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**Artists' Impressions** in Architectural Design

# **Artists' Impressions** in Architectural Design

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# Chapter 1
# Context and Introduction

The design for a building begins with a concept, an idea in the mind of the architect. This image must be conveyed to clients, who understandably need to know what their building will look like. It needs to be communicated to planning authorities and perhaps to committees judging competitions or organizing exhibitions. Members of the public also have an interest in finding out what is planned for their neighbourhood. The architectural intention of a design often needs to be communicated to people who may or may not possess architectural understanding. It is not normally practical to create a prototype building, nor is it sufficient to describe the inspiration of the architect in words. A visual representation is required. Presentation techniques, for different stages of the design process, have ranged from the brief conceptual sketch, geometrical plan, section and elevation, picturesque perspective, physical scale model through to today's computer simulation. Thoughts are represented either subjectively, providing an *impression* of the building, or objectively, via precise geometry attempting to define the building in advance, the two approaches perhaps reflecting that architecture belongs to both art and science. Some worthy presentation drawings and models, whether for realized projects or not, have found their way into galleries, archives, collections and books, and as such have become publications, moving outside the building process and into the cultural institutions of architecture (Lipstadt 1989). Whatever the form of the *artist's impression,* its importance and interest, and debate on its effectiveness, cannot relate solely to the representation itself. We must take into account the process by which it came into being. The visual representation of buildings has taken many forms, and its rich history, great diversity and fascinating future remain as interesting today as ever.

A*rtists' Impressions* are drawings and models of designs for a building that does not exist at the time of their preparation. It can be difficult to differentiate between this type and representations of completed buildings that are known as topographical depictions (Stamp 1982). The position of *architect as artist,* within the background of British architecture, was arguably the historical position and held good until building activity in the 20th century started to gain pace. Prior to the 13th century an important church may have had a simple plan, usually based on an existing building, but construction could continue over several centuries during which time styles changed and drawings did not survive. If a drawing was used it could be very large, or even full size, prepared on tracing boards or on specially prepared plaster screed floors (Porter 1997). In the Gothic period (12th to 16th century), although the geometry was sophisticated, architecture was fundamentally a *constructive practice,* operating through well-established traditions and geometric rules, discussed and applied directly on site. Art was *applied* to buildings, in the form of marble statues, alabaster images, stained glass, English embroidery, and curvilinear mouldings. The 14th century saw more architectural ideas conceived as

geometric representations, and window tracery adopted both flowing patterns and rectilinear forms. However it was the period of the Renaissance (16th to 19th century) and the introduction of new scientific discoveries, including geometrical theory and practical systems for making perspectives, that signalled a milestone in the representation of architecture. Due to its distance from Italy, England was not influenced by the movement until a century after its birth in Florence, when it became fashionable for young men to visit Italy and return with Renaissance ideas. Creative influences also developed as many artists and craftsmen were displaced, perhaps for political or religious reasons, from important artistic centres in Europe, and sought refuge in England. Various English monarchs who had liked concepts they had seen in Europe also introduced artistic fashions and trends. However during the 17th century the designers of buildings were mostly working masters who had risen from the rank of mason, carpenter or bricklayer. It was the 18th century that saw the emergence of architects who had begun their careers as artists or sculptors, often studying in Italy. Architects began to engage pupils and the profession of architecture began to be consolidated. Towards the end of the 18th century the Picturesque Tradition, and its fashion for architecture and landscape gardening, saw an establishment of designs composed as pictures. The new media and techniques of the Renaissance had resulted in greater freedom of expression for the draughtsman and increased stature for the artist. Drawings, paintings and physical models, making use of the technique of perspective, were used as a way of presenting ideas to clients, and some beautiful presentations emerged.

The 19th century witnessed a period of great innovation. It brought the invention and development of various new aids for architectural drawing (Hambly 1982). These ranged from accurate, sophisticated mathematical instruments such as the elliptograph, pantograph and scale rule, to the simpler tee square, drawing board and tracing paper. Hambly (1982) described how a new type of instrument-maker emerged in Britain to meet the demand from engineering, architectural and surveying professions. W.F.Stanley started his business in 1853 and invented and produced a wide range of drawing instruments that were technically efficient and simple for the draughtsman to use. His business survived for over one hundred years.

Photography was also born in the mid–19th century, and various photographic processes developed as the technology improved. The technique of photomontage, superimposing designs of proposed buildings onto photographs of existing scenes, was introduced in an attempt to provide a new realism. Yet photography could never portray a building that did not exist—*one of the few situations in which the camera is not an option* (Myerscough-Walker 1958), but it was welcomed by architects as an important aid for the visualization of existing buildings. Photography offered an alternative to sketching, in the recording of existing details, but the simplicity and portability of the sketchbook were features that stood the test of time. The latter part of the 19th century was a period when visual art was of great significance. Architects with sufficient means travelled regularly to the continent with pocket-sized sketchbooks to record architectural details. Some celebrated artist-architects emerged at this time, with artistic style varying from soft-edged watercolour impressions to exploration of pen and pencil techniques and aerial views. The representation of depth in a two dimensional medium resulted in concern for shadows, and renderings aimed for a geometrical accuracy in their production. At the end

of the 19th century the formation of societies such as the Art-Workers Guild (1884) and the Arts and Craft Exhibition Society (1888) heralded the Arts and Craft Movement. Its aim was to revive handicrafts and reunite them into building design. Painted friezes, stained glass, woodcarvings began to once again adorn buildings. Further integration of art continued into the early 1900s. Architects began to include murals, mosaics, sculptures and other works of art into large public and commercial buildings. However towards the end of the 19th century engineers were demanding more accuracy and axonometric projections and three dimensional geometric representations were considered by some to be more objective forms of communication. The beginning of the 20th century heralded a distinct change in architectural representation. Drawings were based less on visual intuition, and a more academic approach was adopted for their production. The period of the Modern Movement signalled a time of increasing industrial technology and saw a revival in the use of physical scale models to represent buildings. Drawings became symbolic rather than literal, with architects expressing their design intention without decoration, although the technique of perspective was still applied. Indeed *throughout the 19th century and up to the advent of CAD the perspective drawing remained the traditional way for an architect to demonstrate to his employer, what the results of his investment would be. It sought to provide a realistic impression of the intended finished* product (Fellows 1998).

