

MYSTICISM IN THE EXPERIENCE OF ARCHITECTURE

VOLUME ONE (of two)

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MYSTICISM IN THE EXPERIENCE OF ARCHITECTURE.

ABSTRACT

In this thesis I argue that architecture can sometimes evoke a sense of the numinous, or a sense of God. In volume one, beginning with Christopher Alexander I set out his theory of centres, and his argument that ‘the Blazing One’ can be known in and through building. I then turn to my own account of this experience, which draws especially on the Neo-Platonic tradition.

In the second chapter I set out the aspects of architecture which seem to me to make possible a sense of the numinous in the building, and I illustrate how this might be achieved in buildings of my own.

Chapters three and four are analyses of four great buildings, two sacred and two secular, which in my view evoke the numinous or mystical.

The fifth and last chapter proposes a Temple for the ‘Universal Order’, a group interested in Neo Platonism. In the submitted plans and sketches for this, I hope, show how a sense of the numinous could be achieved.

Since an architect’s language is through drawing, a large part of this thesis comprises drawings and illustrations. In volume two, these, with commentary, will support my argument that architecture can in itself, speak of God.

MYSTICISM IN THE EXPERIENCE OF ARCHITECTURE

VOLUME ONE

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CHAPTER ONE

ARCHITECTURE AND THE MYSTICAL.

In his great work on the Gothic cathedral, Otto Von Simson advances the idea that the sacred buildings of the twelfth and thirteenth centuries were created to stimulate a particular religious experience. Medieval architects sought to do this through the use of light and proportion which were thought to convey an insight into the perfection of the cosmos.¹ Odd as it may seem, I want to argue that an analogous purpose is still at work. This thesis represents the reflection of a life spent in architecture: I have been a practising architect since 1957 in the United Kingdom and for some time in the Gulf of Arabia. Over the years I have felt more and more strongly that architecture, properly practised, can and indeed ought to evoke the numinous, or the mystical. Many architects have felt this over the centuries, perhaps most famously John Wood the elder, the architect of the finest designs in Bath.

In making the case I shall, in subsequent chapters, rely on examples of my own and other works to illustrate that which I understand as the mystical experience and that where, upon the conception of an appropriate interpretive scheme using the categories of a particular religious or philosophical tradition in its design, a tradition-specific account of the religious import of the building can be discerned. For example, the

¹ Otto Von Simson, *The Gothic Cathedral* (New York: Princeton University Press, 1988), pp. 10-11.

establishment of unity and wholeness in such an interpretive scheme could generate a religious resonance since these qualities may be interpreted as the unity and oneness of God.

However in this thesis I am primarily interested in the apprehension of the religious import of a building through an experience that cannot be described or comprehended readily. This import is given directly through the experience of the building's spatial conception, with particular reference to both the internal space relations, juxtapositions and interpenetrations and the external spatial relationships with the environment, to create and nurture the spirit of places as discussed by Christopher Day.² Reflection on the significance of this experience is secondary to that which is communicated by the experience itself, pointing to a culture-transcendent conception of the religious import of the built environment.

Essential to this second approach is 'the numinous experience' which is referred to in the work of Rudolf Otto³ as a mystery, a non-rational, non-sensory experience or feeling whose primary and immediate object is outside the self, with a personal quality of being in communion with a *Holy Other*. The language of religion emerges in its explanation, but never fully conveys the direct revelation of the experience, which supports the theoretical stance and primary interest of this thesis.

Otto's 'numinous experience' as defined in his book is an overwhelming experience of the 'Holy' whereas in this thesis it is generally associated as,

² Christopher Day, *Places of the Soul* (London: Harper Collins, Hammersmith, 1990), pp. 119-120.

³ Rudolf Otto, *The Idea of the Holy* (Oxford: Oxford University Press, 1977), pp. 12-13.

an intimate encounter with, or of, a sacred reality. Therefore it is used in a different sense from that which is generally current in scholarly literature.

I shall refer to these two basic categories relevant to mysticism and the numinous in the course of this thesis, and to Otto's use of the term, but I shall begin by appealing to a contemporary architect whose practice has led him to speak of God in relation to architecture in a way which must be called 'mystical'. This is Christopher Alexander, who read Maths at Trinity College Cambridge, and then studied architecture, becoming Professor of Architecture at the University of California, Berkeley. Alexander has advocated a new approach to architecture, building, and planning, encouraging people to design buildings for themselves or work to improve their towns or neighbourhood and he believes that buildings can lead one to see the 'Blazing One', as he calls God, behind all phenomena. In this chapter I shall begin by charting his path to this claim and then outline the shape of my thesis.

The theory of centres

Crucial to Alexander's argument is the theory of centres. To understand this idea, consider an artist standing before a blank canvas. If he or she places a square of colour on the canvas, a whole series of relationships are immediately created between the painted square and the boundaries of the canvas. The shapes on the canvas form an overlapped and nested structure, which decreases the relative strength of the painted square. Therefore the strength of any given centre is not just a function of its internal shape, but is

bound up with the wider structure.⁴ This can be extrapolated to anything, not just a building or any part of a building, but a street, a town, a park or forest, or a person. Whatever is being considered, its wholeness is made of parts and the parts of the wholeness. A centre is anything which can define an organized zone of space or a distinct set of points in space. What is meant by ‘centre’ here is a point which forms a local zone of relative centredness with respect to other parts of space because of its organisation, internal coherence, and relation to its context.⁵ It is, Alexander argues,

“a field of organised force in an object or part of an object which makes that object or part exhibit centrality. This field like centrality is fundamental to the idea of wholeness.”⁶

In architecture, for example, a window is a centre and it is made up by other centres such as panes of glass with wood or metal, but it is only a centre because of its organization and the relatively greater centredness of the proportioned brickwork of a wall in which it is positioned, which then in turn cooperates with the greater centredness of another block or further walling and fenestration. Alexander argues that life is gained in some fashion from the cooperation of the living centres they contain, always in a supportive configuration, with each one helping another and the totality. He writes of the recursive character of centres which arise within the greater wholeness purely as a result of the mathematics of the space itself, as new centres grow and concentrate themselves. Centres can be seen as focal points in a large unbroken whole related to the world as a whole. The

⁴ Christopher Alexander, *The Nature of Order. Book one, The Phenomenon of Life* (Berkeley, California: The Centre for Environmental Structure, 2003), p. 84.

⁵ Alexander, *The Nature of Order, Book 1*, p. 84.

⁶ Alexander, *The Nature of Order, Book 1*, p. 106.

intensity of these centres and wholes can be recognised empirically when the observer appeals to feelings of wholeness within himself.⁷

Alexander argues that centres help to create life in its wholeness. Together centres produce more and more intensity which becomes potentially space/matter, the living stuff of which the universe is made.

“The material actually transforms, comes to life, becomes transformed, ‘blazes’ one might even say, as this field of centres is created in it.”⁸

This language of centres is a way of understanding how reality as a whole is articulated, and how it comes to life. Alexander wants to move from perception to metaphysics. He argues that we are not simply dealing with our perception of reality, but that our perception echoes reality. What we call material reality really lives.

Reality as wholeness

The theory of centres helps us to understand reality as wholeness. In what is perhaps his most famous work Alexander speaks of wholeness in terms of a ‘pattern language’, a set of rules, inductively derived, which function somewhat similarly to a genetic code that assists and guides the growth of plant cells and contains features that guarantee the slow adaptation of the individual parts and simultaneously helps to create those larger parts, systems and patterns that form the whole. The pattern language leads to a vision of reality in which there is one pattern of life which includes both animate and inanimate matter, and which is responsible for the entire

⁷ Alexander, *The Nature of Order, Book 4*, p. 323.

⁸ Alexander, *The Nature of Order, Book 4*, p. 428.

structure of reality.⁹ He believes that pattern languages generate, not just the form of buildings but their life as well. Their beauty and ability to move us emotionally hinges on the power of the pattern language that the builder or architect uses.¹⁰ To be successful architecturally, Alexander argues, a building or a group of buildings, a street or town must work as a whole, a unity or oneness structurally and aesthetically.

The importance of wholeness has echoes in contemporary art, as when in 1908, Henri Matisse published some 'Notes d'un Peintre' in which he explains that expression is in the whole disposition of the picture, the place occupied by the figures, the empty space around them, and the proportion. Composition, he argued, is the art of arranging in a decorative manner the various elements the painter uses to express his sentiments. In a picture every separate part will be visible and will take up that position, principal or secondary, which suits it best. Everything which has no utility in the picture is for that reason, harmful. A work of art implies harmony of everything together. He also gives an example of four self portraits in which significant details are quite different but which are all recognisable of the same person. The similarity lies not in the detail but in the wholeness.¹¹

An emphasis on wholeness is also found in contemporary physics. David Bohm, for example, introduces the notion of the implicate or enfolded order in which any element contains enfolded within itself the totality of the universe, so that matter and consciousness are part of each other. The Newtonian idea of a world constituted of basic objects or building blocks is

⁹ Christopher Alexander, *The Timeless Way of Building* (New York: Oxford University Press, 1979), p. 215.

¹⁰ Alexander, *The Timeless Way of Building*, p. 215.

¹¹ Herbert Read, *The Meaning of Art* (London: Faber and Faber, 1951), pp. 258-259.

replaced by a picture of undivided wholeness in flowing movement. Bohm argues that this idea harks back to earlier ideas. Aristotle, for example, considered the universe as a single organism in which each part grows and develops in its relationship to the whole and in which it has its proper place and function, or in modern terms, the mind, could be turned to the flowing movement of awareness. In the early days of the development of civilisation, notions were essentially of wholeness rather than fragmentation. Western thought made progress through measurement, which tended to a discrete picture of reality but Bohm believes that when all forms of measurement are taken into account we will once again find a universal harmony and we will overcome fragmentation.¹² Other physicists have reached similar conclusions. Wolfgang Pauli believed that a satisfactory physics would understand matter and mind as complementary aspects of the same reality.¹³

C.F. Weizsacker formulated the identity hypothesis in 1980, regarding consciousness and matter as different aspects of the same reality.¹⁴

Alexander does not base his views on wholeness on these accounts, but he finds that the idea of wholeness he has arrived at as an architect, agrees with theirs. As we have seen, he argues that life comes from the interrelation of centres. The unity is so distinct that if any centre is moved or taken away, the whole conceptual unity could be lost. This can be seen in the structure of a Mondrian painting (fig.1.) or architecturally in the composition of Frank Ghery's works (fig.2.) or the complex and often bewildering structures of

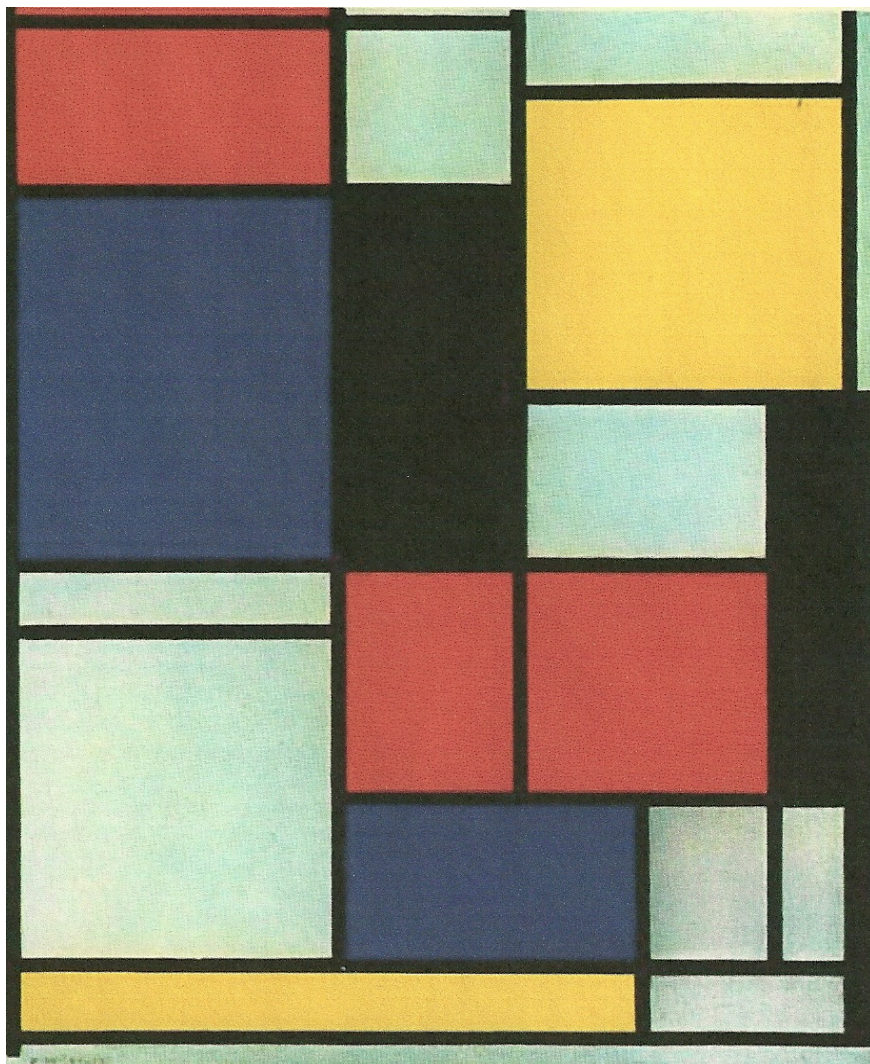
¹² David Bohm, *Wholeness and the Implicate Order* (London: Ark Paperbacks, 1983), p. 23.

¹³ Carl Gustav Jung and Wolfgang Pauli. *The Interpretation of Nature and the Psyche* (New York: Bolligen, 1955), pp. 208-210.

¹⁴ C.F.von Weizsacker, *The Unity of Nature* (New York: Farrer, Strauss, Giroux, 1980), p. 252.

Daniel Libeskind.(fig.3.) Then there is the romance of Antonio Gaudi's work, intricate but possessing, in its dream-like quality an extraordinary balance of wholeness and order.(fig.4.)

(fig.1.) Piet Mondrian

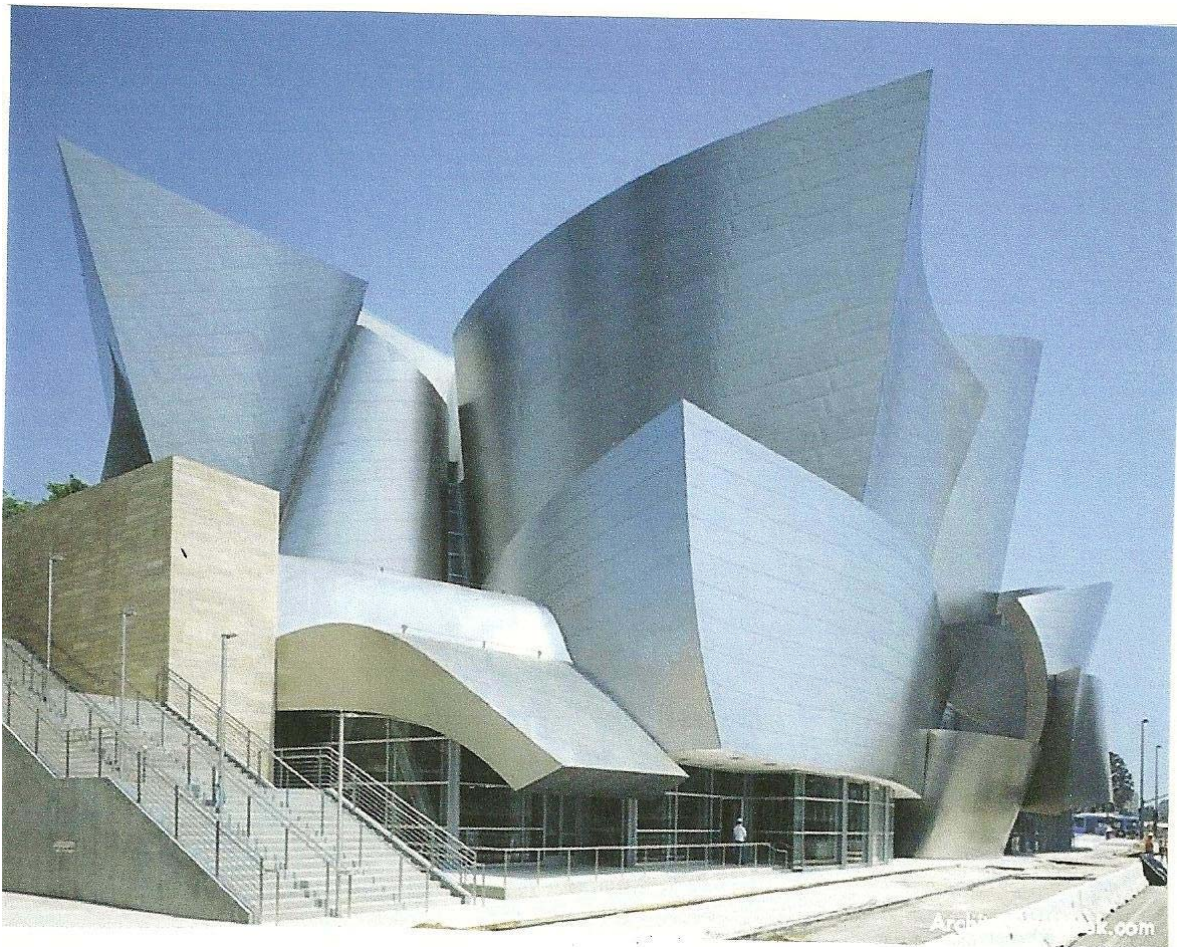


Frank Elgar. *MONDRIAN Translated from the French by Thomas Walton.* (London: Thames and Hudson, 1968) Tableau No.11.1921-5, p. 123.

