfunctory scribble to the most highly refined artefact. It can describe something that is abstract, impressionistic, realistic or technical, which may be freehand, made with technical instruments, or made with computers all are graphic artefacts, created with the single intention of creating and bringing to completion an interior design project.

Of course a drawing may also refer to the sheet of paper on which a number of individual drawings, however generated, are collected, usually for distribution to those involved in the process of commissioning, creating and constructing an interior project. Everything that emanates from an interior designer’s studio, other than a letter, tends to be described as a drawing and that convention is accepted in this book.

Drawings may be further classified by the following terms:

Digital drawing

Made using a computer.

Freehand drawing

Refers to a drawing made entirely without technical instruments and judged by eye, or to a drawing for which the essential delineation is made by instruments but which is finished by hand.

Image

A drawing, primarily three-dimensional, created on a computer.

Manual drawing

Made by hand, with or without technical instruments.

Model

There are two types of model:

- **Physical** or **‘real’** a three-dimensional representation, made to scale. A physical construction as opposed to a drawing.
- **Digital** or **virtual** a three-dimensional, computer-generated **image** or **drawing**, usually rendered to achieve a high degree of realism.

Rendering

A drawing, usually three-dimensional and made either on a computer or by hand, which uses colour and tone.

Technical drawing

There are two types of technical drawing:

- Made to scale, on a computer with appropriate drawing software, or by hand, using the traditional range of instruments a scale ruler, set squares, compasses, pencils or pens.
- A drawing, usually made to scale but occasionally freehand, made to communicate technical information.

Visualization

An accurate three-dimensional, usually colour-rendered, representation of an interior, once hand made with technical instruments but now more likely to be computer-generated. who introduced so many to the fundamentals of digital imaging, to Jason Milne, whose virtuosity across media proves that great drawing depends on the maker and not the medium, and to Olga Valentinova Reid for her exploration of the far reaches of digital imaging and her generosity in creating so many drawings especially for the book.

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