The skill and artistic licence of the architect in presenting his ideas have led to questions concerning the relationship between drawing and building. In considering the work of Edwin Alfred Rickards, a partner of Lanchester, Stewart and Rickards, Fellows (1998) notes *he was able to produce marvellously fluent drawings, particularly of detail and ornament, which, one feels, could have been translated from the paper into reality. The immediacy of the inspiration is conveyed in the building…* It may be claimed that there is an interactive relationship between the drawing and the product that it is aiming to illustrate. At a base level, it is probable the building and its drawing have a common style. However the relationship can be much deeper. The architect may be even subconsciously trying to visualize the very ethos of the design philosophy, through the drawing. For the artist-architect, this is a natural association and the drawing can become part of the design process (Fellows 1998).

There have been many times, however, when architects did not produce their own representations, but employed independent artists. The Picturesque Movement at the end of the 18th century saw architects beginning to employ professional watercolour artists to illustrate their ideas. Many qualified architects acknowledged that their real love was in the representation of architecture, whether via drawing, painting, sketching, model making or digital art. Some worked alongside practising architects, but chose to focus on the visualization of design ideas. Naturally some important and longstanding relationships developed between artists and architects—*The production of art, as much as any other production, takes place in the context of human interaction—with others, with nature, with tools, with artifacts, and with ideas from times passed* (Nadin 1989). Artists required skill, patience and trust to successfully envisage the idea in the mind of an architect. The introduction of architectural competitions in the 19th century resulted in further employment of professional independent artists to produce presentations of the highest quality. Societies were formed which acknowledged the importance of these

independent artists, model makers and computer illustrators, and their contribution as professionals and craftsmen in the field of architecture became well recognized. At the end of the 20th century the traditional lines of distinction between advertising, public relations, architecture, computer programming, and graphic design were blurring (Buday 2000). *Again, we are at a point where paradigms are shifting, synthesis is occurring, balances of power are being unbalanced, worlds are being hyperlinked and professional boundaries are disappearing* (Spiller 2000). Architectural practice was becoming *multidiscipline* and larger practices either employed their own artists to work on a variety of media, or they commissioned work from those independent artists who had formed their own companies. Successful independent artists have always had to keep abreast with developments of their time, applying new tools and techniques to architectural representation. Yet the aim of the independent artist can be different to that of the architect. Whereas the architect's aim in a visualization is to communicate ideas, an artist is concerned with generating meaning, with revealing the nature of their medium and their relationship to it (Wright 1989). Fellows (1998), developing his claim about the association between drawing and design process, is concerned that where either the personnel or the means are more detached, there may be more apprehension as to whether the drawing is a faithful representation of the future building. In particular as architects' offices were becoming increasingly computerized, and the need for drawing skills was becoming less important, the CAD software that was used could well have an effect on built work.

Concern and debate on the validity of images that represent architecture has had a long history, with conflicting attitudes to the art of drawing, the eye-catching perspectives of the 19th century, and the computer-generated representations of the 20th century. Issues of *skill, honesty,* and *artistic licence* apply to all forms of architectural representation and should be considered in any analysis of correlation between architectural representation and eventual building (Stamp 1982).

If an architectural representation is to be effective in demonstrating to a client what the results of his investment will be, the process of its production needs to be reliable, and the final image credible, if it is to carry any measure of authority. The creation of a realistic impression where the object does not exist, is a particular skill (Stamp 1982). *Skills* required for effective architectural representation have gathered over many hundreds of years and architects have accumulated an impressive portfolio of expertise, developed alongside educational advancements and technical innovations. Although tools and media may change in function and form, and some are long forgotten, many of the skills of the architect are as important today as they ever were. Architects have long analysed existing structures by sketching, then incorporated ideas from these sketches into new designs. Broadbent (1989) describes this approach as *You like this building, so you are going to record it as seductively as you can, making the sketch itself into a beautiful thing: the medium itself takes over, conditioning what it is you sketch.* Sketching, whether for recording details of an existing building, or for forming ideas for a new building, has remained an essential skill of the architect. An understanding of drawing, painting, colour, three dimensional geometric representations, isometric perspective and sciagraphy is still required to create and communicate the essence of design. Whether using blank paper, empty canvas, modelling clay, or computer screen, certain

fundamentals still apply, and possession of knowledge and skill in these areas can only result in a more credible representation. The growing ease with which it is possible to select options from a computer menu, to perform tasks that used to be in the domain of craftsmen, does not lessen the need for an artistic eye, together with an understanding of the craft the machine is performing.