Mondrian opened the way towards a new language of painting influencing not only painting but also the architecture, sculpture, decorative arts and even the fashions of the twentieth century as a pioneer of abstract art or more precisely, the geometrical abstract art in the immediate years following the second world war. Influenced by Van der Leek. he painted in compact planes of pure flat colour in squares and rectangles.. In this painting the proportion of the rectangles, the

distribution of colour and their relationship is key to Alexander's principles of centres architecturally. The way the red colours relate to the blue, the yellow and the black and to the whole is such that any omission will destroy the total composition. Even the thickness of the black dividing lines is critical to the total composition and Mondrian was known to adjust these by millimetres in the course of his work.

(fig.2.) Frank O. Gehry architect.

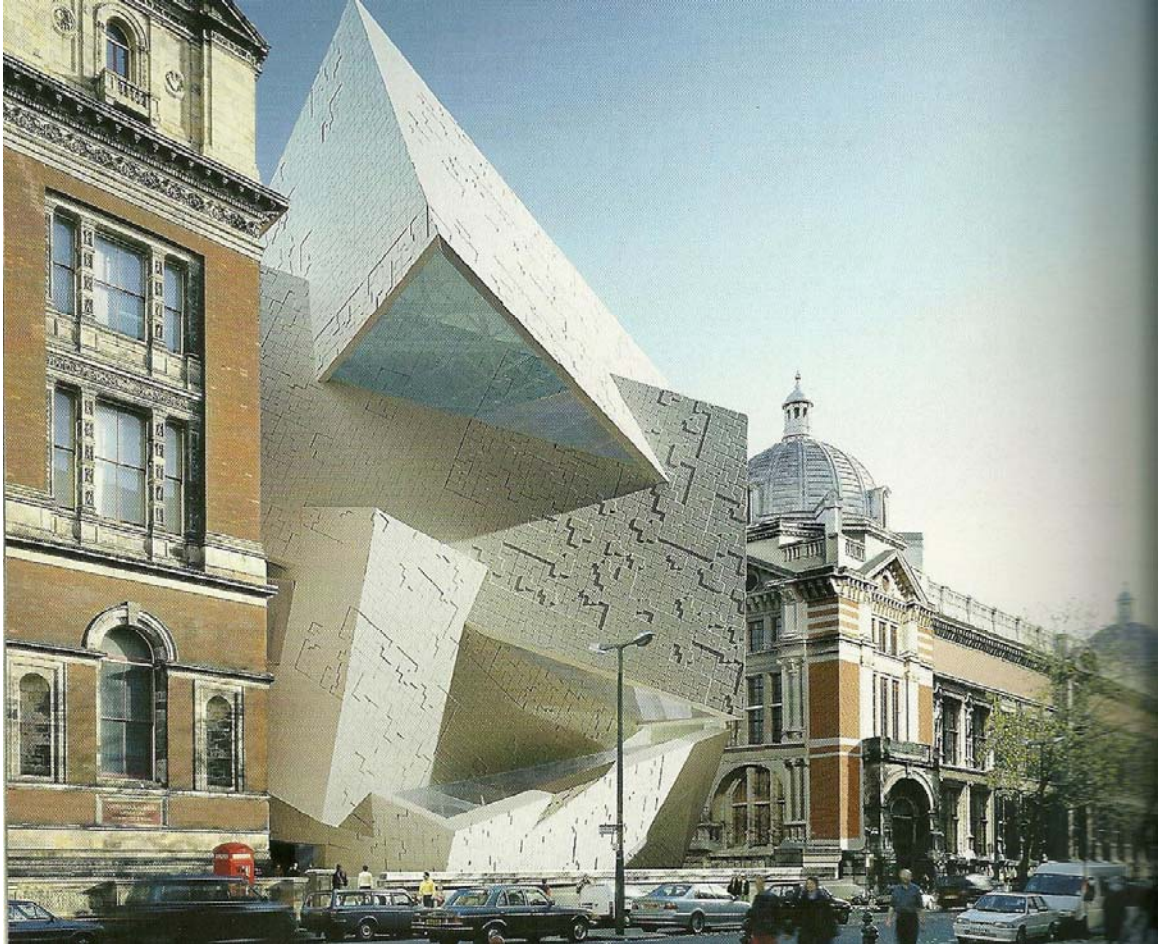


Disney Concert Hall. Los Angeles, California, USA. 2009.

Photo Tom Bower.Architectureweek.com

This is an illustration of Frank Gehry's shaped centres, strange in form but closely related in the same manner of a Mondrian painting, and each centre essential to the whole composition but in a four dimensional manner and therefore more complex. The spaces between the centres are vital to its four dimensionality as also with the subtle play of light to the varying curved surfaces which move the eye into the mysterious, numinous depths of the

composition. Despite its complexity of form and disarming scale, it possesses a total oneness and unity in its conception and an invitation into these depths.



(fig.3.) **Daniel Libeskind**.architect

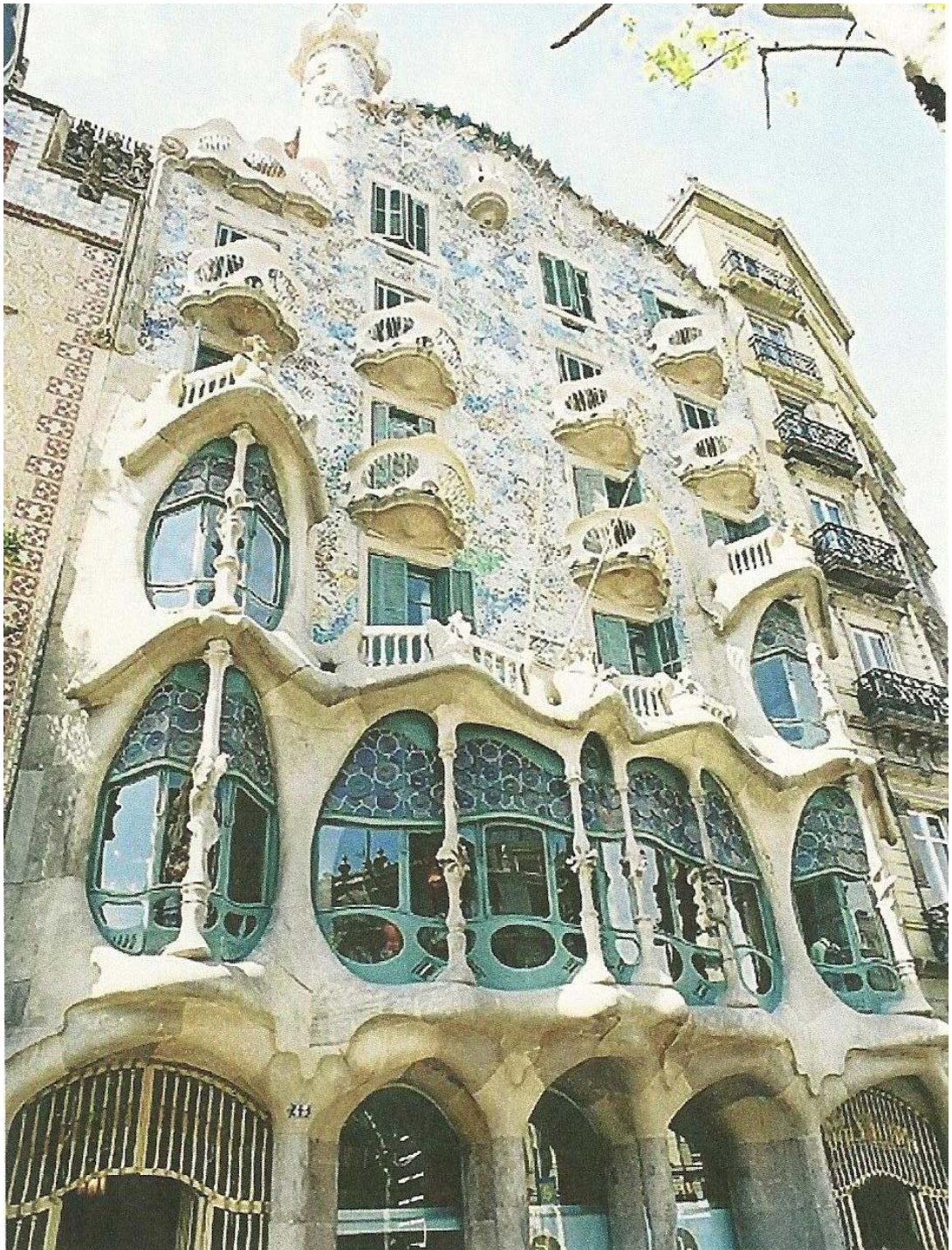
Extension to the Victoria and Albert Museum London.

Reproduced from Great Buildings.com

The spiral extension to the Victoria and Albert Museum offers new possibilities within the horizon of an evolving cultural and educational resource with a celebration of public activities in a unique historical setting. This conception by Libeskind tells us that history is not something that has passed away but is an ever evolving and dynamic process uniting the present simultaneously with the future. Controversial as it may seem, its unity unfolds in a set of exemplary spaces and inspiring experiences

involving people in the ever involving drama of art, education and their mutual significance to society. Each part is essential to the continuity and its unity so that if any is removed, disorder would result.

(fig.4.) Antonio Gaudi.architect



CASA BATLLO. BARCELONA, SPAIN. Architect ANTONIO GAUDI.
Reproduced from Great Buildings.com

This vigorous composition shows how vital each centre is to the other and to the whole. An example of the unfoldedness of unity in architecture.

Alexander makes the link between order in architecture promoting life in buildings, or living structures, and their appearances to our own self, making a connection to our own deep eternal self or with configurations which mirror our own deep self of humanity.¹⁵ He maintains that the beauty of a building and its capacity to support life stems from its wholeness, not just its wholeness as a particular building but as part of an extended and undivided continuum that is the world beyond its boundaries that contains other wholes within it.

In most cases, wholeness is a product of simplicity and purity which Alexander argues is manifested architecturally as a tangible geometric form that induces a certain slowness, majesty, and quietness or inner calm that comes when everything unnecessary is removed. When order is thus obtained, by stripping out all centres that are not actively supporting other centres, then what is left is the concept in a state of inner calmness externally, caused by the inner, true simplicity of the mind and heart of its creator. It is this contagious mystical state generating wholeness, oneness, and life that induces a presence of another realm, a glimpse of eternity and of the One Creator.

Alexander refers to the 'I,' or the World Soul, and matter itself, as a potentially soul-like materiality.¹⁶ *The job of the architect is to liberate this*

¹⁵ Alexander, *Nature of Order, Book 4*, p. 55.

¹⁶ Alexander, *Nature of Order, Book 4*, p. 331.

in relation to building. This has been the heart of my own architectural practice, as I shall hope to illustrate with examples of my work. We can build, he argues, in such a way that buildings ‘live’, and so that they promote the life of those who live and work in them.¹⁷ It follows therefore that architecture is ‘almost God-like’ in its ability to create life, and to see and reach the essential core of things¹⁸.

In architecture the question of unity is not dissimilar to that of the whole, the main difference being that it can be likened to putting a stop to disorder, or restoring order. In everyday speech unity is the bringing together of many things into an arrangement that makes them appear as one, in harmony, consonance, and cohesion. It demands that the multiplicity of parts become subservient to an overarching conception, whereas wholeness refers to the relatedness of things. Unity implies a singular vision rather than a relational one. The unity that is ultimately perceived in a work of architecture is a reflective unity arrived at through an interactive process or dialectic between the initial imaginative vision and the working out of the design on the ground.

Architecturally, Alexander invites us to throw away all functional explanations in regard to design. However, architects always seek to meet particular needs or functions, and to do this they employ geometry. These two, function and geometry, are intellectually different in type but they cannot be separated. Alexander is right that in good architecture space comes to life. ‘Space in tension’ is a term often used by architects in design terminology, the tension between centres and wholes and wholes that are

¹⁷ Alexander, *Nature of Order, Book 4*, p. 331.

¹⁸ Alexander, *Nature of Order, Book 4*, p. 331.

centres in turn, that create life in that they are a web of dependencies which thrive in each other's company. They are alive because of their organic structure and geometry. To use Alexander's words,

"It is not life in space, not an inorganic mechanical substrate, filled with a few living organisms, it is one living thing, the space has come to life, it is nonsense to separate the two."¹⁹

As a consequence of the structure of space, life exists in every occurrence, in buildings, and functional existences, and Alexander agrees with Whitehead's view that there is nothing that does not have some form of life.²⁰ Similar views are expressed in the ideas of the Buddhist conception of the world, and a more contemporary biological version of the same idea has been formulated by the Japanese biologist Imanishi.²¹ Like Alexander all these share the view that life is inherent in matter and it is the very nature of matter to be alive.

Alexander assumes that to varying degrees, created space can be more or less whole and alive or more or less broken, more separated or less separated. Architecturally it is the responsibility of the architect to create life through wholeness, harmony and unity in design, no matter how small, and no part, centre, or detail is exempt from this. This is a moral and spiritual matter:

"Within such a universe, building things and shaping things is fundamental to the spiritual condition of the world and to our own spiritual development.

¹⁹ Alexander, *Nature of Order, Book 4*, p. 430.

²⁰ Lawrence Bright. O.P., *Whitehead's Philosophy of Physics* (London: Sheed and Ward, 1958), p. 56.

²¹ Kinji Imanishi, *Shizengaku No Teisho, In support of Geocosmology* (Kyoto, 1981) and Seibutsu No Sekai, *The world of living things* (Kyoto, 1941)

It is our closest approach, almost God-like, to creating life, and to seeing and reaching the essential core of things.”²²

Alexander argues that our scientific and technological worldview makes a profound connection with God in medieval works of art almost unattainable to us. This means that,

“To make living structure - really make living structure - it seems almost as though somehow, we are charged, for our time, with finding a new form of god, a new way of understanding the deepest origins of our experience, of the matter in the universe so that we, too, when lucky, with devotion, might find it possible to reveal this ‘something’ and its blinding light.”²³

Again, he argues that when we contemplate the wholeness of the world of centres,

“Then at that moment, we are face to face with that spirit. We are face to face with God. This quality, when it appears in things, people, in a moment, in an event, is god. It is not an indication of God living behind all things, but it is actually God itself. This is spirit made manifest.”²⁴

Like the fourteenth-century mystics, he finds unity at the root of all things and asserts that it exists as a real thing, parallel to the whole world, but incapable of having structure because it is pure oneness. It is potentially visible and under certain circumstances it becomes visible so that, “we see, or sense, the glow of the Blazing One beyond.”²⁵

²² Alexander, *Nature of Order, Book 4*, p. 331.

²³ Alexander, *Nature of Order, Book 4*, p. 42.

²⁴ Alexander, *Nature of Order, Book 4*, p. 302.

²⁵ Alexander, *Nature of Order, Book 4*, p. 150.

This is religious experience, a glimpse of eternity, and a quality of the reality of the spirit made actual. So as we understand that God lies behind all things, we recognise that a building, or a detail as part of a building, or a painting, or other work of art, is in some degree or other, spirit. When a thing is well conceived with love and intense thought and as a foil to the perfection of the Cosmos, it is a realization of the spirit of that perfection, an actual realization that acts as a window to the realm of the world soul, enabling a glimpse of that realm through the made world. Like the twelfth century builders, Alexander believes that faith and purity of heart are needed to construct such a building .

Mysticism and architecture in the Twentieth Century.

The great social changes and technological developments associated with the Twentieth century produced architecture to match. Although we associate this century with secularism and rationalism I shall argue that the best twentieth century architecture also has a mystical significance.

Following Giedion I shall argue that this follows from the use of space in architecture.

An architect not only considers space within buildings but the often less obvious spaces that the buildings create with others and the totality of the environmental spaces. The architect's initial conception cannot take place other than in the mind. Any drawings or sketches that the architect makes at the initial inception occur only after an initial act of imagination. Space cannot be drawn, it has to be imagined and when dealing with many volumes almost all at once in the initial conception, the architect can only contain them, moving within them, manipulating them in the mind, around a

central idea. It is the successful spatial arrangement that generates a mystical experience and the architect has to know how the spatial variations, their volumetric subtlety, and impact will affect and excite a certain mood in the users of the building.