Prior to the establishment of formal architectural education, architects learnt their trade by observation of the work of influential architects or respected theorists, past or present. Publications of creditable doctrine were translated into various languages and eventually published in the form of practical manuals, disseminating principles to those in practice. The development of new drawing aids and instruments, drawing and graphic techniques, as well as many realized and unrealized designs were all recorded in a variety of published works. Collections of drawings also provided a valuable resource for students of architecture seeking to adopt the style of inspirational architects. Those students fortunate enough to be employed in architectural practice learnt from their employers, some of whom were good teachers, keen to inspire and encourage. Pupils could help in the production of architectural publications, and although they received no formal architectural education, their powers of observation, and other skills developed in apprenticeship, were valuable for the future. Those with the means to do so would travel to places of architectural significance to study both building design and conserved drawings. The formation of influential societies, guilds and academies over the years improved and added to the range of skills of the architect, as well as providing respected forums for the exhibition of proposed architectural designs, competition entries and topographical depictions.

The development of full-time architectural education did not begin in England until the beginning of the 20th century. Architectural courses became recognized at universities, following the approach set at Liverpool University, under C H Reilly. The system of articled pupillage of previous years, where students learnt their craft from their masters, was to be replaced by a scheme modelled on the French Beaux Arts system, and versions practised in the United States. The systematic preparation of a Beaux Arts drawing is recalled by Broadbent (1989): *You stretched a sheet of paper, drew your Renaissance composition in meticulous detail, cast the shadows and then rendered it with up to 40 washes of hand-ground, and filtered, sepia ink.*

At the beginning of the 21st century the digital revolution was accompanied with concern for the integration of digital methods into architectural design and presentation. The introduction of computers to students of architecture was influenced by factors such as available resources, enthusiasm of staff, pressure from students, direction from professional bodies and prejudices in favour of the more traditional techniques. Nonetheless students of many schools of architecture at the beginning of the 21st century were demonstrating that skill in design and traditional drawing could be combined with the new skills of computer modelling, rendering and animation (Clary 2000). Indeed architectural practice was looking to employ young graduates who had an aptitude for the new technology, so they could further its integration into practice. In a discussion of *cyberspace,* a term used by William Mitchell, Pickering (1996) predicts that the architect's skill in transforming *artistic impulse into material expression* could be of enormous benefit to the forces that are bringing cyberspace into being.

As well as the skill of the architect, or artist, in visual communication, credibility of an image could be improved by evidence of *preciseness* and *honesty* in the process of its production. The accuracy of architectural representations has long been a subject of reflection and debate. Architects have had a wide range of drawing aids with which to work over the years, and Harris (1982) claims that there is no doubt that the constant high quality of architectural drawings throughout the centuries is due to the high precision of drawing instruments. From the early 18th century many established north European architects published their works to attract further patronage. The tradition of publication demanded clear and accurate representation, and mathematical drawing instruments were used to meet these demands (Hambly 1982). Accuracy was certainly required for the correct representation of the classical orders. Specialist pens were developed to aid geometrical drawing. Broadbent (1989) comments that axonometric drawings of architects such as Stirling, Eisenman and Krier would not have been possible before the development of the Rapidograph pen (1952) and Rotring's Isograph pen (1977). The introduction of the rationalized steel frame from America (early 1990s) contributed to black and white, precise engineering-like drawings with figured dimensions which could be reproduced easily. CAD images, based on mathematical processes, are supposed to be precise, and the computer can indeed perform calculations to impressive degrees of accuracy. The initial data which form the basis of the model need to be derived from accurate sources. Functions are built into software to support and encourage accuracy in modelling and to eliminate guesswork. For visualizations that began life in 2D format, then extruded into 3D, accuracy was vital as the subsequent rendering process could highlight any flaws in initial geometry.

Issues of *honesty* are also of as much concern today as they have been in the past. The following chapters touch on the honesty of the architect, and the recognition by some architects that their preferred mode of presentation had limitations. There has been mistrust recorded about many types of presentation, and the level of detail incorporated. The current trend of clients becoming involved *earlier* in the design process has led to a belief by some computer illustrators that simpler renderings are preferable to those with artistic finishes. A presentation may gain influence by being full of detail, but it may also lead to clients' reluctance to suggest changes. There is an honesty in rendering a building from an accurately constructed computer model. Simple renderings can still possess an artistic elegance and clients can be very enthusiastic about the opportunity to view a design as a quickly rendered computer model (Claridge 1996). Therefore simple, accurate representation, presented honestly to the client to help explore design possibilities has its place in today's world, where even the most complex buildings are expected in less time and at less cost.

In addition to the skill and honesty of the architect or artist and the precision of the tools and media, the issue of *artistic licence* is a consideration in any study on architectural representation. In examining the role of the traditional perspective Gavin Stamp (1982) says, *the perspective is not an essential part of the architect's job, nor is it a precise tool in the difficult process of turning a design into a building. Rather it belongs to both art and architecture. It is an ARTIST'S IMPRESSION and the success of a perspective depends on artistic imagination and skill. So, while building designs are approved by clients without a perspective view of what the building will look like,*

*nevertheless it can provide a bridge between the architect and an often-uncomprehending public. As such, it is as useful today as ever.* However some believed that the nature of a drawing could obscure the reality of a building (Stamp 1982). It is possible that the self-expression of the artist, his *artistic licence,* may not always provide a clear picture of what a building might be like. Fellows (1998), in discussing the trend, in the early 1990s, of architects to employ professional perspectivists points out that *the draughtsmen all worked to their own particular styles, which on some occasions were not really appropriate for the subject matter and emphasized fashionable approaches and techniques.* In today's busy practices there is some belief that computer representations are getting close to work produced by professional artists; *you can do walk-through perspectives with solid and transparent planes, coloured and shaded, with highlights and reflections. Even better when by skilful use of video you can put real people in, moving around, changing scale in perspective as they do so. And once you've added sound, smell, temperature…*(Broadbent 1989). Skilled use of today's technology is aiming to provide an *'almost real' experience,* rather than simply an *impression,* of a building. Yet in the quest to provide a new realism, there remain concerns that fashionable technology can be used indiscriminately. Doubts are raised as to whether this new media, impressive for its accuracy and preciseness, could ever lend itself to *art.* Wright (1989) stated that computer imagery can give the impression of having a greater clarity than an ordinary photograph, as each object projects itself on our retina as forcibly as the next…*it is difficult to resist the feeling that the artist has tried to insist upon the superior reality of the computed image by giving all the elements in the scene an equal, idealized definition, that is how things really look without the limitations of the human eye.* Some believed that such visualizations were not providing the sort of realism that lends credibility and authority to an artist's impression: *as opposed to works of art that look better the more we look at them, electronic art seems to exhaust itself at the first encounter. There are numerous instances in which the computer controls the artist and 'signs' the work* (Nadin 1989). There is a need for the technology to *disappear,* to become *invisible.* This criticism of computer art, and concern with *realism,* is understandable. Reaction to new forms of art, and architecture, is rarely without conflict.

Aristotle, considered to be the originator of realism, believed that works of art should not be literal copies of nature but should express the *essence* of the subject portrayed (Jones 1989). Two schools of thought have developed on the subject of representation, and are described by Coyne (1994) as the *constructivist* view and the *correspondence* view. The constructivist school of thought argues that representation is a cultural phenomenon and that the quality and appropriateness of a representation depends on its purpose. The correspondence view argues that a representation corresponds to what is out there in the object: *if we can capture the basic geometry of the world in a computer system, then the representation of this information is an accurate reconstruction of reality.* Architects select those properties of a building considered necessary to preserve in a representation. The selection will depend on the purpose of the representation, but for architecture, geometrical description is usually considered fundamental. Beyond that, how much detail is required and where emphasis should be placed are but two of the questions only answered by clearly identifying the purpose of the work, and thereafter establishing whether a subjective or objective representation is appropriate. *Photo-*

*realism* may not be always what is required.

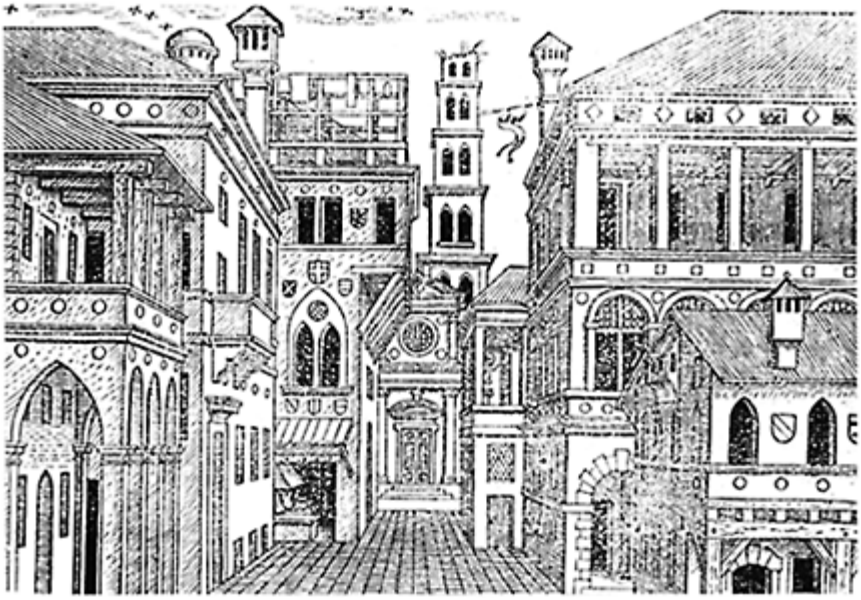
As new tools and techniques became fashionable for architectural representation, a preoccupation with these often resulted in a diversion to the matter in hand, the representation of a building. Claridge (1996) remarked that *in traditional media, artists are often recognizable in their work. With computer rendering, it is sometimes easier to recognize the software than the artist behind it. The challenge seems to be in finding efficiency in the tools without allowing them to compromise or pre-empt the design intent.*

The prescriptiveness of computer systems had been a major preoccupation of researchers during the 1980s and 1990s, with concern that standard elements included in the software package were being built in real life. Practices were finding it easier to select a less-than-ideal object from a ready-to-render symbol library than to create an ideal one from scratch (Claridge 1996). Some questioned whether this prescriptiveness encouraged designers to modify their design proposals to fit the constraints imposed by a system, and if so, whether this had any effect on architecture (Tweed 1999). There was also concern that the conventions embedded in the hardware, software and imagery of computer graphics could limit the models that may be generated (Jones 1989). Architects and artists have always been presented with new tools and media for design and presentation, but it was the preconfigured nature of the computer, full of defaults and short-cuts, that gave cause for concern to the profession at the end of the 20th century.

So what of the *correlation between architectural representation and eventual building*? Many of the elements which influence architecture—social forces, technology, orientation, movement, context and ecology (Crosbie 2000) also influence visual art, and therefore it may be reasonable to contemplate that there is a connection between the style of a building and the way it is represented. The examples that follow in *Artists' Impressions* offer some contemplation on this hypothesis. Lee Dunnette is an architectural illustrator who has worked with world famous architects for many years. He reflected, in correspondence, that *it is important to make a distinction between impressions produced during the design process, and impressions presented to the client at a later stage, when the design is more defined. There is evidence to show that the visualizing techniques of architects, whether drawings, paintings, physical models or computer simulations, used during the design process, are directly related to the final design of the building. However the presentation techniques of architects, when showing their design to the client, are related to the design visualizing techniques, but may not be the same.* The process of conveying an idea from the mind of the architect to the medium of exploration, to the medium of explanation, then to the completed building, is rarely accomplished without some deviation.