Architects use space to create a sense of movement and affirmation of unity through multiplicity and plurality of form. Space is liberty of movement and we adapt ourselves instinctively to the space in which we are positioned, and the movements created, filling them with our own movements. It is affected by light and shadow, colour, and our own expectancy through the space we have already left. The original intrinsic value of architecture depends on internal and external space relations and all other elements, plastic and decorative count in the judgement of a building according to how well they accentuate, coincide or interfere with the spatial. That spatial value is concerned with the same elements that are involved in utilitarian values, which are the elements of the voids themselves.²⁶

In their manipulation of internal and external structured space such ordered spatial sensations heighten the perceptive sense and this, combined with the controlled and subtle use of light, can lead to awareness of life and of God. My contention is that the awareness and feeling of space is the first personal reaction to great architecture in the approach to it and in the involvement of its interior spaces. This introduction sets the seal on its perception of its wholeness in its setting and surrounds, and then the unfolding of the spatial unity of its forms finalises its ordered impact. Sensitively designed, sympathetic to the natural order of life in all things, this impact can induce a sense of awe, expectancy, and well being. In my view this cannot be fully

²⁶ Bruno Zevi, *Architecture as Space* (New York: Da Capo Press, 1993), p. 200.

expressed in words. This often happens in religious buildings but I would argue that the same thing can happen in a concert hall, an office block, a house or even in a small part of a building or area attached to a building, or a space where a building has been.

Giedion argues that the shaping of interior space was not regarded as of great importance, and he goes on to say that throughout the first high civilisations it could be that their builders neglected or even disregarded it²⁷. Space was not a term used descriptively in architectural terminology until the mid eighteenth-century and even then not in the modern sense of a direct connection with and evaluation of architecture until the late nineteenth and early twentieth centuries.²⁸ My contention is that new methods of construction and of innovative structural systems which appeared in the twentieth century allowed an architect to create spatial movement and perception, quite similar to the architects of the great Cathedrals in the Middle Ages. Giedion argued that,

It is not the independent unrelated form that is the goal of architecture today but the organisation of forms in space: space conception - the present space-time conception - the way volumes are placed in space and relate to one another, the way interior space is separated from exterior space or is perforated by it to bring about an interpenetration of space - is a universal attribute which is at the basis of all contemporary architecture.²⁹

²⁷ S. Giedion, *Space Time and Architecture* (Cambridge, MA: Harvard University Press, 1969), p. xiv.

²⁸ Paul-Allan Johnson. *The Theory of Architecture* (New York: Van Nostrand Reinhold, 1994), p. 383.

²⁹ Giedion, *Space Time and Architecture*, pp xxxvi-xxxvii.

To this he adds that contemporary architecture was driven by what he calls 'new regionalism' which served as a springboard for artistic imagination in that its basic force generated respect to the eternal cosmic and terrestrial conditions of particular regions. He remarks that twentieth-century painting has again and again driven 'penetrating boreholes' into the past for the withdrawal of strength and a renewed spiritual link with its forbears. In architecture this is not achieved by adopting past forms, styles, or techniques but through the development of a spiritual bond with space conception and modern architectural expression to reopen a dialogue with these unchanging elements of the past. This creates a universal architectural expression expressed entirely on the actual needs and tasks that are required in the various regions beneath the encompassing canopy of contemporary space conception enabling a polyphonic architecture to develop. I hope to show this through my own work in Morocco and the Arabian Gulf which although modern in expression, is linked to and fulfils basic Islamic tradition and thought.

Giedion emphasises twentieth century structural engineering developments in activating every part of a structural system instead of concentrating the flow of forces in a linear fashion, thus creating structural expansion and giving full liberty in all directions allowing construction to merge with the irrational and sculptural forms. Thus a bewildering multitude of possibilities arise from shell construction which, for the first time in the history of vaulting, allowed complicated spatial forms, leaving the structural system equilibrated within itself. Structure then, by making the most of such advanced methods, allows architects to conceive spatial elements with freedom and to arrive more closely to organic forms in designing. Perhaps

one of the most modern examples of this is shown in the opera house at Sydney Australia where sail-like shells are linked spatially and yet have a single springing point forming a wholeness although some of the shells have differing functions.(fig.5.)



Fig.5. Sydney Opera House. Architect Jorn Utzon. Reproduced from SYDNEY AUSTRALIA. Published by Nucolorvue Productions Pty. Australia.

In ‘The Aesthetics of Architecture’, Roger Scruton takes issue with those who describe architecture as essentially about space, and especially Giedion. He refers to Giedion’s doctrine of space as representing an attempt to find the merits of architecture in something other than its function, and goes on to say,

“like functionalism, which refers to houses, factories, and railway stations, the space theory has fed itself on a one sided diet of examples – in this case, palaces, temples, and churches, which are among all buildings, the most emancipated from functional constraints, and are the most given over to dramatic expression.”³⁰

I would counter this with reference to the works of Le Corbusier, in particular to his housing, in which he always endeavoured to open up, and create new possibilities for, connections between its interior and exterior and within the interior itself through spatial planning. By adopting a structural frame all rooms could be thrown open or enclosed at will and the space allowed to flow or be restricted as desired. This had not previously been possible.³¹ For example, the Villa Savoie at Poissy,(fig.6) is impossible to comprehend from a single viewpoint; quite literally, it is a construction in space – time in that it allows differing separated volumes on three levels to move together, uniting plan forms and sectional forms by their amalgamation in a coherent, functional, and pleasing manner. The body of the house has been hollowed out in every direction; from above and below, within and without, it is a courtyard surrounded by a house within which are extraordinary vertical and horizontal vistas. A cross section at any point shows inner and outer space penetrating and interpenetrating inextricably.(fig.7)

³⁰ Roger Scruton, *The Aesthetics of Architecture* (Princeton, NJ: Princeton University Press, 1979), p. 43.

³¹ Giedion, *Space Time and Architecture*, p. 525.

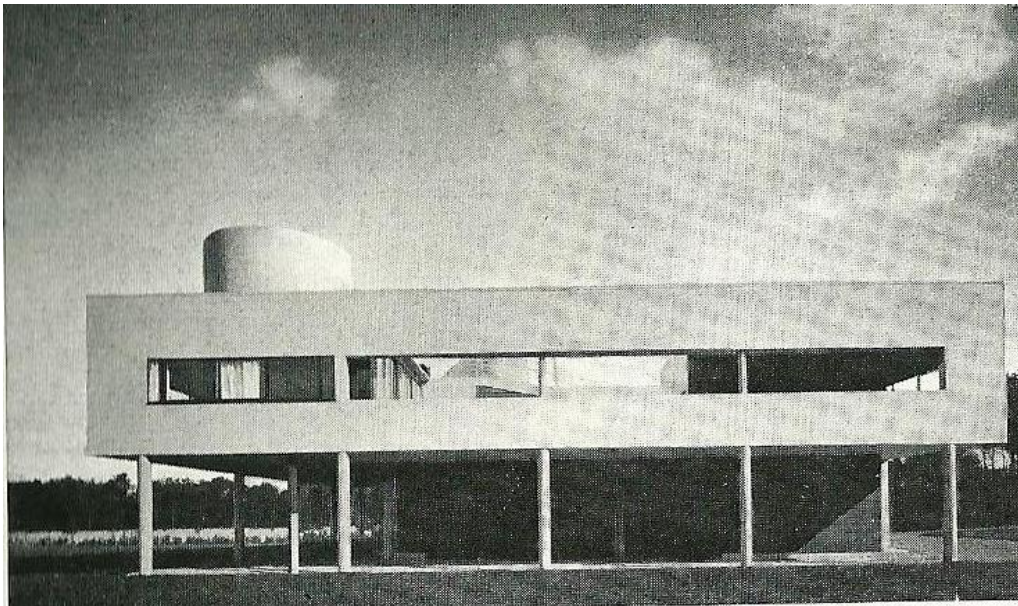


Fig.6. Le Corbusier, Villa Savoie. Poissy. *Oeuvre Complète. 1929-34, vol.2.* (Publié par W. Boesiger et O. Stonorov. Les Éditions D'Architecture.1929-1957), p.28.

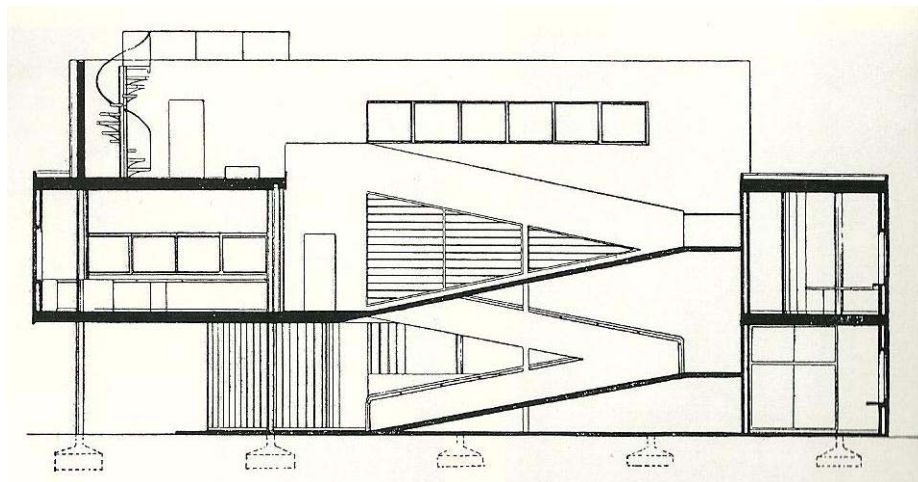


Fig.7. Le Corbusier Villa Savoie. Poissy. Section through ramps linking floors. *Oeuvre Complète, Vol.2, p. 25.*

A further example was Le Corbusier's Le Pavillon de L'Esprit Nouveau 1925 (fig.8.) which was deceptively simple, consisting of a cube within a cube or Cubism in building form, the hollow court with the two storey apartment inside it, and a two storey living room within that. It was a pure geometric relationship and established almost a new architecture in which 'facade' in the old sense of windows on a wall, was dead, and substituted by

a new three and four dimensional architecture on the basis of an interpenetration of volumes, of solids and voids.

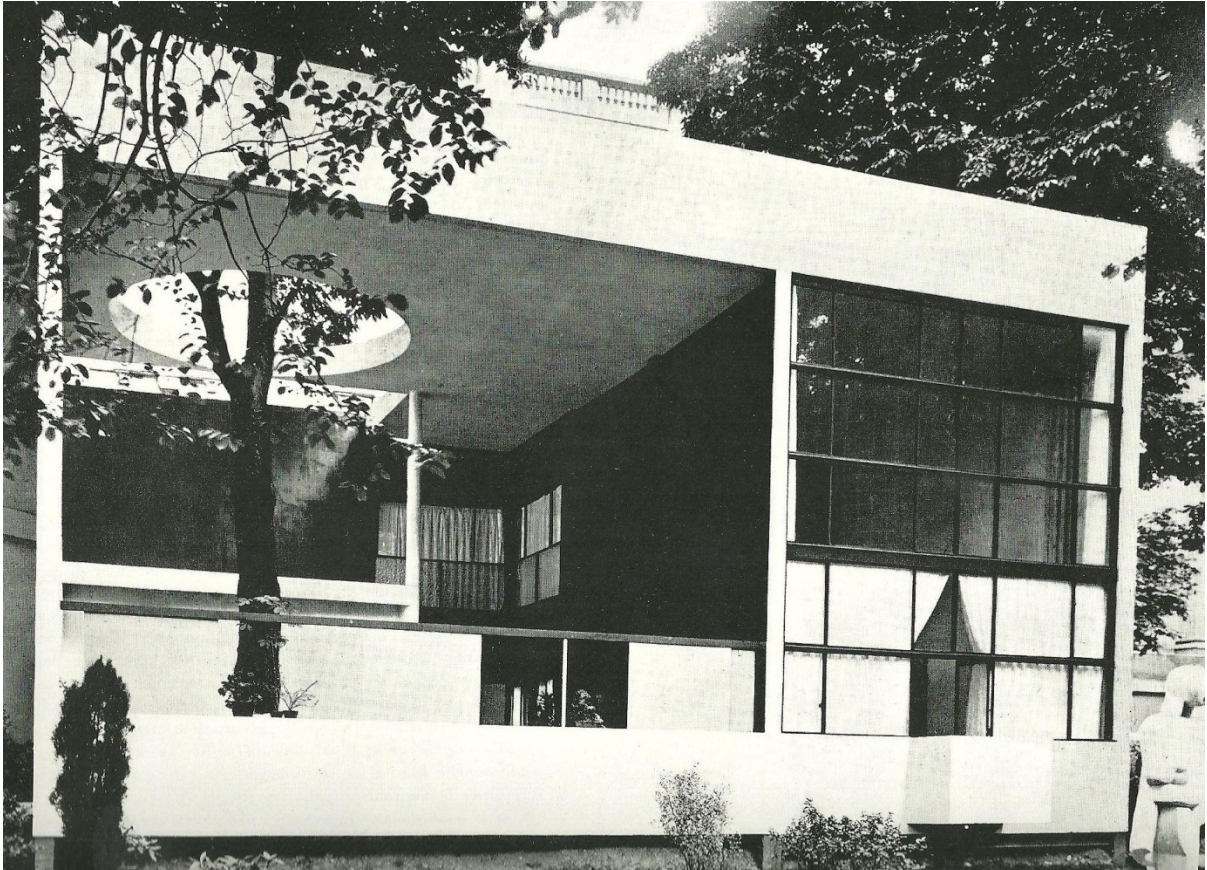


Fig 8. Le Corbusier, Le Pavillon de L'Esprit Nouveau, *Oeuvre Complète*, Vol.1, p. 99.

Mies van der Rohe's contribution to this argument can be seen in his 'Farnsworth House' (fig.9.) where, apart from the bedrooms and other private areas, there is only one space divided by changes of volume and differing materials. The house is in the form of a glass cube, in steel and glass, separated from the ground and open on all sides allowing the interior spaces to flow through to the exterior landscape.(fig10.)

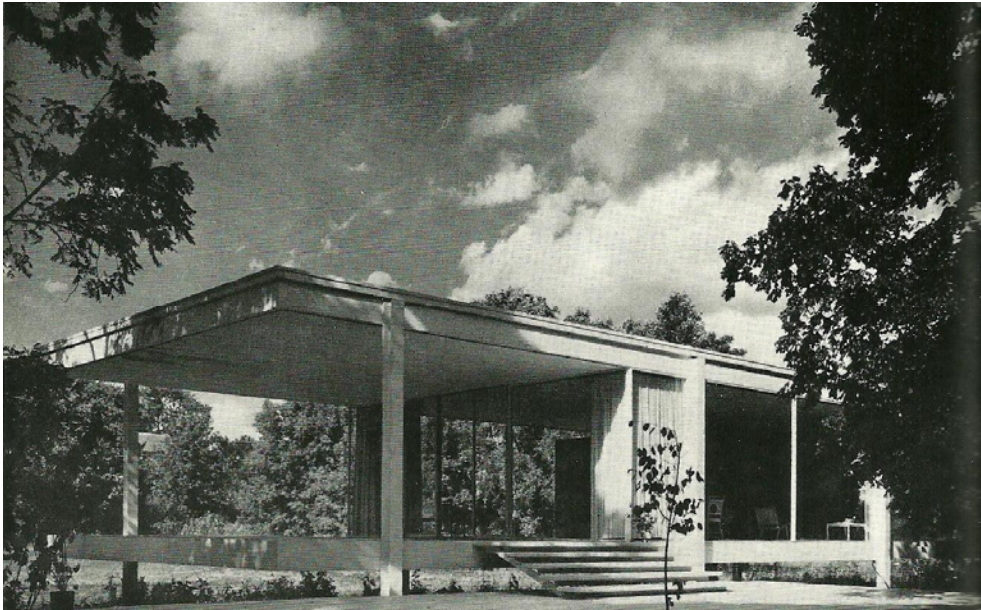


Fig.9. The Farnsworth House. In Illinois by Mies van der Rohe, Jürgen Joedicke, *A History of Modern Architecture* (London: The Architectural Press, 1959), p. 82.



Fig.10. The Farnsworth House in its setting. Werner Blaser. *Mies van der Rohe*.(London: Thames and London,1972), p.103.

Also Frank Lloyd Wright's 'Willitts House', Chicago (fig.11.) with its freely developed cruciform plan where the wings reach out like arms over the tree studded site giving the feeling of great intimacy with the land and its relationship of interior spaces with the help of deep overhanging and inviting eaves in a dramatic expression of wholeness and unity with nature.(fig.12.)