With so much current speculation and debate about the impact of information technology on current architectural practice it is only by glimpsing into history that we can put some perspective on the rapidly evolving techniques of today. The use of computers in architecture is still at an early stage. However architecture is no stranger to scientific innovation and change, much of which has had some influence on representation and built form. The following chapters explore the variety of ways prospective buildings have been represented, and offer a reflection on *artists' impressions in architectural design.*

# Chapter 2
# Theory and Ideas about Envisioning Buildings



**2.0 Perspective Drawing**

Sebastiano Serlio 1611

Great architects were not necessarily great draughtsmen. For example, while Inigo Jones was considered to be one of the finest draughtsmen in Europe, there is much more debate about the quality of Christopher Wren's drawings (Lever and Richardson 1983, Summerson 1966). The situation becomes even less clear where architects of renown established substantial offices in which other architects and pupils were employed. In such circumstances it is often difficult to tell who was actually responsible for the drawings and in some cases the designs as well. In England, standards of drafting were to improve following the foundation of the Royal Academy of Arts in 1768. When at the end of the 18th century, picturesque architecture came into fashion in the work of architects like **John Nash** (1752–1835) it became almost obligatory to compose designs as pictures. As well as line and wash, presentations were required in watercolour paintings. As a result, professional watercolour artists were increasingly engaged by architects to illustrate their designs in flamboyant style. Many of the illustrators were architects themselves, and it is interesting to speculate on how much they were

responsible for developing the designs as they drew them. By the early years of the 19th century, it had become almost impossible in many cases to distinguish between a topographical view and an architectural design. This depiction of Whitley Court is a topographical view by Wood, although it could almost equally well be one of Repton's c. 1810 design drawings for Nash. From the turn of the century, perspectivists were much in demand especially in the larger architectural offices. The Royal Academy

**2.1 Witley Court, Great Witley, Worcestershire**

J Wood 1843

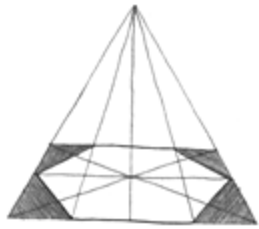
Exhibition had become an important venue for attracting commissions and perspective artists produced many of the exhibits which seemed to increase in size as the 19th century progressed (Lever and Richardson 1983). According to Blomfield (1912), there are clear differences in architectural drawings related to their purpose. The intention for creating them may be either objective or subjective, i.e. generated to produce a building exactly as drawn or to allow an impression of the building to be formed in someone else's mind. Farey and Edwards (1931) point out that as owners are spending considerable sums on these projects, they should be able to demand a realistic impression of the building as well as the kind of factual information for construction. It sounds so simple—the architect just needs to offer *a realistic impression of the building* but this statement is at the heart of the discussion. Even Goodhart-Rendel's (1951) proclamation that the perspective drawing *is the dishonest architect's most artful and convenient confederate* does not really explain the various forces at work. As Gavin Stamp (1982) says, it is actually to do with skill as well as honesty and the notion of artistic licence undermines some of the assurance about a correlation between the eventual building and its representation. Spiers (1887) notes that a perspective can never *convey the ultimate effect of the building because it is limited to one fixed point of view.* Presumably, therefore, he was advocating models as the only means of securing unlimited views of the proposals. Adams (1901) adds more doubt about the effectiveness of pictorial representation in his conclusion that *the more we realize that perspectives are at best architectural diagrams, the better for good building.* Perspective drawing was not used in early art forms. It does

not occur in ancient Egyptian or Greek art. The geometric theory and practical system for these drawings were actually developed during the Renaissance (Diekman and Pile 1983).

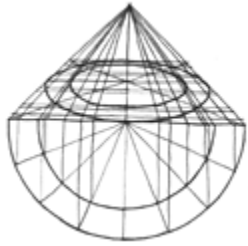
In the 15th century, architecture came to be understood as a liberal art and architectural ideas were increasingly conceived as geometric two dimensional drawings. Filippo Brunelleschi (1377–1446) is credited with the earliest example of a systematically constructed linear perspective in 1420. On a small, rectangular wooden panel, Brunelleschi painted a symmetrical representation of the octagonal baptistery in Florence's *Piazza* San Giovanni. He then perforated the panel at the vanishing point and asked observers to verify the correctness of the representation by looking through the orifice from the back of the panel toward a mirror that the observer held in the other hand. In Renaissance treatises on perspective drawing, binocular vision was often reduced to a single point of view. One of the most influential pioneers was **Sebastiano Serlio** (1475–1554) whose book has arguably even eclipsed *De Pictura (1485)* by the great Leon Battista Alberti (1401–1472) as a model for subsequent treatises. According to Serlio, no perspectivist could do his work without architecture nor could there be architecture without perspective. Possibly this was an evangelical view by someone at the forefront of perspective development surrounded by the ubiquitous *lineamenti.* He based his initial one point perspective technique on the triangle and used it to set out a number of geometric figures. Examples are the hexagon and the circle, in which the plan was the generator. He discovered that this system could be used for any plan where projected or real features cross the diagonal. It works well for two dimensional figures like plans but Serlio needed to develop it for three dimensional elements such as columns. One significant difference is that the column appears essentially in elevation and without depth, unless the observer is positioned to the side.

The height of the observer as shown by vanishing point VP1, becomes quite significant as the human scale can imply the size of an element and determine whether it is seen from above or below. In this way, architectural composition can be viewed in one point perspective. While the scale of the plan can be used to determine the height and eye level of the observer, Serlio (1611) is rather vague about how the depth is obtained. It can be achieved by trial and error but as a theory, which can be tested and replicated precisely, it is not easy to follow without a more precise geometry—the perspectives can become distorted.

The most recent textbooks on architectural drawing state that the one point perspective is more suitable for interior views or the surroundings of buildings which are themselves shown in elevation. In this case, the scale of the plan relates to the back wall of the space or the building elevation, and the eye-level of the observer scaled accordingly. The position and distance of the observer need to be chosen and can be scaled if required. The depth is determined within a 90° field of vision that



**2.2**



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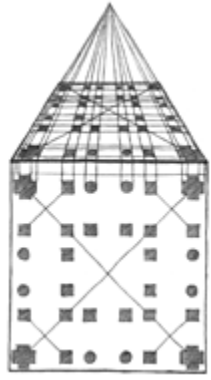

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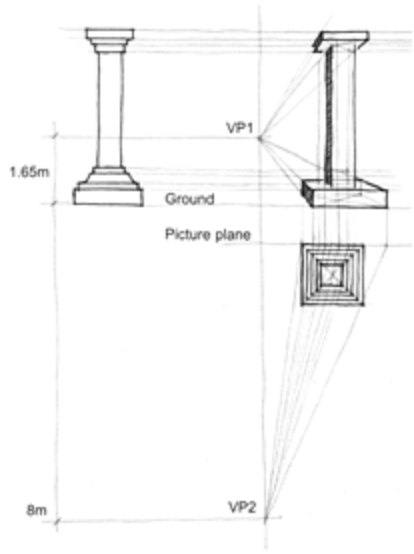
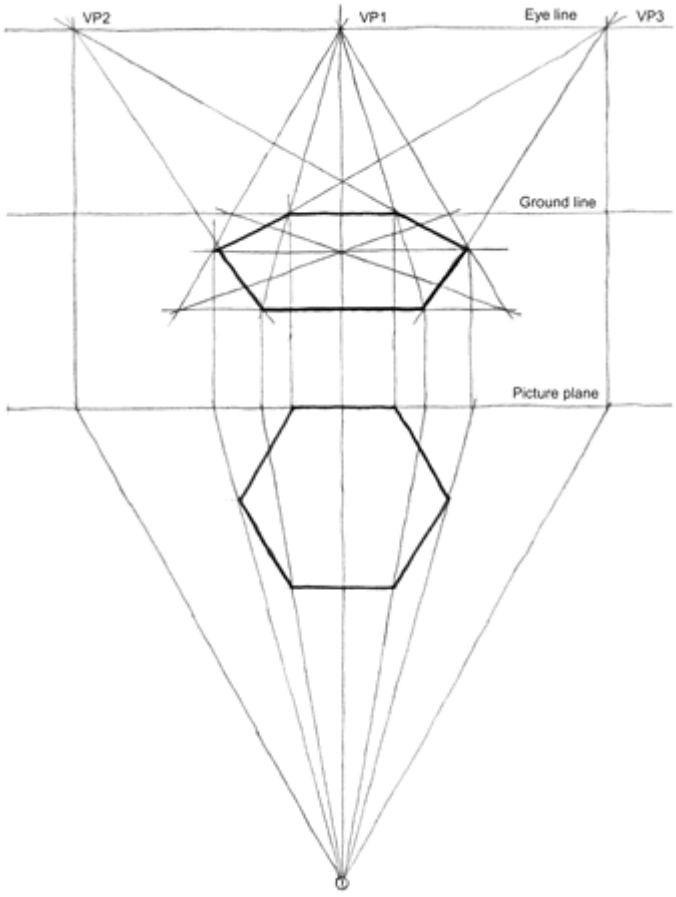


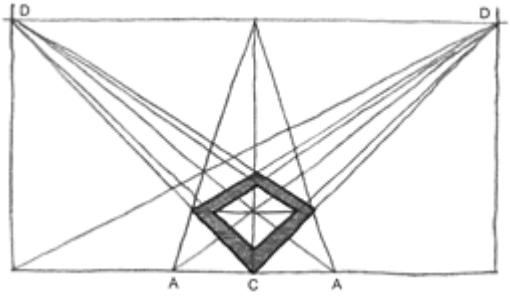

**2.5**

generates two vanishing points (VP2 and VP3) to either side. Projection from the observer through positions on the plan to the picture plane and then vertically to the ground line—intersecting lines from VP2 or VP3—provide intermediate depths . (McCarthy 1996). It is interesting to apply this approach to Serlio's models. The adjacent drawing shows the hexagon reproduced in single point perspective by using the 20th century technique of three vanishing points. In all perspective drawing, the construction lines should be very light but clearly and accurately drawn. The slightest error can easily become greatly exaggerated and distort the whole drawing. It is a useful technique but has distinct limitations. For symmetrical shapes it is fine but cannot cope with asymmetry.