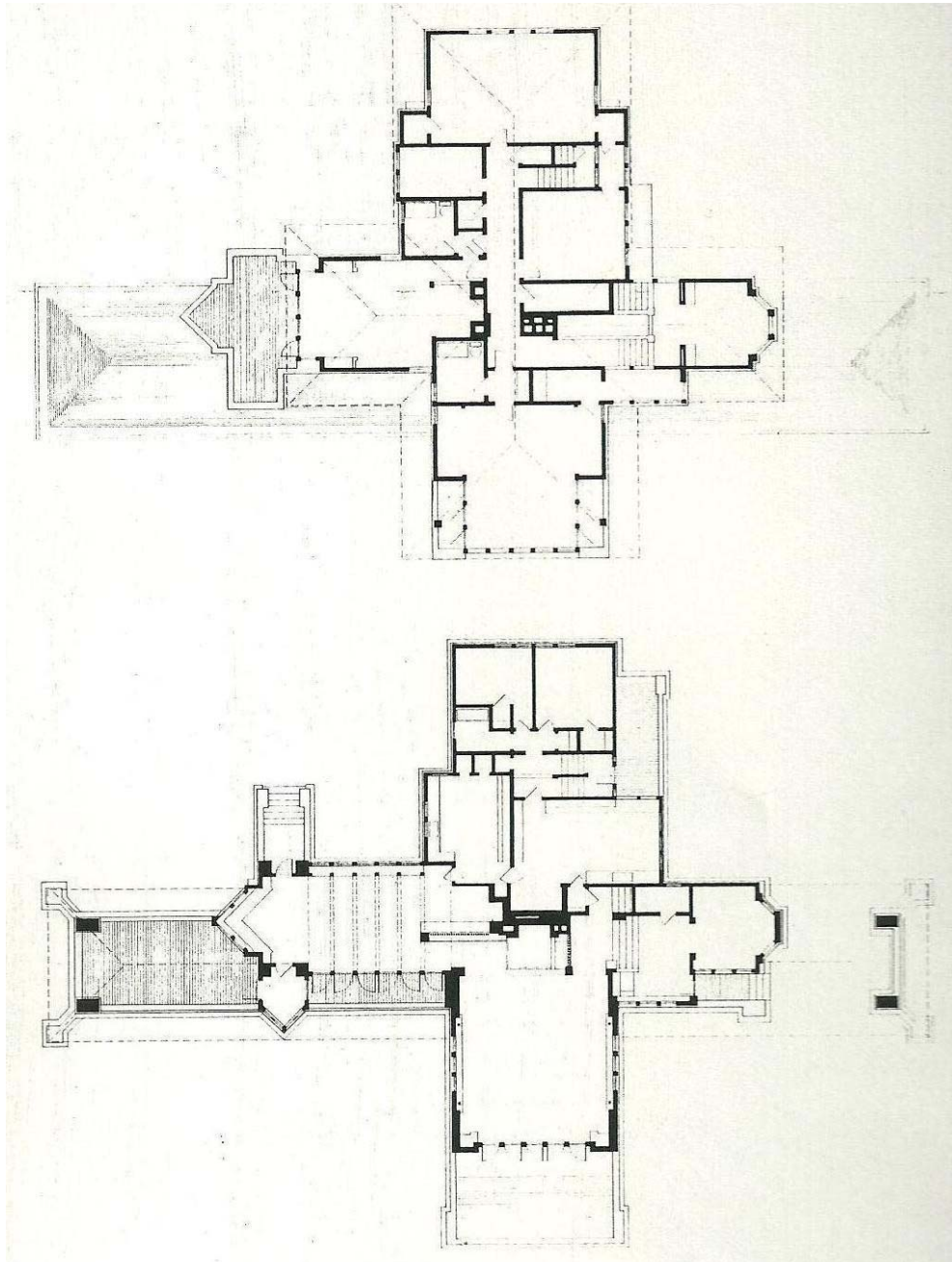
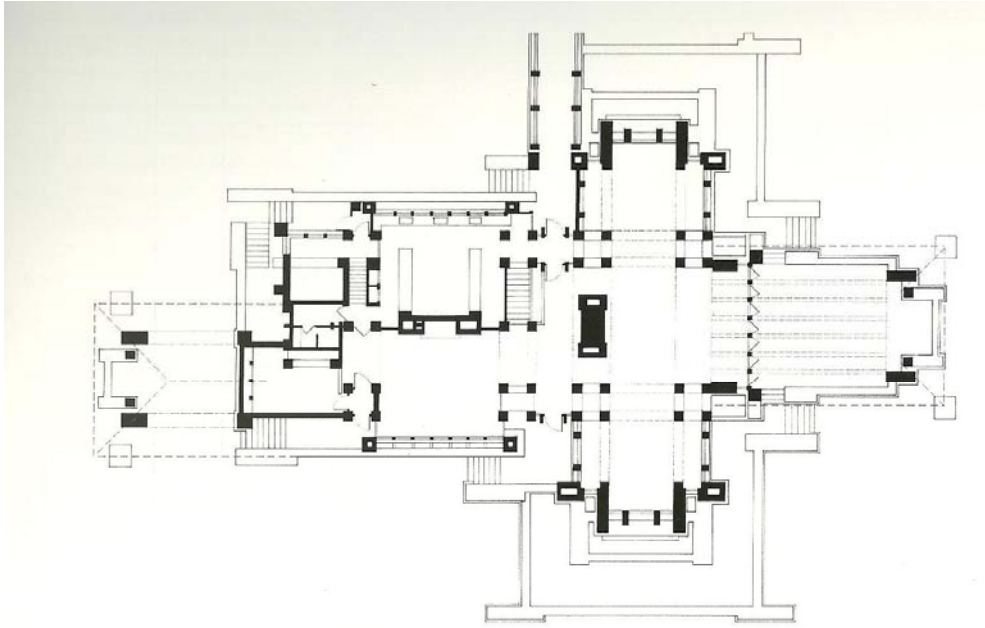


Fig.11. Willitts House.Illinois. Ground and First Floor plans. Robert McCarter, *Frank Lloyd Wright Architect* (London: Phaidon Press Ltd,1997), p. 53.



Fig.12. Willitts House. Illinois. The House in its setting. McCarter, *Frank Lloyd Wright Architect*, p.52.

Wright's Darwin Martin house, Buffalo, New York (fig.13.) shows how internal uninterrupted spaces give appropriately open and monumental forms, organised as a series of cruciform pavilions of varying scales, their axes crossed and re crossed to produce a pattern of centres woven into the landscape. (fig.14.) It abandons the floor to ceiling walls, composing an interior in plan and elevation, of free standing elements so that the feeling of moving within a matrix implied by piers, beams, low walls, screens, and built-in furniture is accentuated. Wright deliberately draws plans at different levels so that there is a different feeling of space when sitting down to that when standing due to the different definition of volumes.



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Fig.13. Darwin Martin House, Buffalo, New York. Ground floor Plan.
McCarter, *Frank Lloyd Wright Architect*, p. 59.



Fig.14 Darwin Martin House, Buffalo, New York. The house in its setting.
McCarter, *Frank Lloyd Wright Architect*, p. 58.

Scruton argues that describing architecture in terms of space misses out the importance of light and shade, ornament, textures and mouldings, but I argue that all of these elements tend to assist in the definition of volume,

shape, and space, but are subservient to the prime impact of spatial tension and composition. He writes of the beauty of a composition, dependence on the rhythm of elements together with the perceptible quality of workmanship in sculptured lines which would be reduced in their emotional power if formed in concrete or stucco, and argues that to reduce the effect to one of space would be to misrepresent the entire nature of the experience.³²

This of course is quite true but Giedion is not denying Scruton's argument but insisting that architecture from the beginning of the twentieth century dispensed with a single viewpoint of perspective. The spatial qualities of free-standing buildings, the space about buildings and their affinity with sculpture, all contributed to the space conception of present day architecture. On this view the qualitative use of space is fundamental to the design and an essential part of the architect's conception. The rhythm of elements and strength of composition rely almost entirely on their spatial content.'

Scruton argues that if space was all that was interesting then much of the architect's activity would be like so much useless decoration. A less literal position, he agrees, is that the essence of architecture is not space but the enclosure of space. Bruno Zevi puts it like this:

“the essence of architecture does not lie in the material limitations placed on spatial freedom, but in the way space is organised into meaningful form through this process of limitation...the obstructions which determine the

³² Scruton, *Aesthetics of Architecture*, p. 47.

perimeter of possible vision, rather than the 'void' in which this vision is given play."³³

In response to Scruton I would argue that the experience of a building is essentially determined by its spatiality both with regard to its volumes with internal structures and externally with its place on the site, relationship with the site and surroundings.

Von Simson shows how medieval architects appealed to Dionysian metaphysic and used light to evoke the very presence of God. Although we no longer share that metaphysic I argue that architects still use light and shadow to play on surfaces, to unify wholeness in space, induce tranquillity, and where its source is hidden, to give a sense of mystery and awe to a structure. As with the medieval buildings, this can inspire a sense of God. I am assuming that what Alexander and contemporary physicists argue about the matter-spirit continuum is correct and in this thesis I want to show how some architecture can induce a direct sense of God. This sense, close to what Rudolf Otto meant by 'the numinous', the elements of awe, overpoweringness, energy or urgency, the 'Wholly Other' and fascination, is what I mean by 'the mystical'.³⁴ The experience is subjective, abstract, and not readily conveyed in verbal or conceptual terms. Mysticism is widely defined as a direct personal experience or common awareness of the immediate experience of the Divine through intuition or illumination. It leads to an experience of being 'at one' with the whole of reality. Such an 'at one' experience is often achieved through a meditative process but the mystical experience of architecture in the sense of this thesis is a result more

³³ Zevi, *Architecture as Space*, p.30.

³⁴ Otto, *The Idea of the Holy*, pp.13, 19, 23, 25, 31.

of a contemplative nature, catching a glimpse of something purer and more fundamental than the normal or mundane, a seeing or sensing of the glow of the 'Blazing One beyond'³⁵. My argument is that it follows from our experience of space, not only moulded interior space but the exterior spaces created by the building in relation to its surroundings, or the ensouling of buildings.³⁶

Scruton describes the experience of architecture as essentially an 'imaginative perception' as opposed to ordinary perception and this interpretation is inseparable from the way it looks³⁷. But there is a degree of obscurity involved in an assertion that experience of a building depends upon a conception of its object. He makes the point that perception, experience and interpretation (or precept and concept) are inseparable, and cites Kant to place proper emphasis on the intimate relationship between experience and concept, postulating a faculty through which sensation and concept are united, to which he gave the name 'imagination'.³⁸ Scruton calls 'imaginative perception' his concern in respect of the theory of imagination in relation to architectural aesthetics, where the object of perception is seen as unreal, as in the understanding of a picture.³⁹ But space perception *is* an 'imaginative perception', a profound aesthetic element, and the feeling of spaces and their movement can give pleasure that is varying, related to the numinous, and stimulating to the imagination as much, if not more, than visual aestheticism. It can result in the same sensation of quietness, inner

³⁵ Alexander, *The Nature of Order, Book.4*, p. 150.

³⁶ Day, *Places of the Soul*, Chapter 9.

³⁷ Scruton, *Aesthetics of Architecture*, p. 74.

³⁸ Scruton, *Aesthetics of Architecture*, p. 75.

³⁹ Scruton. *Aesthetics of Architecture*, p. 77.

calm, and mystery in much the same way that has been described in the appreciation of wholeness, leading to a sense of God.

Internal space relationships are accentuated in Modern architecture and have therefore much more relevance than in the traditional, mainly because modern structural techniques allow the omission of many internal walls or divisions thus giving the architect freedom in planning and allowing space to move and vary so that divisions are created with differing volumes. The ease of creating many and varied spatial structures through these techniques assists the liberation of the mind to perceive and create its own perceptions, interpretations, and visions leading the imagination to where it will.

In the next chapter I want to show how the creation of three and four dimensional space can produce a numinous effect coupled with Alexander's argument that the quality of life in buildings is created by the use of a language at the heart of which is the creation of 'centres' which build a progressive relationship to a wholeness or a unity. If the basic language of 'centres' is combined with an internal and external spatial conception, and a relationship with the environment and beyond is established, then buildings can be said to come to life.

Descriptions and drawings of my own work are included in chapter two, to be read in conjunction with volume two of my drawings and illustrations to explain how and why architects think the way they do, and how sometimes a mystical perception of God can thus be generated.

In the two chapters which follow I attempt analyses of four great buildings to illustrate my theme. In chapter Three I consider two sacred buildings, one medieval and one modern, and in chapter Four I consider two secular

buildings, one monumental and one domestic. These chapters are also to be read in conjunction with plans, photographs and commentary included in volume two.

The concluding chapter comprises descriptions and drawings of the complete design and conception of a Temple for The Universal Order, with a commentary. In the full course of this argument I hope to make the case that architecture is not a purely 'secular' affair but can, properly understood, contribute in some cases to a mystical sense of reality.

CHAPTER TWO

THE WORK OF THE ARCHITECT

Having argued that a mystical understanding of architecture is possible I move, in this second chapter, to an outline of the way in which the architect works to accomplish such an outcome. I shall set this out under eight headings, and then illustrate these with reference to four of my own projects in the United Kingdom, one in Morocco and two others in the Arabian Gulf.

The architect, the client and the art of architecture.

The first task of the architect is to determine the needs of a client and to establish the beginnings of what should be a close and personal relationship with as much knowledge of the person or persons as possible, and to ascertain their needs in relation to the building. It is then essential to see the site, its location and surrounds, which is vital to the first conception, for the architect must always have all features and detail of this continually in mind during the act of designing. Most architects prefer to do this alone, for this is when the first ideas begin to germinate as to the disposition of elements, forms and massing, relationships with features of the site and its location. Some architects would describe this process as one of being able to hold the total conception in the mind and being able to move around, in and over the building, understanding the various aspects and virtually living in it before any commitment to a drawing is made. Sometimes ideas are roughly sketched in quick succession as perhaps alternatives, but in general the first

ideas are those that prevail throughout the subsequent process of drawing.

Le Corbusier spoke of this imaginative act as,

“an undeniable event that arises in that instant of creation when the mind, preoccupied with assuring the firmness of construction, with desires for comfort, finds itself raised by a higher intention, that of simply being useful, tends to show the poetic powers that animate us and give us joy.”⁴⁰

The architect must also give attention to structure and materials, for all will be pertinent to the nature of the site, and always, in the background, is the consideration of aesthetics. Architecture is both an art and a science.

Stephen Grabow comments that ‘The ‘science’ side of the equation is usually interpreted to mean applied science- the realm of structure, materials, construction, and the technological hardware of building operations. The ‘art’ side of the equation is usually reserved for the question of design - the realm of the synthesis and generation of architectural form. In terms of tradition then, the architect is fundamentally an artist, but one who understands science and can apply it to the problem of building.’⁴¹

Le Corbusier thought the architect turned technology into poetry,

“You yourselves, will create, by yourselves, the true poetic vision of today that I shall show you. I shall talk ‘technique’ and you will react ‘poetry’, And I promise you a dazzling poem: the poem of the architecture of modern times.”⁴²

⁴⁰ Le Corbusier, translated by Ed Schreiber Aujame, *Precisions on the Present State of Architecture and City Planning* (Cambridge, MA: MIT Press, 1930), pp. 218-219

⁴¹ Stephen Grabow, *Christopher Alexander: The search for a new Paradigm in Architecture* (Stockfield: Oriol Press, 1983), p.7.

⁴² Le Corbusier, *State of Architecture and City Planning*, p. 36.

By 1928, Hannes Meyer, who was then the director of the Bauhaus, summarized modern building processes in which the architect was to be a specialist in organization and building, as nothing but organization, social, technical, economic, and psychological. One of the foremost names in the Bauhaus, and later architecture, Mies van der Rohe, spoke in 1950 at the Illinois Institute of Technology, of an architecture of its time linked to technology and by the 1960's the science of architecture had become manifest as the *machine aesthetic*.

It is not difficult to see that this machine aesthetic, or the structure, fabric and servicing of modern architecture, involves the strict observance and obedience of physical laws and that it is not possible for it not to be seen as a science. By contrast 'art' was progressively reduced to things that were not dependent on the general laws of physical science, but instead on tradition and the ideal of the finished form of the work as a fixed ideal. But science does not displace art, which is responsible for the overall vision. We can see art triumphing over science, for example, in buildings such as the annex to the National Indoor Stadium, Tokyo (fig.15) the elegant bridges of Robert Maillart (fig.16) and the mushroom structure of the Johnson Wax Company, Wisconsin, by Frank Lloyd Wright (fig.17).



Fig.15. Annexe to the National Stadium Tokyo. Architect. Kenzo Tange.
S.Giedion, *Space, Time and Architecture*, p.1ii.

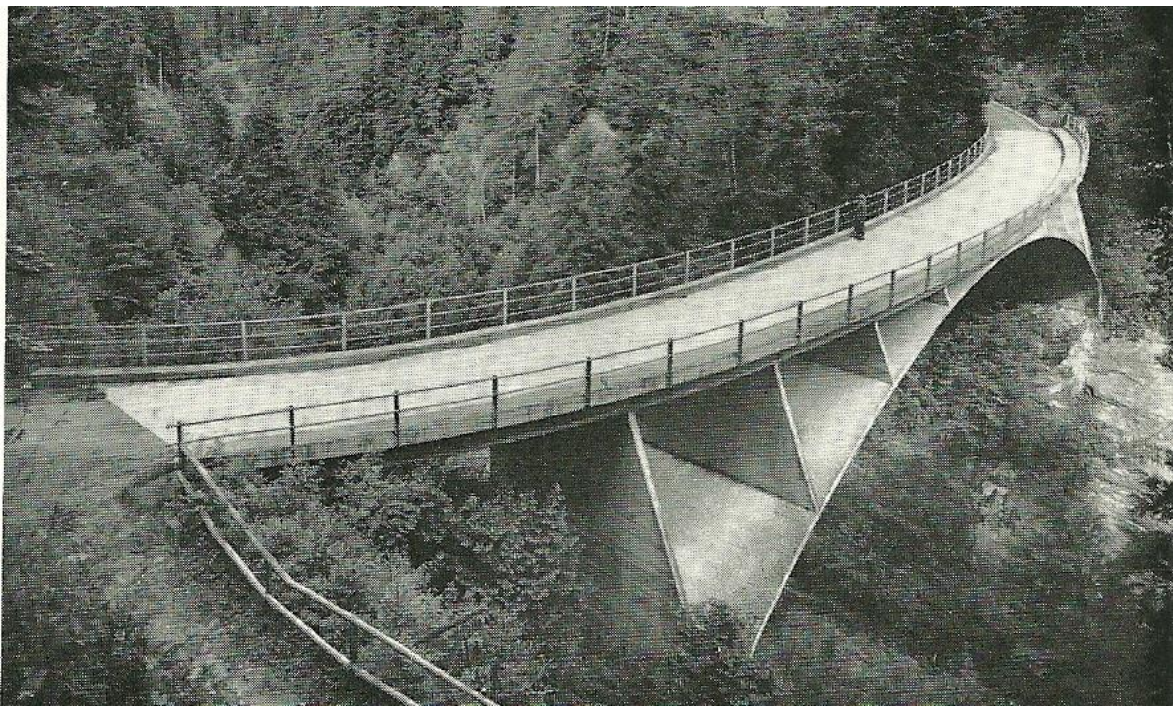


Fig.16. Schwandbach-Brücke in the Canton of Berne, by Robert Maillart.
‘There is a clear inference that mechanical shapes and the shapes evolved by art as the mirror of a higher reality rank *pari passu* in terms of development.’ S.Giedion, *Space, Time and Architecture*, p. 462.



Fig. 17. The Johnson Wax Company, Administration Building, Racine, Wisconsin, Architect Frank Lloyd Wright. S.Giedion, *Space, Time and Architecture*. p. 419.

Architecture as the enclosure of space

In the First Century CE the architect Vitruvius described architecture as ‘the art of creating space through the construction of boundaries in common-sense space’. He went on:

“ One can bound that space through intent alone, but the result will fall short of what architecture creates...A work of architecture must be made, not merely intended. There is no building without the use of muscle acting on resistant material to produce something palpable and substantial. Whoever accepts the clearing as a possible dwelling bounds it off from the rest of the world. But he who makes a dwelling not only bounds it off but produces

roof, walls, window, door, flooring, each of which itself is a newly created tensed spatial object, within a larger space.”⁴³

In my understanding, the enclosure of space is the first work of the architect. The constructing of a shelter involves establishing boundaries to protect and create a place from space, a building. Architecture understood as a re-presentation of space would make this function conspicuous.

Many contemporary architects and writers on architecture agree. So Nicholas Pevsner wrote that,

“What distinguishes architecture from painting and sculpture is its spatial quality....Thus the history of architecture is primarily the history of man shaping space, and historians must keep spatial problems always in the foreground.”⁴⁴

Le Corbusier defines architecture as a total space conception of plastic forms and the interplay of light. It was, he said, precisely the plasticity of architecture which allowed it to express emotions in a unique way.

“Architecture alone is an instance of total plasticity. Architecture alone represents the medium for total lyricism. A total thought can be expressed through architecture. Architecture is self-sufficient. It is a genre that was created for expressing both through and in itself a whole cycle of emotions, the most intense of which stems from the influence of mathematics

⁴³ Vitruvius Pollio, *The Ten Books on Architecture*, translated by M.H.Morgan (New York: Dover Publications, 1960), 2.1.1. p. 38.

⁴⁴ Nikolaus Pevsner, *An Outline of European Architecture* (Harmondsworth: Penguin Books, seventh edition, 1943), Introduction.

(proportions), where the play of plastic forms is symphonic (volumes, colours, material, light).’’⁴⁵

Architecture cannot be understood simply in terms of function. The social purpose of a building may be the expression of status, a role, a group, an institution or may serve and represent the social system as a whole. Such expressions cannot be understood in terms of the addition of decoration to functional sheds, because, I would argue, all genuine ornament has a social function and helps to distinguish the ornament bearer, articulate the built environment, to give emphasis and joy.

In bounding space architects of course make use of geometry. Le Corbusier spoke of geometry as the foundation and also the material basis on which architects build those symbols which represent perfection and the Divine.⁴⁶

Most architects’ understanding of geometry is in the straightforward use of three primary planar figures, the square, the triangle and the circle and the more complex curves such as the ellipse, parabola, catenary and the spiral. Only in the nineteenth century, it seems, was surface geometry really understood when from the development of material science and technology, membrane structures, geodetic and shell construction became widely used. This has given free reign to architects for plasticity in design resulting in spatial conceptions of extraordinary complexity and resultant sensations.

Geometry is the vehicle used by architects to express their conceptions by manipulating known regular geometrical shapes to the particular element of

⁴⁵ Le Corbusier, *Sainte Alliance des Arts Majeurs ou le Grand Art en Gesine*, in *Architecture d’Aujourd’hui*, No.7 (July 1935.), p. 86.

⁴⁶ Le Corbusier. 1929. *The City of Tomorrow*. English translation by Etchells of *Urbanism* (cited in Agrest, 1991), p. 64.

the idea. But it is important to say that manipulating geometrical shapes for their own sake has nothing to do with geometry as a controlling device in architecture. The key mode is determining which shape or shapes can be geometrically right for the particular idea in relational terms.

If the quantitative use of space follows directly on the qualitative aspect, then the positive, essential concepts of space can be said to generate architectural creativity, and the concept that space, not shape, should lead in the generation of form. Conceptual space is created by enveloping it with walls which in turn may become usable in the sense of containing walls of secondary spaces which can be dependent on the primary space for their access to light or air. A simple example of this can be seen where internal walls are not taken up to full height, giving an apparent division, allowing space to move from one volume to another. Sensitively developed and exploited in the design process it can contribute to that sense of unity, wholeness and numinous, associating the senses to a communion with God.

Shapes may determine the particular architectural expression of space, especially in the architecture of Islam, and therefore creative excellence depends on the strength and clarity of this encounter. Positive space as an active quality carves the spatial connection with secondary space systems, flowing through the structure and shapes and transforming surfaces into ornamented testaments, such as free shaped internal balconies or mezzanines. Secondary spaces such as courts, paths and other routes, rivers, streams, can rely on the primary spaces for their existence or prominence. The linkage is important, following a basic pattern of connection, transition and culmination.

In the medieval cathedrals I believe that it is primarily space and its expression and conjunction with secondary spaces either openly or suggested, which can convey awe and a sense of mystery and I would argue that it still has this capacity in a secular age.

The need for wholeness

The conventional wisdom of architecture has long been and still is that a completed building is a wholeness composed of parts either arranged symmetrically or asymmetrically in a whole which is greater than the mere sum of its parts. Architecturally, one explanation of the part in relation to the whole is that the separation of the whole from the part is critical to the understanding of the part because in the conception of that distance lies the mechanism of the whole. Since the quality that involves parts in being parts, leads to their discovery as parts, making them potentially wholes, and because this quality is supplementary to the part without any commitment to what it might be, there will always be a surplus of this amongst parts. This, then, can be said to be the 'sum' by which the whole is greater. This surplus or supplementary quality of the jobs that parts are made to do may vary in the context of the idea of them and until they are placed in contradiction to, confirmation of, or intersection with the job they are to do, they remain parts.

It is equally plausible to say that architecture is not greater than the sum of its parts but is the dialogue among the parts depending on which approach is taken in designing from a conception of the whole using 'division', or from a conception of parts using 'connection'.

Almost all biological processes achieve wholeness by the multiplication of cells through cell division but others achieve this through streaming towards centres of aggregation and therefore it could be claimed that cells are differentiated and become organisms only in accordance with laws that relate to their assembly and place in life. It could be said to be a plan of life, a fundamental principle of nature, and theists might think of this as proceeding from God as the Architect of the Universe. Perhaps, then, God's creative activity with nature and the allocation of parts to their appropriate place in the scheme of the whole could be associated with the creative art of architecture.

Alois Hirt argued that every work of architecture could be considered as an organic whole made up of primary, secondary and contingent parts which stand in a specific volumetric relationship to one another. Where organic structures are concerned, this relationship is determined by nature itself in such a way as to meet the particular functional needs of individual structures. In respect of architectural structures it is determined by man.

“The proportional relationships between the various parts and between each individual part and the whole, is determined by considerations of stability, partly by the needs of comfort and partly by the architect's desire to create a particular impression.”⁴⁷

Frank Lloyd Wright agreed.

“An organic-entity, this building as contrasted with that former insensate aggregation of parts. Surely we have the higher ideal of unity as a more

⁴⁷Alois Hirt, cited in Georg German, *Gothic Revival in Europe and Britain: Sources, Influences and Ideas* (London: Lund Humphries and with the Architectural Association, 1972), pp. 33-34.

intimate working out of the expression of one's life in one's environment.

One great thing instead of a quarrelling collection of so many little things.⁴⁸

The components of spatial form are no longer complete, isolated addends but are fractions of a pre-existent whole, incapable of independent existence which causes the diminishment in clarity of their boundaries. By spatial addition where each of the part members is a detached, clearly defined entity, an addend, each member of differing shape helps create a rhythmic community of spaces of individual identity, as for example the interior of an auditorium with balconies or other levels of seating interpenetrating the primary space. Another is the vision put forward by Christopher Alexander in 'The Nature of Order' in which he sets out to paint a more holistic picture of the universe as an unbroken whole, where biology, ecology, complex systems theory, and physics, all point to a new conception of the world in which the local system is influenced and compelled by the behaviour of the whole. Within these new scientific systems passages of inspiring thought and beauty are encountered, but these visions have not been achieved scientifically in a form which allows the human self to find its place, because they only deal with the inert and mechanistic leaving the *felt self* in the universe, the presence of consciousness, and the vital relation between self and matter, unsolved.⁴⁹

⁴⁸ Frank Lloyd Wright, *Organic Architecture*, cited in Ulrich Conrads, *Programmes and Manifestos on 20th Century Architecture*, translated Michael Bullock (Cambridge MA.: MIT Press, 1971), p. 25.

⁴⁹ Christopher Alexander, *Nature of Order, Book 4*, p. 17.

Unity.

I distinguish unity from wholeness in terms of the attempt to bring the different aspects of a building into harmony, consonance or accord. It is the attempt to overcome disorder and restore order, and when done properly unfolds rather than being imposed. In unity the emphasis is on the subordination on the part to the whole, in wholeness it is the other way about.

Architectural unity cannot be expressed by way of analogy with natural organisms because these are symbiotically entrenched in the laws of growth, closely related to their environment, individually achieving a state of almost perfection, and inherently non spatial. In architecture, on the other hand, its laws are partial and flawed because it is inherently spatial and affected by the environment only as far as it is allowed. It is however a conscious imaginative act which has no analogy in nature. All completed buildings are a unity of a designed outcome that encompasses the whole conception with the process and formal appearances. Such unity depends on the sensitivity of the architect, affirming multiplicity and plurality, generating a unity of difference.

The shapes used in architectural design are inseparable from the concepts of mathematics, and geometric form and numbers have an ordered, qualitative and symbolic sense in which they are an echo of unity and a reflection of a quality contained in principle within that unity. They are a reminder through their symbolic aspect of the spiritual principles which a building reflects, which also relate to an ordered, inner state of all beings.

Order

To the ancient Greeks architecture consisted of arrangement of parts in relation to one another with an elegance of composition. Vitruvius says of order :”it gives due measure to the members of a work considered separately, and symmetrical agreement to the proportions of the whole.”⁵⁰

In Greek culture and in traditional cosmology the universe or cosmos was an ordered harmonious system of which humankind was a mirror.

Alexander seems to be recalling this order when he writes,

“I have come to believe that the problem of physical order – the kind of order which creates quality in architecture... is of so great a stature, that we shall have to modify our picture of the whole physical universe in order to see it clearly.”⁵¹

The order to which Alexander refers becomes a total way of seeing the world in which architectural order is merely one of the many orders that exist in a total unified understanding.

The three forms of order in architectural discourse are, firstly, archetypal order, the original pattern from which copies are made, or the abstracted image of a grouping; secondly, prototypical order, which is the first primary type of anything, a pattern or mode, not altogether distinguishable from archetype; and thirdly, stereotypical order, where the meaning is something permanent and reproducible, a conventional re-presentation or replication of some already acknowledged prototype. These could be said to be the classical canon in which the whole consists of division into parts, the

⁵⁰ Vitruvius Pollio, Book 1.1.2.

⁵¹ Christopher Alexander. *The Nature of Order. Draft Manuscript for discussion* (New York: Oxford Press, 1992).

individual elements, and symmetry. Symmetry of elements is a simple, comforting ordering device and still a potent force used by some architects until they find other possibilities of arrangement and composition, but many architects, like Palladio, for example, show that asymmetry may still produce balanced buildings.

Today chaos theory is a way of thinking of order, but in architectural theory chaos is absence of order, structure or shape, or in other words it is only understood through reversing a knowable concept, and therefore in the classical sense, could be unknowable. Any image of chaos is of a random distribution with no introduction of order or anything from which a pattern or arrangement of forms could be created. To my mind it is doubtful that chaos theory is applicable in architecture.

Scale.

Charles Moore and Gerald Allen write, “The basic measure for scale can be categorised under four main headings: relation to the whole, to other parts, to usual size, and to human size.”⁵² Generally scale in architecture tends to mean the relationship of the building or complex of buildings to the human figure, a graduated series or order, a system or scheme of relative values, the ratio of representation to objects or relative extent. Although it must be important that the building relates to the human form, the architect has to consider the movement from inside to the outside when a subtle transition of scale has to be considered between the surrounding structures or the Settlement and even the Town or City. In some cases the natural features of

⁵² Charles Moor and Allen, Gerald, *Dimensions: Space, Shape and Scale in Architecture* (New York: Architectural Record Books, 1976), pp. 17-24.

the site are of great importance, but in almost all cases, there has to be an adjustment of scale when relating to existing buildings or features.

Scale is not mentioned, or at least the term is not used, in the works of Vitruvius, although there is a hint of the measure when discussing symmetry.

“After the standard of symmetry has been determined, and the proportionate dimensions adjusted by calculations, it is next the part of wisdom to consider the nature of the site, or questions of use or beauty, and modify the plan by diminutions or additions in such a manner that these diminutions or additions in the symmetrical relation may seem to be made on correct principles, and without detracting at all from the effect.”⁵³

Scale brings many problems to an architect in the process of design, notably the scale shift that is often required to obtain a variety of spatial relationships and it remains a repeating challenge to devise ways to reconcile this in form and space successfully. In contrast to proportion which can be seen as a relationship to physical dimensions, scale can indicate the real size measured against a dimension of comparison and is therefore normally used to designate the size of a building to the human form.

Skilled use and shift of scale by a sensitive architect can induce effects of spirituality, humility, or other emotions such as modesty, arrogance, prestige, dignity and power, but possibly the most potent device is height with its romantic preoccupation with the Sublime as evident in Gothic cathedrals or the spatial amplitude and grand dimension of monumental

⁵³ Vitruvius, Pollio, Book 6.2.1 and 6.3 on the cavaedium or atrium house.

architecture. Often the drama of this can be heightened by the deliberate reduction of scale before entering a greater space, increasing the mystical sensation.

Scale used architecturally adopts the perceptual rationale of using familiar elements that are consistent in all buildings such as windows and doors, all of which are used as a step to relate the human form to a building. The classic portico is often used as an emphasis to what is after all an insignificantly small size door designed for the human form. Also the magnificently scaled recessed entrances to cathedrals to frame and emphasise a human size door recognises the hierarchical device in the concept.

There can be important conditions in the use of scale such as expected or familiar use which might refer to volume, utility or sizes of brick or stone units in construction. Proximity of the compared objects is an important introduction, which might be the relationship of various design elements or size and disposition of windows within a volume, and shape factors within design elements can create an engaging, satisfying choreography. All of these conditional aspects will assist the designer, particularly when calling attention to, or emphasising parts to the whole, or as the total conception demands.

Proportion.

Proportion can be explained architecturally as the relation between the whole and a certain part selected as standard. Alberti said that it was the quality of being, by intervention and adjustment of rhythm, to subjectively

satisfy harmonious proportions. He gave the special name of *concinnitas* to this quality and the task of *concinnitas* is to,

“compose parts that are separate from each other by their nature, according to some precise rule, so that they correspond to one another in appearance. . . .proportion comes from concinnitas: that is, the successful combination of number, measure and form.”⁵⁴

It is possible from this to say that proportion provides the basis of an architectural aesthetic and requires such an aesthetic for it to be understood. Roger Scruton shows that sense of proportion and the recognition of aesthetically significant detail are dependent and in fact inseparable.⁵⁵ He writes,

“What we have noticed is that the rules of proportion are a posteriori: they derive, not from the meaning of the term, but from some discovered criterion for its application. They do not tell what proportion essentially is, but only give laws for its production, laws which hold at best only approximately and from certain points of view.”⁵⁶

But it is not only the sense of detail that is necessary to appreciate properly proportionate forms, for every aspect of aesthetic appreciation is used to judge in the proportional sense and it could be naïve to assume that it can be captured by some mathematical paradigm only. It can be assumed that architecturally proportion is only one means to an end aesthetically and that it seems in its mathematical and geometrical conceptuality more of a feeling

⁵⁴ Leon Battista Alberti, translated by Joseph Rykwert, Neal Leach, and Robert Tavenor, *On the Art of Architecture and Building*, in ten books (Cambridge, MA.: MIT Press, 1991) Book 1.9.

⁵⁵ Scruton, *The Aesthetics of Architecture*, p. 67.