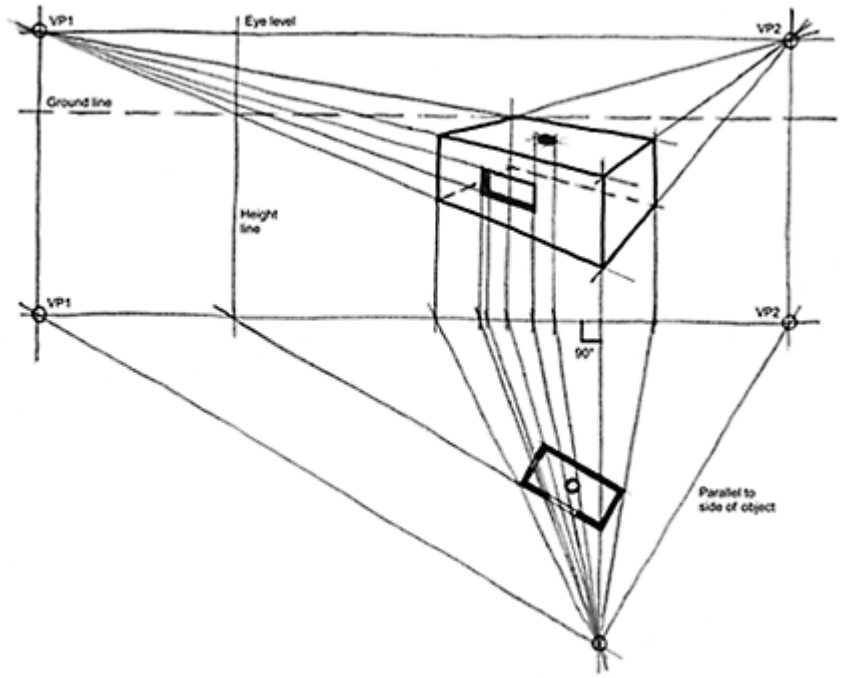
Serlio (1611) muses that as *I thought to make an end of my second book, I begin to handle a harder matter…it is as well drawn by the horizon as by the distances, as you may see in the figure following.* He had begun to consider the two point perspective. Serlio goes on to develop this principle with a number of geometric figures but when it comes to the architectural and natural perspective scenes at the end of the second book, they are all in one point perspective (see Fig. 2.0) indicating that the two point variety had not reached a position in which it could be freely used.



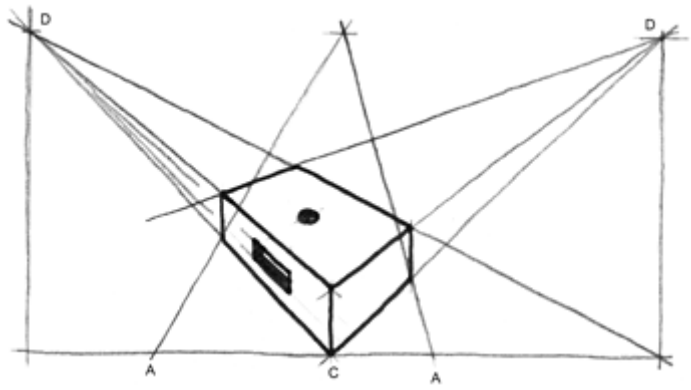

**2.6**




**2.7**




**2.8**

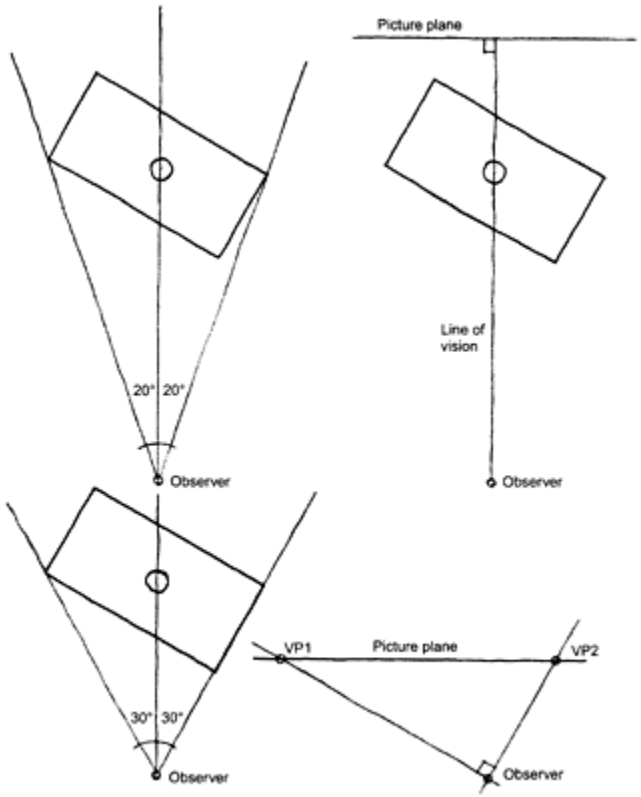



**2.9**

By the latter part of the 20th century, the above had become the generally accepted method of constructing two point perspectives. The observer does not have to look directly at the corner of the object but it does simplify the method to do so. It is recommended that the line of vision should not bisect the object or the effect will be spoiled. Serlio's symmetrical approach is starting to look too limited for general

application. A good way of positioning an asymetrical line of vision could be to draw lines from the observer to the limits of the building (McCarthy 1996).

Alternatively, it has been discovered from experimentation that the angle of vision between these lines should be between 40° and 60°, and bisected to find the line of vision. The picture plane must always be at right angles to the line of vision and the angle between the lines, drawn to locate the vanishing points, must also be a right angle. This method seems to favour rectilinear shapes. Other geometric or irregular shapes need to be enclosed in a framework of straight lines. Geometrical perspectives have been criticized for their mechanistic appearance, although in machine-age architecture this would probably have been an advantage. At the opposite end of the spectrum, the picturesque philosophy relies totally on the artist's eye, which led to the accusations of inaccuracy and even deceit. A common form of illustration depicts the building in two dimensions whereas the foreground is in perspective. Depending on one's attitude, this can be perceived as a rapid