⁵⁶ Scruton, *The Aesthetics of Architecture*. p. 66.

of rightness and satisfaction intellectually in the establishment of the parts with the whole. Traditional architectural thinking would argue that if proportion were removed from conceptual thought then harmony is lost and chaos would ensue. But if traditional ratios are ignored it is surprising that nothing drastic happens and compositions of free ranging parts, often unrelated convoluted shapes and forms, possess aesthetic appeal as in the house of architect Oswald Mathias Ungers, Cologne,(fig.18.) which is a bold design of unrelated volumes skilfully handled. Also the Gerrit Thomas Rietveld house at Utrecht (fig.19.)which shows a harmonious balance between verticals and horizontals, with an acceptable pattern of solids and voids, catching light and casting shadows.

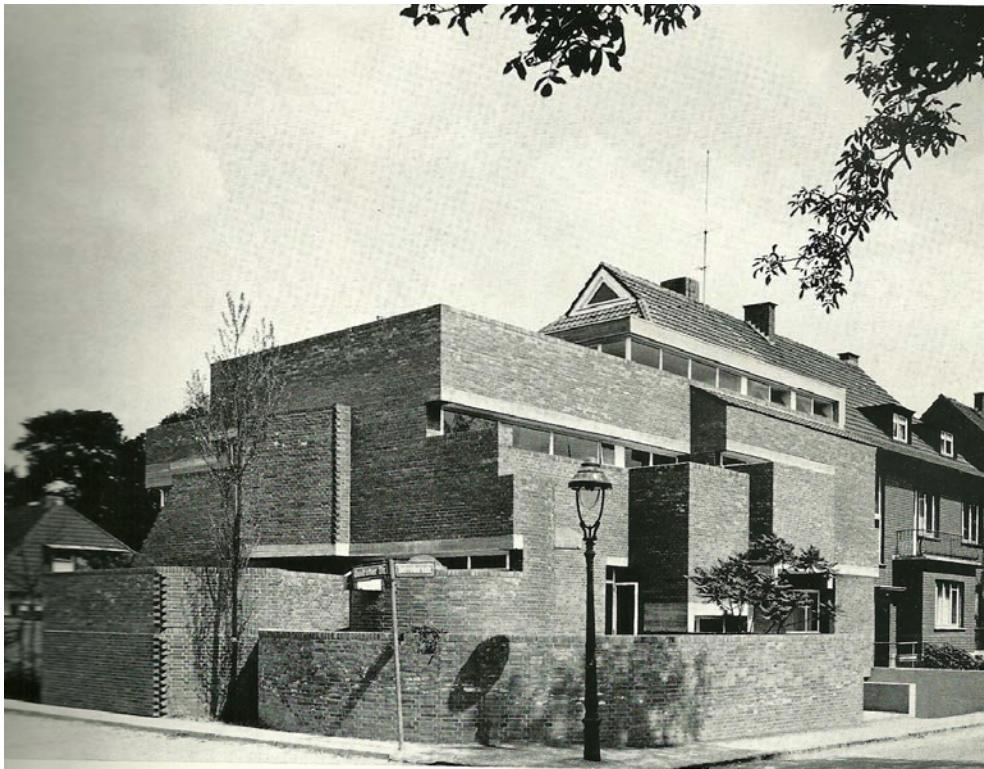


Fig.18. The architect Oswald Mathias Unger's.house,Cologne-Müngersdorf. Ulrich Conrad, *Modern Architecture in Germany* (London: Architectural Press, 1962), p.39.

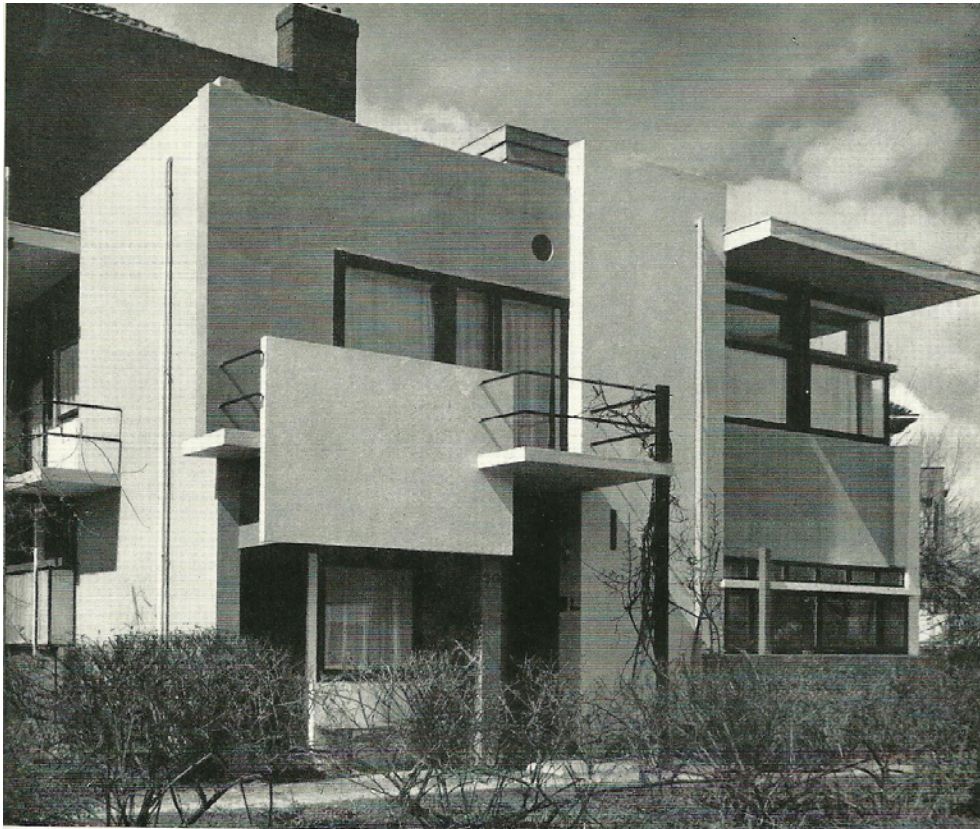


Fig. 19. The design of a house for Gerrit Thomas Rietveld at Utrecht 1924, reflects the architectural conception of the Dutch group “De Stijl,” formed in 1917 by the painters, Mondrian, van Doesburg, van der Leek, and Huszar, the architects Oud, Wils, and van ‘t Hoff, the sculptor Vantongerloo, and the poet Kok. Oud left the group in 1921.

Jürgen Joedicke. *A History of Modern Architecture*, p.103.

The concern for beauty

It was the view of Alberti and other thinkers of the Renaissance that architecture existed on one hand, setting itself the highest aims in design, and building on the other which was little more than a craftsman’s activity with no aesthetic content. Scruton discusses the role of the architect with that of the builder suggesting that it is as much of the common builder as of the architect to know what is appropriate, and to build in the light of that knowledge. He seems to imply that Alberti agrees with this because of his repeated emphasis on what is appropriate, fitting, ordered and proportioned.

But aesthetic considerations must always be at the centre of the architect's conception. The builder must make sure a structure is sound but essentially all aesthetic considerations are those of the architect as the initiator of the total conception. A close relationship between builder and architect is unfortunately rare, though it may have happened in the age of cathedral building, when the architect as known today did not exist and the role was taken by master stone masons, often acting independently but in the overall, creating a unity of purpose.

Joseph Esherick considers that beauty is unreal as a goal.

“Preoccupation with aesthetics leads to arbitrary design, to buildings which take form because the designer ‘likes the way it looks’. No successful architecture can be formulated on a generalised system of aesthetics.”⁵⁷

But it is equally wrong when the architect produces designs, expressing the main aims of his ideas, and then looks for ways to embellish or fulfil them aesthetically by the addition of ornament or unnecessary features which have no relation to its main idea. Modernist Architects are always professing simplicity or trying to simplify design concepts, striving for an absence of complexity, stripping off excess ornamentation. The architects of the Modern Movement encouraged simplicity in buildings with the removal of all superfluous ornament to form a fresh, free expression of the spiritual, social and economic life of the age. To achieve this simplicity in detail when designing is not a straightforward process but is the result of painstaking work of reduction. In addition there is the influence of the

⁵⁷ Joseph Esherick and P. Heyer (eds), *Architects on Architecture* (New York. New Directions in America, 1966), p. 111.

particular structural problem solving process which generally leads to rejection of all that is superfluous as part of the ordering.

I have set out eight factors which determine the work of an architect: the initial imaginative grasp; the use of space; wholeness; unity; order; scale; proportion; and finally beauty. It is my contention that through proper attention to these criteria an architect may build in such a way as to induce a sense of the numinous. I am going to try and instantiate this by analysis of seven of my own buildings and then, in succeeding chapters, four great buildings, three of which are amongst the greatest buildings of the twentieth century

Examples from my own work

The Norfolk House at Colton.

Drawings and photographic for this house are found in **Volume 2. Figs.1-3**

To illustrate the subtle use of moulded space on a small scale to provide a wholeness, a sense of unity and life in a building, I choose a small house in Norfolk as my first example, where space is the mystical component resulting in the creation of a quiet meditative state inducing a sense of the numinous.

This house was for two people who had found an idyllic site in the heart of Norfolk to build their home. It was situated out of the sight of any dwellings, sloping gently to the south, towards a winding stream, and surrounded with trees. (Vol.2.fig.1.p.7) The site was obviously designated as ‘countryside’ and within an area scheduled for no development of any kind, but I was persuaded to visit it. Whilst exploring it I kicked against

some brickwork in the undergrowth which on further investigation proved to be the remains of some brick walling and foundations which, when uncovered seemed to be the remains of an outbuilding or cattle shelter, long demolished or fallen down. Their extent was measured and a small dwelling designed over them. It was very small but enough to take to the planning authority to persuade them that some structure had existed on the land which they could accept as previous development. After much discussion and further drawing they agreed and it was further established that any new dwelling could be extended in size but only in a small measure beyond the outline of the demolished building..

Because of these strict limitations in size, the design needed a determined, careful analysis of their way of life and they were receptive to changing traditional house design and use of space, to reach a solution. Once a first stage was complete complying with these restrictions, the planning authority would have difficulty in refusing a further extension which could result in a house fully satisfying all their needs.

The concept, although quite small in size, nevertheless assumed a greater power in imaginative thought to capture the essence of their life vision.(Vol.2.fig.2.p.8) Many ideas, although quite acceptable now, were very advanced at that time but the bond with the clients was further increased when the builders arrived and it became obvious that they too were involved in the total notion, and were caught up in the enthusiasm of the clients and wanted to be creatively involved in the whole process.

To save ground floor space the roof was designed as a complete living area and constructed so that all its structural members were exposed down to

floor level, which eventually gave it an extraordinarily organic, sensual sensation of living amongst live timber.(Vol.2.fig.3.p.9) It had to be designed ergonomically because of limited headroom but in the end it was successful exercise of space manipulation, with no applied decoration except for treated timber and with a large brick fireplace at one end to give it scale and a focal point. It overlooked the beck and after entering it from what was termed 'the great hall', which was in reality the dining room and kitchen area on the ground floor, it gave a sense of tranquillity in spite of the busy, complex roof construction, almost a haven above and away from material things, looking over the natural colours of the countryside. There was an essential sense of rising from the ground floor from the beckoning open stairwell, to be removed from the constraints of earth to a mysterious higher level into a natural, calming, living world of seemingly growing timber with vistas into the green living Norfolk landscape, thus bringing the whole interior at one with the exterior. This sense of oneness was further emphasised through the vertical spatial link of the open stair well which was increased in size to give the movement upwards to a mysterious 'unknown' space which could be sensed as soon as one entered the front door. The 'rightness' of this small structure could, in my view, be attributed to the honest, thoughtful, reflective involvement and contribution of all those involved, thinking and working together with a common love for what they were doing. This is very much like the situation of Le Corbusier, his builders and his chapel at Ronchamp which I shall analyse in the next chapter. It emphasises and conveys, simply by the use of space, a form of unity and love. Certainly, the owners experience that sense and its timelessness even forty five years after completion, although it has been

extended in size. This sense of rightness and the atmosphere it possesses can be attributed to the manner in which the spaces on two levels are handled with the vertical spatial link of the staircase. This building, then, illustrates the way in which initial imaginative grasp, rapport with the client, scale and use of space can all create a religious import given directly as an experience of awe and fascination attributed to the numinous. These qualities coupled with its simplicity, hiddenness, and unity give an intimation of the Divine which cannot be fully defined.

The theatre.

Drawings for the Theatre are found in **Volume 2. Figs. 4-7.**

The same awareness of space, attempting to create a sense of wholeness and unity by the continuous movement of uninterrupted volumes through differing levels, is shown in the design of a civic theatre where the relation of parts to the whole to create a unity of structure are expressed. In this conception, a theatre for a town site situated in an area for recreational facilities, was designed and because of the nature of the site, a structurally honest, simple expression of form to complement the trees and its open space was chosen. Bruce Allsop notes that,

“Much of the best architecture has resulted from the adoption of a simple and limiting format. Many architects make things much more difficult for themselves than is necessary. There is no virtue in virtuosity deployed in the solution of problems which need never have arisen.”⁵⁸

⁵⁸ Bruce Allsop, *A Modern Theory of Architecture*. (London: Routledge and Kegan Paul, 1977), p. 89.

My theatre hoped to instantiate this. It was intended to seat seven hundred and fifty people with a small additional exhibition building for local paintings and sculpture, on a spacious, open site of a park surrounded by roads in an area designated for recreational purposes and it was the setting for the building that triggered the central idea for the work.

Any theatre has to fulfil a number of functions, the main one being to stage a large variety of performances involving lighting and other effects, with access for large sets and their storage. Then administrative staff and the performers have to be accommodated. The fly tower is a particular problem because of its height in relation to the other elements. The stage and fly tower complex with all the production appendages could perhaps be called the soul of the building. Consideration has to be given to the auditorium, which needs comfort, clear sight lines and good acoustics. The auditorium must be designed for rapid escape in emergencies and for access by the emergency services with easily visible, readily accessible refreshment facilities, cloakrooms and toilets. Adequate circulation around the auditorium is essential to allow free circulation of people and a simple directional method of leading them to the facilities provided before, during, and after the performance.

The form of the theatre was imagined as a rectangular glass box, within which the heavy elements were placed and plainly expressed internally and externally. The fly tower, stage and production elements could be seen behind a curtain of glass which left the box expressed in a continuous material skin giving a uniform expression. In order to realise this, the auditorium, stage and fly tower were made an integral reinforced concrete

unit, the auditorium with a funnel shape for acoustic and sight line purposes with the stage and fly tower planted as a box at one end.(Vol.2.fig.4.p.11)

The whole of the building was formed as a glass box enclosing this unit, from ground to roof, which was designed as a heavy lid in butterfly form to give a sense of stability over a light glass walled building. The roof follows the downward slope of the auditorium towards the stage incorporating at its highest point, the balcony and the rises again at the point of the stage to accommodate the two storied backstage area so that it is a truthful expression of what is happening underneath its heavy, sheltering lid. The glazed walling enclosing the backstage area and the external walls of the fly tower projecting above the roof, are in a coloured glass with solid backing where no transparency was required, thus preserving the glass as continuous skin material. At each corner, on either side of the entrance square tower blocks rise through all floors containing toilet and administrative offices. These towers are clad with a lightly ribbed stainless steel sheeting which is set back behind the clear glass external cladding in order to preserve and not interrupt the glass skin of the external wall.

Within the volume of the glass box, the various floors are 'inserted' with their linking staircases so that the whole space is continuously flowing horizontally and vertically and the circulation of the whole theatre can be seen and interpreted on entering the building. The core of the building, that is the auditorium, is not continuous with this space but one is always conscious of where it is whilst moving about the building. This gives a sense of unifying the sealed core of the auditorium with the free circulation aspect of the public areas. (Vol.2.fig.5.p.12)

The simple glass box of the building gives an ordered and restrained feel but also allows the glass walls to mix and unify interior and exterior elements giving a wholeness to the public circulation areas by the relation of the parts such as service areas, bars and staircases within and linked to their spaces. A similar interpretation of wholeness is possible from the outside which is further enhanced by the colourful movement of people within the building giving a sense of life and time. The balcony bars, or 'centres', on each side with their linking staircases coupled with similar bars at ground floor level, enable views up and down through the lofty flanking spaces to add to the spatial sensation. The bars are emphasised by their free standing nature, constructed with red leather panels so that they become inter related within their spaces, internally and externally.(Vol.2.figs.6. p.13 and 7.p.14)

The central idea was to contain a complicated system of accommodation, simply and clearly, eliminating any degree of exaggerated ornament so that its clean lines would complement the organic nature of the park site in which it is set, whilst always in total contrast to any natural form. Its transparency was deliberately engineered to allow the nature of the site to interpenetrate the building from all sides in order that this could be satisfied. The introduction of the glass containment of the accommodation coupled with the proportioning of the internal spaces gives a dramatic unity to the structure and its relation to its site Scale is used through the butterfly roof to express the function of the auditorium which has to accommodate two floor levels at one end and the lowered stage area at the other whilst at the same time creating a suitable acoustic shape for its use.

In much the same way as the house in Norfolk the building possesses life, fascination and urgency, evoking the numinous through the spatial sensations encountered within and the pattern language of these spaces and associated 'centres.' In addition, the four dimensional quality of the space caused by its continuous movement and dramatic encounter with its exterior spaces, through the glass envelope, creates a sense of awe and otherness. Its religious import cannot be easily defined verbally or conceptually but can be given directly in the experience of its spatial quality which would indicate a culture-transcendent conception.