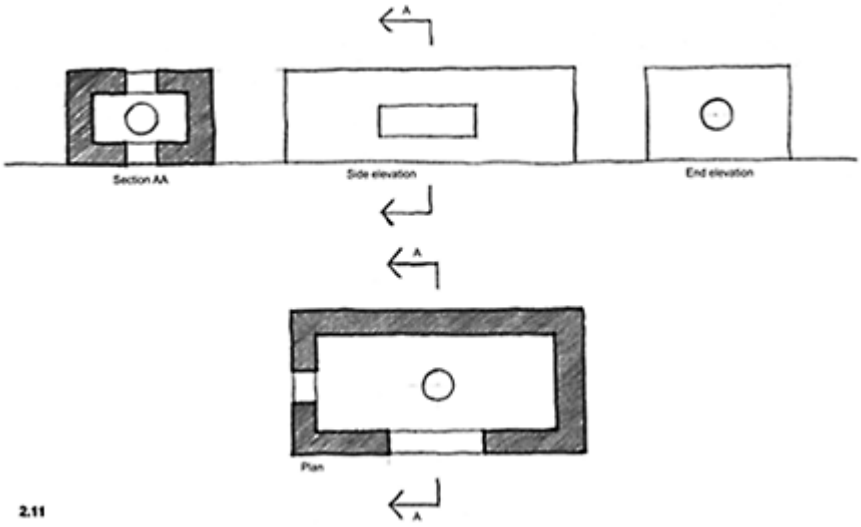

**2.10**

and attractive way of showing the building in context or the use of depth of foreground with trees and foliage to conveniently obscure some unfortunate aspect of the design.

The convention in drawing that shows three dimensional objects in two dimensions is known as orthogonal or orthographic projection. This is a popular form of illustration but demands a leap of imagination to consider how a building might appear in the round. The views are generally plan, elevations and sections where:

- *A plan can be a view vertically downwards on top of a building but more usually is a horizontal slice through a building taken at a position that gives most information, often through the windows just above sill height.*
- *Elevations show the vertical planes derived from the plan, retaining their true size, shape and detail,*
- *A section is a cross-cut made vertically through the building. It should show the interior of the far wall in elevation.*

One of the fundamentals in architectural representation is the creation of depth in a two dimensional medium. Depth takes on greater significance than just another dimension. The height and width are real but the depth is in a way, an illusion conceived by the architect or artist through drawing technique. Arguably, the more honest approach could be to merely show planar surfaces in two dimensions and allow the observer to put them together as an impression of a three dimensional building. Views should be to the same scale and are often aligned with one another. Material which is actually cut through in plan or section is shown in a much stronger manner than information in elevation or on the floor of the plan. Engineering drawings are arranged differently according to whether

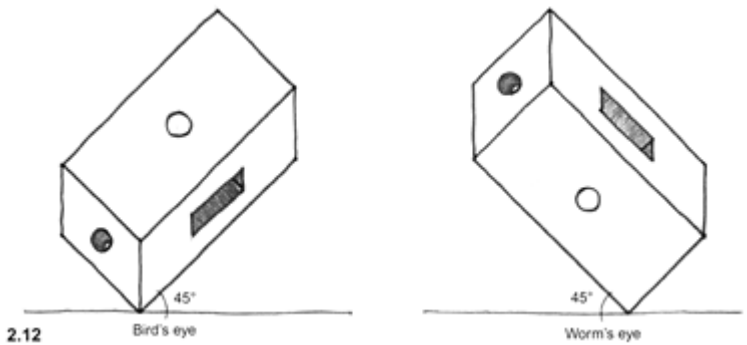



**2.11**

they are in first or third angle projection but the arrangement in architecture is generally as follows.

In the early years of the 20th century, academics such as CH Reilly (1874–1948) became

increasingly attracted by American practice and in 1909 he spent several months in the United States to study the new breed of architects. It increased his enthusiasm for the grand manner of McKim (1849–1909), Mead (1856–1906) and White (1848–1928), and Daniel H Burnham (1846–1912) of Chicago. Drawings were based on the French Beaux Arts system with its emphasis on plans, sections and elevations. Sometimes they look like abstract patterns in their own right and the drawings almost became an end in themselves. Reilly introduced this system into the Liverpool University School of Architecture and it swept into the new full-time architectural courses throughout the country. Very rapidly, the free and easy nature of Edwardian Baroque, which was based on visual judgement associated with picture-making, was replaced by drawings of monumental designs in a restrained and academic manner (Fellows 1998). However, as early as the 19th century, there had been those who wished to present three dimensional geometric impressions. Axonometric, isometric and oblique projections were seen as ways of combining the accuracy of plan and elevation with the overall effect of perspective. If plans are seen as either looking downwards onto the top of a building or as a horizontal slice through it, axonometric projection contains true plans. The principal angle is 45° and the vertical lines are also true to scale. As drawing instruments developed into drafting machines, geometric accuracy became a particularly useful property in readily showing bird's eye and worm's eye views. The new instruments also contributed to changes in the building designs. Idiosyncratic expression appeared less as rectilinear forms tended to take over.




**2.12**

**2.12**

Axonometric projection was taught in Engineering Schools from the late 19th century, for its usefulness as an accurate technical tool. In the architectural world, Augustus Choisy was the first author to use axonometric projections extensively. In his famous works on the history of architecture, published between 1873 and 1899, he used mostly worm's eye views. Choisy claimed that orthogonal projections were abstractions that fragmented the representation into plan, section and elevation. Whereas, the axonometric was one image showing an integrated view of the plan, exterior, section and interior disposition—accurately accompanied by scale. At the 1923 De Stijl exhibition, axonometric drawing was presented as a privileged vehicle for conceiving the architecture of space. Yet, for many people, this kind of projection seems to distort both