An Office Block in Norwich. Drawings and photographs for the Office Block are found in **Volume 2. Figs. 8-12**

Architects are often presented with clients in possession of a confined site in the centre of cities, demanding a design for commercial development where the only requirement is to maximize the floor area for the greatest financial gain. Such a solution was required from me in Norwich on a restricted site in a predominantly Georgian street and within a strict conservation area. The street was comparatively narrow and on the land immediately opposite was a substantially solid office building, four stories high, with additional towers at each extremity.

It was thought to be bad mannered architecturally to allow a tall building to face the relatively narrow street because of the existing office building and yet height was required in order to obtain maximum floor area, so I decided to divide the proposal into two blocks. The first one along the street frontage, ground floor plus two floors high and the main block set back behind the front block at right angles to the street, to a height of ground

floor plus ten floors. This would present the narrow side of the high tower to the street, set back to lessen its impact, with the front and rear blocks separated by a linking service core, at the top of which was the main services, heating and ventilating equipment centre. The low block to the frontage would have to comply in height with existing buildings on the street, in proportion, and colour, with the ground floor completely glazed to give a sense of lightness to the two floors above which would then appear to hover above street level. (Vol.2.fig.8.p.16)

The structural system was on a fixed, uniform grid square module with reinforced concrete columns and beams integral with reinforced concrete floor slabs. This allowed the frame to be completely and honestly expressed externally showing that the building's structure was simple, economical and apparent. The three blocks or design elements were also clearly expressed in function with the solid infilling panels forming the external walls, separated by the structural columns to express exactly by their form, not as a load-bearing quality, but part of the infilling wall structure in conjunction with the continuous window membrane. These panels or 'centres' were the only external wall facings other than glass, and were cast in concrete with specially selected textured finish in a dark red brick integral colour to match the predominant brick of the adjacent buildings. They form the main 'centres' of the scheme with their conceptual devices of scale and proportion apparent which give unfolding unity through their repetition throughout the building. This is similar to the repetition of the division of the glass walling of the theatre previously described which gives a sense of tranquillity and calmness. Together with a dark grey tinted glass the

elevations present a quiet, sombre, dignified yet modern addition to the street scene. (Vol.2.fig.9.p.17)

Because of its simple and uncomplicated expression of 'centres' with no relief from applied features or decoration, it was essential that the structure's proportions should give prominence and dignity in a street of some architectural merit, giving a strong sense of order and unity through the repetitive wall panels. The main block was designed to the golden section in plan and elevation and the front block's structural bays from roof level to underside of first floor level are also in this ratio, divorced from the ground floor element which was totally glazed. The precast panels of which the whole building is composed are uniform in size and also in the same proportional ratio. This gives the total building a wholeness of parts or centres and an unfolding unity from the low block to the higher with a clearly expressed link for the two.

The total conception was a geometrical solution, but proportion in this case paid an overwhelming part of the architectural expression largely because the building's purpose was to maximize its provision of floor space with all the technology required to satisfy that objective and there were no ancillary uses or features that could be incorporated, nor any space on the site that could be used imaginatively in conjunction with the building. Instead, sensitive use of external space was achieved by the creation of the free space above the front block to allow the rear block to sit comfortably in the composition.(Vol.2.fig.10.p. 18) This space was not contained but is 'felt' from both directional aspects in the street scene and adds considerably to the sense of balance between the elements, providing an invisible link between

the buildings either side of the block. This space is also important with respect to the building's relationship to the existing offices opposite for without it there would be an overwhelming sense of claustrophobia and overcrowding. It is this spatial relationship established between the two developments that creates a sense of calmness and satisfaction. (Vol.2.fig.11 p.19.). It is my claim that such a space between buildings might help to create a sense of the numinous or mystical. What Christopher Day calls, 'the conversation between idea usage and place'.⁵⁹ It is a configuration of space, subjective, religiously suggestive, yet not capable of being readily explained, thus leading to a sense of the numinous. A similar device used in creating a mysterious undefined space, yet giving a perception of form can be seen in the Seagram building plaza, in New York's Park Avenue. The thirty nine floor tower block is set back twenty eight metres from the Park Avenue building line with the extraordinary effect of a proportioned non defined space that is mysteriously experienced approaching the building but long before it can be seen.(Vol.2.fig.12.p.20)

A small housing development in Norwich.

Drawings and photographs for the housing development are **found in Volume 2. Figs. 13-18.**

Residential building has an advantage over other forms of architecture in that its design is intimately concerned with the lives of people, their thoughts, lifestyles, and needs. When the needs are to live in a City the design becomes more complex and the whole approach to amenities in a small space has to be given priority. To reach a wholeness and unity of

⁵⁹ Day, *Places of the Soul*, p. 107.

conception that allows them to live independent lives in close proximity with one another and yet feel a communality of spirit is essential.

‘Beechbank’ is a small housing development in the centre of a Medieval City for which my Practice was responsible in the early nineteen sixties, which followed a period of dreary post war residential development in both the public and private sectors. At that time there seemed little regard or sensitivity for the needs and quality of life required by the inhabitants and a misconception of how the house should contribute to the swiftly changing life style of that epoch. This was long before Christopher Alexander’s Pattern language, but it seems to me that this development instantiates some of his principles in relating part to whole, right down to the physical materials and structural elements out of which buildings are made.⁶⁰ When the pattern works it generates what Alexander calls ‘the quality without a name’, a quality that is objective and precise, and yet cannot be translated into a formula. According to Alexander all the functions in buildings are associated with living ‘centres’, and the choice of these determines whether or not the building works.⁶¹

In the housing development in Norwich, the living centres are the open communal green, the separation of cars and provision for them, and the blocks of dwellings. My aim was to provide a safe environment, with privacy for each dwelling, the retention of all trees plus additional sympathetic landscaping, properly designed pedestrian walkways, and to have a scale in relationship to the surrounding areas.

⁶⁰ Christopher Alexander, *The Timeless Way of Buildings*, pp. 274-304.

⁶¹ Alexander, *The Nature of Order*, Book 2, p. 342.

At that time, new housing schemes both for Local Authorities and in the private sector in Norwich consisted of individual detached or semi detached houses of traditional design which varied little from the dull pre war standards in design and with site layout systems of similar unimaginative quality that did not deal with the ever mounting problem of the motor car. The design and layout of housing seemed to be rudderless because of the fear amongst private sector developers that any radical change to the normal design would be opposed by the public with the resultant loss of sales. These developers lacked courage to step outside the standard parameters of layout, density and design standards, resisting high density schemes because they were considered retrograde and alien to public need, even though much more profitable because of the more economical use of land. Planning authorities were reluctant to adopt any forward thinking approaches to these problems and were more concerned with over development, overlooking, lack of privacy and detrimental to public amenities that this form of development generated.

My clients owned 'Beechbank,' a large Victorian house near the City centre, standing in gardens liberally planted with mature trees. The surrounding areas consisted of a mixture of medium sized detached houses, all with large gardens, and an adjacent Church. Their instructions to me were to demolish the house, which was in an extremely poor condition structurally, and to develop the site with a block of flats sited on the area occupied by the house. They considered that because of the number, size, and position of the trees any other form of development could not be possible and the planning authority would be difficult over anything that did not simply replace the house in size and position on the site.

It seemed a perfect site for a high density approach with an access road traversing the route of the existing driveway to the house from the main road which could then feed vehicular traffic into the back of the site. By so doing it would open the remainder of the site for individual housing which could be grouped into a quadrangular form around a green, an open, traffic free, communal area to be enjoyed by all the occupants. Simple as this seems, there were great difficulties with the existing trees which were randomly grouped throughout the area for development, but with the aid of an enthusiastic City landscape officer, it was established that building close to some of the trees was possible. In the event, none of the existing trees were removed and new additional planting was introduced to support a full landscape scheme complimenting the existing. At this stage, the clients were only mildly interested and not fully convinced of the financial success of such a modern approach, and neither were the planners who wanted a more traditional layout and house design.

A scheme design was produced which involved terraced houses grouped around a central garden on three sides with a small block of flats on the fourth side. (Vol.2.fig.13 p.22.and 14.p.23) This was a form of geometry that was previously unknown since terraced houses had not been developed since the war and although Norwich possessed many streets of small terraced Victorian artisan dwellings, the very word *terrace* immediately classified the house as undesirable to the average home owner. Although the existing Victorian terraces were high in density they were low in amenity. The proposal showed higher densities that had ever been encountered plus private, walled gardens and the great open aspect of the centrally landscaped area with mature trees, carefully designed pathways and free of traffic. The

houses were designed in small terraced groups in the overall form of a rectangle around a central communal space, parts of a whole but complete wholes within themselves and carefully related to one another and the surrounding landscape and the existing housing that enclosed the site. (Vol.2. figs.15 p.24,16.p.25,and 17.p.26) Some of the houses were of three story configuration not only to give interest with varying heights but to give elevated views of the green space from their first floor windows. (Vol.2.fig.18.p.27) The houses were modern in design, using a panel construction between party walls, continuous windows with tile hanging infillings, all of which were considered innovative at that time, but much copied now. They were close to existing trees to give a sense of maturity and a distinct sense of place. An interesting pedestrian route was arranged from the adjoining church into the site, through the trees. The houses were not small and consideration was given to contemporary living with open space planning and amenities not normally provided with housing at that time and of that classification. They gave family dignity because of the privacy and allowance for individuality and layout such as a study, garden room, and utility room, all of which have since become standard accommodation. Internal planning was open, creating much more spatial interest and greater utilisation of areas. Thought was given to privacy and overlooking with walled, sunlit gardens and noise reduction, plus the elimination of cars from the central area, although servicing and delivery arrangements were designed into the scheme. It was an initial criticism that people would not accept walking to their garage which was positioned at the rear and away from site, but this proved to be appreciated because of the

quiet, green, and safe communal area which brought peace and a sense of privacy even though it was communal in use.

The planning authority, after much discussion, were persuaded to accept the idea of this radical and expressive scheme, because it had recognised the importance of its design relative to people's lives, needs, and comfort. It brought people together as a communal unit with interest and concern for each other, and with each other's property and possessions, and with a respect for the natural gifts of the site which had been designed for their benefit and use. There was a satisfying sense of order and unity whilst the wholeness of the composition and variety of accommodation brought into a relatively small area allowed an assertive and architecturally significant presence which through its intimacy with the lives of people, gave it a sense of mystery.

Its merit and thoughtfulness was recognised by people, as was shown by the fact that all the houses were sold before being built and the flats were also sold, in spite of a prejudice against flats at that time. The group of houses promote a sense of life through their simple relationship with each other and the nature of their surroundings. Individuality and community are equally emphasised as each person has their own room, but also some communal space, each house with its own territory and together with the others in the group forms its own cluster which links, by design, with other houses in the surrounding areas to form a neighbourhood and thus to a community.

Through the relationship of the centres mentioned before and their progressive relationships with the people that live there and in the adjoining properties beyond, a bond is developed, a unity of architecture,

place, and people which, again I believe creates an experience of a religious nature which is almost unexplainable.

The housing scheme in Norwich posed a great number of design conceptions because it involved the lives of so many people and affected many surrounding homes. Normally high density housing in a city centre lacks proper space conception due to the high cost of land. In this case, by the use of an open communal landscaped space accessible by all the inhabitants, free of vehicles, quiet and very green, a sense of wholeness and unity is achieved for the community with high amenity values for its occupants. Whilst architects model internal space sculpturally to stimulate moods by giving movement, the experience of space architecturally has its extensions in the city, the streets, squares, alleys, parks and gardens as urban space where it can produce a sense of order and unity, not only spatially but with the sympathetic juxtaposition and use of materials and colour. In this example there is a variation in scale and proportion with the use of single, two, and three storey houses, plus a four storey block of flats. Where the house in Norfolk relied on internal space to achieve life and a sense of the numinous, this scheme, with some similarity to the Offices, uses external spaces, relationships and light to point to its religious import through the element of awe, fascination and energy in the culture-transcendent conception of the development beyond easy verbal interpretation, bringing that sense of the numinous to fruition and a perceptual fulfilment of life through architecture.

Ard Allah. The house in Morocco.

Drawings for Ard Allah, are found in **Volume 2. Figs. 19-25.**

Building a house in a different culture and in a land of completely varying social values and climatic conditions can show how the same criteria involved in attaining life and mysticism in buildings whilst at the same time addressing these differing values can be achieved.

In many ways, a similar approach to space conception as the theatre although smaller and of differing function, this is a design for a house in Morocco where the site was a typical desert formation, featureless except for a few small trees but with one quite magnificent exception in that it was situated just north of the foot hills of the Atlas Mountains which commanded a fine panoramic background to the site. (Vol.2.fig.19.p.29) The prime value of the land was this unique aspect which had to be treated as something to be conscious of from all parts albeit some distance away. The immediate environs of the house were considered to be more important and intimate with the lives of the occupiers whilst the mountains to the south as simply an ever present backcloth.

Climatic conditions allowed for an open form of communication between elements which are grouped around a central courtyard garden the awareness of which is constant throughout the main units of the design. This constancy of awareness of the total concept and the garden on entering the building is a most important and essential element in Arabian houses of whatever quality. (Vol.2.fig.20.p.30) Nader Ardalan notes that,

“The architectural conception of garden reflects the sense of place, the garden being viewed as a defined space encompassing within itself a total reflection of the Cosmos.”⁶²

Kinship patterns and a strong emphasis on the family unit provided an important sociological reinforcement for the centripetal organization of space, and space usage. At the same time, this ‘contained’ feeling is maintained. (Vol.2.fig.21.p.31) There is always apparent, in the background, the overwhelming, towering, mountainous presence as the foil to the house. The four main elements are living, guest sleeping, main sleeping, and service. Each of these are independent wholes connected by open walkways which cause the composition to come together architecturally with a creative link to nature, giving a sense of cool tranquillity in an often oppressive climate. The sleeping areas for guests are situated away from the main accommodation and have small private gardens or overlook larger landscaped areas and are near the swimming pool. The main bedroom suite has a commanding outlook to the mountains and is removed from the other elements for privacy.

The open end to the quadrangle of elements is completed by a further garden and pool viewed through an open pergola. The whole composition develops from the central garden position and the individual parts are grouped around it and identified architecturally for what they are.

From the main entrance is a small square lobby with limited top lighting and low ceiling height, designed to give a sense of constriction before entering the lofty, spacious, living area giving a direct view from the door, of the

⁶² Nader Ardalan, *The Sense of Unity* (London: The University of Chicago Press, 1973), p. 68.

mountains through a large semi circular bay window at the end. This room has a lowered floor to a sitting area for quiet contemplation overlooking the central garden. The whole space is varied spatially to create areas for varying moods, by changes of level in floors and ceilings to apparently divide the room without physical divisions. At the same time the vistas into the garden and towards the mountains through floor to ceiling windows exploit the spatial awareness and the relationship to nature and the world outside in a similar way to which the glass walls of the theatre provided appreciation of its surrounding areas. From the core unit of the living space, the whole house can be enjoyed with a glimpse, the eye being taken through the garden, moving across the directional pergola to the guest bedrooms via the outside dining area. In the other direction, movement through the open sided family area to the main bedroom unit can be seen with the mountains always in the background.

Through this continuously flowing space of varying volumes, linking separate parts or centres, each of which is a whole in itself, and with controlled use of materials, a sense of wholeness, completeness, and unity is created as a living structure, a home with a close relationship and a continuous belonging to its surrounding nature and to its central garden space. (Vol.2.fig.22.p.32.)

The elevations of the individual elements vary in height to give differing spatial experiences and express their functions whilst always being related to the whole in their placement with each other. Their treatment is of plain surfaced walls decorated in traditional colours, with semi circular and pointed arches, heavy buttresses giving strength and deep shadows, tall

ornamented traditional chimney stacks, and wide floor to ceiling doors, which when opened increase the spatial sensation, admitting the landscaped gardens into the rooms to lessen the division between them.

(Vol.2.figs.23,33,24.p.34,and 25.p.35) The whole is conceived as an experience rather than a set piece, a joy to walk through, in, and around with an amalgam of material and nature combined to create a living habitation. Because of its design there is an ever present sense of its living '*with*' people, instead of being a mere shelter, and its continuous link, with the mountains, albeit a controlled link with nature, adds to its sense of life by adding movement continuously in undulating and expanding space that is forever united.

The house at Ard Allah, Morocco shows that the internal spatial grouping of elements can create the same sense of unity, order and balance, scale and proportion, without the use of external space or other development. There was only the natural feature of the Atlas mountains as a backdrop and the conception depended on the creation of its own environment other than the proximity of the mountains, which is why the courtyard house was adopted. By the grouping of the various parts or 'centres' to look inwards onto an internal garden or space, as in the previously described scheme in Norwich, a self contained encompassing organism with occasional but contrived vistas through space to the mountains was achieved. This created a centre or a whole from several other centres which were themselves wholes such as in a guest bedroom and inclusive garden, the main living room with its spatial links to other living areas or uses.

The spatial concept of this house is intimately linked to that of all the preceding projects and it represents a journey through living architecture by means of all the devices discussed in this and the previous chapter. The religious import here relies mainly from the experience of the almost single space experience of the house, so arranged to give a variation of spatial volumes, sensations, and movement, This import cannot be spelt out verbally or conceptually but is given in its culture-transcendent conception.

The work in the Arabian Gulf.

The intellectual background.

During the years of the middle nineteen seventies I lived and worked in Doha, Qatar, within a culture profoundly different and yet spiritually very similar. The two remaining examples are in the Arabian Gulf and are similar in that they are both buildings used by the public, one for recreational purposes, the other for governmental and public use. Both are based on flexible space conceptions and symbolism which is very important in Islamic culture. I needed to be responsive to this, and I found it chimed in with the Neoplatonic ideas to which I was anyway attracted. Before describing the buildings I will summarise the Muslim approach to architecture as set out by the Iranian architect, Nader Ardalan, who is an associate professor in the Department of Architecture of Tehran University and author of several books on Islamic architecture. As with Neo Platonism, he believes that creation is an emanation from God and he argues that most people accept a commonality of structure and proportion which he affirms is quantifiable through mathematics⁶³. As with Neo Platonism, Ardalen

⁶³ Ardalan, *Sense of Unity*, p. 23.

believes that given this, an aesthetic value can be attained that is general, universal and eternal. Order and proportion can be viewed as cosmic laws whose processes can be comprehended through arithmetic, geometry and harmony. Since proportion is to space what rhythm is to time and sound, and as cosmic rhythm and harmonious sounds are made comprehensible in terms of number, so comprehension of proportion can be seen to begin there also.⁶⁴

For this understanding, which is essentially Pythagorean, geometry allows the exploration of the processes of nature, in her mode of operation, not in her manifested form. The square, circle and triangle are not merely shapes but can be said to essentially incorporate a reality, the understanding of which through spiritual hermeneutics, can lead to the world of similitude's and perhaps ultimately to the Truth.

In Islamic teaching, space is one of the most direct symbols of being and in its cosmology, the 'locus' of the Universal Soul. The practice of geometry is seen as a possible approach to the way in which the universe is ordered for it is only with reference to the heavens that the apparent indefiniteness of space can be given direction. The concept of forms such as triangle, square, and circle, have a mystical connection by which they are contemplated as still moments, revealing continuous, timeless universal action which in general terms is hidden from sense perception. Such a common mathematical activity can then become a discipline for intellectual and spiritual insight to reality and ultimately to the Truth.

⁶⁴ Ardalan, *Sense of Unity*, p. 21.

The triangle is, according to Nadar Ardalan, the first form to enclose space in the generation of points from the first base point designated as 1. (the creator), to 2, forming the base line (represented as the action of the intellect), to the Soul 3, in descending, horizontal or ascending motions. The addition of a further point, 4, becomes the first solid, the tetrahedron, the primary 'structural' polyhedron of four faces. The tetrahedron is accepted as the strongest solid with the greatest surface area for volume of all the polyhedra and therefore able to resist the strongest external forces from all directions. Through point 4 as a static form, it becomes a square which, in Islamic teaching, and with further development, as the cube which becomes the most inactive of shapes, representing the most externalized and fixed aspect of creation.⁶⁵ The square represents mathematically, the first square number and is attributed to stability. The hexahedron could be regarded as the symbol of earth in the macro scale and all humanity in the micro scale as in Islamic teaching where humanity as the last manifestation, is shared with the earth and the heavens, and among matter.⁶⁶ It represents all humankind's manifest characteristics, the co-ordinate system of the six directions, up, down, front, back, left, right. which are shared with the earth and heavens. The supreme temporal symbol of Islam is the cube or Ka bah. "The Ka bah is an outward symbol in this material world of that Presence not seen by the eye, which dwells within the Divine world, just as the body is an outward symbol of this visible phenomenal world, of the heart, which cannot be seen by the eye, for it belongs to the world of the Unseen, and this

⁶⁵ Ardalan, *Sense of Unity*, p. 29.

⁶⁶ Ardalan, *Sense of Unity*, p. 29.

material, visible world is a means of ascent to the invisible, spiritual world for him to whom God has opened the door.”⁶⁷

Sometimes the traditional architecture of Islam is combined with the dynamic symbolism of the circle as in the Ka bah at Mecca which is the centre of the rite of circumambulation and doubtless one of the oldest sanctuaries that exists. The rite expresses with precision the relationship between the sanctuary in the form of a cube and the celestial movement of circulation seven times to correspond to the numbers of celestial spheres.

Geometrically, in Islamic thought, the circle or sphere is accepted as the most perfect shape symbolizing the lightness and total mobility of the spirit. The heavens are said to move in a circular motion because such a form has no beginning and no end and is symmetrical in all directions with respect to the centre. It is said to be instrumental in the human conception that, in the microcosm it begins life as a sphere, perceives the visual world through the eyes which are spheres, and completes a full circle upon death.

Recreation Centre, Doha, Qatar, the Arabian Gulf.

Drawings for the Recreation Centre are found in **Volume 2. Figs. 26-29.**

It was because of the symbolism of the square, cube and sphere that such forms were used and adapted in the conception of a recreation centre for Doha, the capital city of Qatar in the Arabian Gulf in 1974. The site for this complex was typically restricted, in the city centre and surrounded by buildings of high density and mixed use , but relatively low in height, so that a building of such intense public use seemed to require a very positive

⁶⁷ Al-Ghazzālī, Ihyā the mystic, translated by M. Smith, in Ardalet, *Sense of Unity*, p. 29.

statement and one that suitably dignified a gift to the young people of the State from their Emir.

It is important for a western architect to understand the basis of traditional Islamic architecture before attempting to design any building within such a deeply rooted cultural and religious system. Its traditional thought extends sacred principles, from the Mosque to almost all other architectural unities, in the relation that exists between the source of all reality, traditional man in the sense of *anthropos*, the cosmos, and architecture. This relation is rooted in the Divine Principle and sustained by the source of all these realities. It could be said that man in this same sense, and with the cosmos, are themselves works of ‘sacred art’. Ardalan writes,

“In their ontological reality, man, the cosmos, and sacred architecture are utterly dependent on the Divine, while from the point of view of knowledge it might be said that, traditionally, cosmology, anthropology, and the ‘philosophy of art’ are all so many applications of metaphysical principles to various domains”.⁶⁸

This unitary point of view of tradition in Islamic architecture embraces not only architecture in its totality but all the elements that altogether create an architectural form. Nothing is left outside its scope and its unitary point of view refuses to recognize a legitimate domain of the purely secular or profane in contrast with the sacred. All is seen in the same light as the sacred.⁶⁹

⁶⁸ Ardalan, *Sense of Unity*, p. xiii.

⁶⁹ Ardalan, *Sense of Unity*, p. xiii.

From these principles, after considerable consultation, the central idea and form chosen for the main sports area of the recreation centre was a hemispherical dome, dominating the total conception, with the required ancillary use components such as squash courts, cinema, and administration elements, in cubic or double cubic form surrounding the circumference but spatially linked internally. (Vol.2.fig.26.p.37)

Throughout architecture in the design process, geometric shapes are used continuously and become more than just technical devices fulfilling an architectural function. Beyond their material function, their significance is a symbolic reminder to the users of the building of the spiritual principles reflected by it on its own level of reality, corresponding to an inner state of their selves, thus creating unity.

According to the Neo-Platonic thought about which I shall be speaking further in the last chapter the idea of unity can be said to be a philosophical concept and a mystic experience expressible mathematically, but literally unthinkable because in order for anything to exist, in the very positive affirmation of itself, it must negate that which it is not.⁷⁰ This thought regards the universe as a fraction of the unknown One, which can be knowable because these fractional parts can be related to one another geometrically.

The central and dominating feature for the recreation centre was a dome, for not only is it a pragmatic method to cover a space without any internal support to assist its function, it is the image of the vault of heaven and beyond to the illimitable and infinite world of the Spirit of which it is the

⁷⁰ Schwaller de Lubicz, translated by R. and D. Lawlor, *Symbol and the Symbolic Conventions* (Brookline, MA.: Autumn Press, 1978), p. 45.

most direct geometrical symbol. The dome in this case was a full hemisphere, not a shallow section, made in reinforced concrete to eliminate structural ribs, giving a very smooth uninterrupted and very thin skin thickening at its circumference. (Vol.2.fig.27.p.38) It was left with natural shuttering marks on its surface to give a strong directional patterning requiring no decoration, to give a powerful sense of enclosure and protection. Because of its continual and active use, the dome floor was allowed daylight through a repetitive system of pierced openings at close intervals from floor level, continuously around the entire circumference, to flood the arena with daylight which is very intense through the day in the climatic conditions of the area. This has the effect of lightening the heaviness of the dome at the critical point of its junction with the earth where it is at its thickest to give an almost floating effect combined with an uplifting movement internally towards the apex where a circular lantern light is placed centrally at the apex of the dome to relieve the contrasting darkness of the wall in silhouette and a pointer to heaven.(Vol.2.fig.28 p.39) These vertical slit windows are heavily recessed due to the thickness of the dome's shell and therefore provide a good sun breaker, whilst giving an evenly distributed light across the floor area. The total effect of the dome and its lighting is one of thrilling vibrancy and a sense of otherness rather the same sensation as in a Gothic cathedral but more tranquil because of the lack of any ornamental distractions.

The feature of the whole conception is the way in which space is related to form which follows the Islamic principles in that it is 'cut out' from the material forms that surround it and it is defined by the inner surfaces of these forms so that the walls of the courtyards, enclosed gardens and

component buildings that determine the spaces, allow them to flow freely with minimum division within which the users move and operate.

(Vol.2.fig.29.p.40) The space is cut out in such a way to achieve a synthesis and unification of their life and facets of their operations. This is in direct opposition to space definition in Western architecture where a building is placed within a space and the space is defined by the material forms it surrounds.⁷¹

Thus the orientation of space in this model, its qualitative polarization and the relation between space and form, is the reverse of that system and the sense of unity created within the internal planning is immediately appreciated, and the strident, imaginative symbolism of the geometry, accepted by the Nationals. Because the total concept closely depends on the categories of Islamic religious or philosophical tradition in its symbols, forms and methods, its religious import is dependent on such an interpretive scheme and it is traditionally seen in the same light as the sacred.

Al Ain. United Arab Emirates.

Drawings and photograph for Al Ain are found in **Volume 2. Figs. 30-31.**

Al Ain is the largest inland city in the United Arab Emirates and the second city of the Abu Dhabi Emirates, and its location is on the United Arab Emirates eastern border with Oman. It has its own microclimate, much less humid, an oasis, the translation of its name is 'The Spring', and consequently very pleasantly green in its parks and gardens. It is surrounded with an area of sculptured, red, sand dunes with a backcloth of an impressive mountain range. Because of its abundance of water, it has

⁷¹ Ardalan, *Sense of Unity*, p. xiii.

brought people to the area for thousands of years and has a rich archaeological history.

The complex is a scheme prepared for the governmental offices on a site situated on the outskirts of the city at the side of the watercourse, surrounded by red sand dunes and with the mountain range in the background.

The central idea was to incorporate water into the site as symbolic of purity, essence of life, reflective and contemplative. There was an abundance of water and so the watercourse was diverted into the part of the site over which the access road would run to serve the complex and to extend to surround the prestigious reception, assembly and ministerial offices and restaurant, so that all would appear to float and be reflected in the water which was taken up to the edge of the buildings and the roads, giving an ethereal sensation of driving on water with the white, flowing structure of the dome covered entrance drive-in, rising up from the clear, reflective quality, calming water. A rich, clean, contrast to the dunes and mountains is created whilst emphasizing the greenness of the oasis and peaceful nature of the area. (Vol.2.fig.30.p.42)

Because of the varying sized functional elements, the complex could not have the sense of free, flowing, internal spatial content in the plan, but calmness through the introduction of water and low, soft, round structural shapes with deep cut windows for shade and coolness, are substituted and achieve a similar sensation.

The buildings were kept low in height, complementing the surrounding dunes with their rippling domes and vaults but not in any attempt to

compete with them. Since the site was completely open and not part of the city complex, the various elements were placed upon it rather than ‘cut out’ as explained for the recreation centre at Doha, in the Islamic tradition and therefore massing of individual elements becomes more in the western tradition.

As at Doha the dome was used as the main feature since it conveys real meaning in Middle Eastern countries where traditional civilizations have thought of it, by association, with a tent, house, tomb, or sanctuary as a symbol of the universe, where the dome-like ceilings of these structures and their spherical shape are linked to the heavens.⁷² It was then reasonable to transfer this shape with its profound meaning to another one, thus preserving an ancient memory and conveying some of the ancestral beliefs and esoteric meanings associated with the dome. The Mongol tent dwellers of Central Asia brought this tradition to its peak with their magnificent domed shaped tents fabled to hold a thousand persons.⁷³ These were constructed on a round frame of wickers interlaced compactly and covered with white felt or hides.

The dome, in Islamic culture, retains its ancient vital imagery and fulfils a manifestation of fundamental Islamic cosmogony in the realization of the Islamic attributes of centre, circle, and sphere, inherent within. It embraces the idea of the Spirit which surrounds and pervades all being, just as it encloses its space, as the vault of the sky embraces all creation. The passage of this spirit from the apex of the vault symbolizing unity, is viewed as being downward and expansive; or as upward and contractive toward

⁷² .E. Baldwin Smith, *The Dome* (Princeton, N.J.: Princeton University Press, 1950), p. 81.

⁷³ Ardalan, *Sense of Unity*, p. 74, from *The Book of Sir Marco Polo*.1903, translated by Col. Henry Yule.

Unity.⁷⁴ Archetypically, the dome in all its manifestations is the locus of the Divine Throne, passive to the intellect, maternal in gender, and sublimely timeless in form.⁷⁵

(Vol.2.fig.31.p.43) The large dome shown in the model, is similar to the Doha example but its purpose as the main assembly council chamber dictated a circular form and it was in fact an answer to a request that the assembly room should be in the form of a semi circle. The smaller dome is a restaurant and both domes have large segments cut out of their profile with a cantilevered semi circular balcony projecting low over the water. Heads of departments and government officials have their spacious apartments in a square building lifted clear of the ground with terraces underneath. The various rooms have a '*brise soleil*' feature forming the eternal wall to break up the sun and give a deep modelling to the walls, whilst shell-like structures on the roof diffuses light and form dramatic internal features to the rooms. The main office suites for VIPs are grouped in the cubed building roofed in nine domed vaults with glazed spandrels with sun breaker screens behind. Both the square and the cube forms are used for the symbolic significance described earlier

A main feature is that all elements have ground floors set back from the perimeter forming cool, shady communicating walkways and the main general administrative block is a square, three storied building with cut out internal gardens and similar open walkways to the perimeter with no internal corridors. Connection between buildings is made with broad, open

⁷⁴ Ardalan, *Sense of Unity*, p. 75. cites 'Le Symbolisme du dome', in *Symboles fondamentaux de la science sacrée*, p. 263.

⁷⁵ Henry Corbin, *Avicenna and the Visionary Recitals*, translated by William R. Trask (London: Routledge and Keegan Paul, 1961), p. 18. Corbin develops the concept of the dome as being the cosmic crypt, as cited in Ardalan, *Sense of Unity*, p. 74.

covered concourses or arcades, with landscaped areas opening up from them and through vistas to the water and other parts of the site. They run along the building and provide the junction of the public to the buildings, making an ambiguous territory between public and private worlds. They are sometimes open sided and more often semi-open with arched bays and play a vital role for the interaction between people and building. They are broad, and allow groups of people to collect and discuss within them, rather like a forum, giving a friendly, living atmosphere to the whole complex.

The wholeness of the development is brought together by the use of these broadwalks which act as links creating an unfolding unity as they thread their way through and past buildings which represent centres of differing use and the internal spaces flow from them as they enter buildings, gardens and water features. They are intended to function as corridors or links but have been designed to be used more like connecting streets in their openness and size to connect with the continuous recessed frontages on the ground floors of all buildings. They bring together the diverse main elements with life and movement and a sense of penetration through the complex, heightening its sense of mystery, inducing calmness but with power and awesomeness in an experience that is verbally or conceptually difficult to explain in full. The religious import of this complex is determined in the quality of this experience coupled with the application of the religious or philosophical categories of Islamic philosophical tradition shown in the previous scheme. The concept gives life, a sense of the numinous, and an invitation to those who work and visit for a communal experience of non separation, making a sense of harmony, consonance, and cohesion which is a true Islamic ideal.

For this reason and given the purpose of the whole development, a site within the confines of the city would have been more suitable since these walks could have been made to link with the city. Water could have still been introduced in the same way around the various elements and used to form an integral unity with the living city instead of a separate monument to authority.

Summary.

I hope I have shown through this sample of my own buildings in two very different cultural contexts that the fundamental principles which the architect uses, space, wholeness, unity, order, scale, proportion and beauty, can be used to affect mood and create spaces which promote a sense of the unity of all things, a subjective, abstract experience of Otto's 'Wholly Other'⁷⁶ In the Islamic buildings the context was one where people are much more attuned to the idea that all architecture, and not just sacred architecture, relates human beings to the divine. It is my contention that this continues to be the case even in the secularised West. From my own buildings I now turn to four indisputably great buildings, and in the next chapter I analyse two great sacred buildings to consider further how a sense of the numinous or of 'the mystical' can be evoked by architecture.

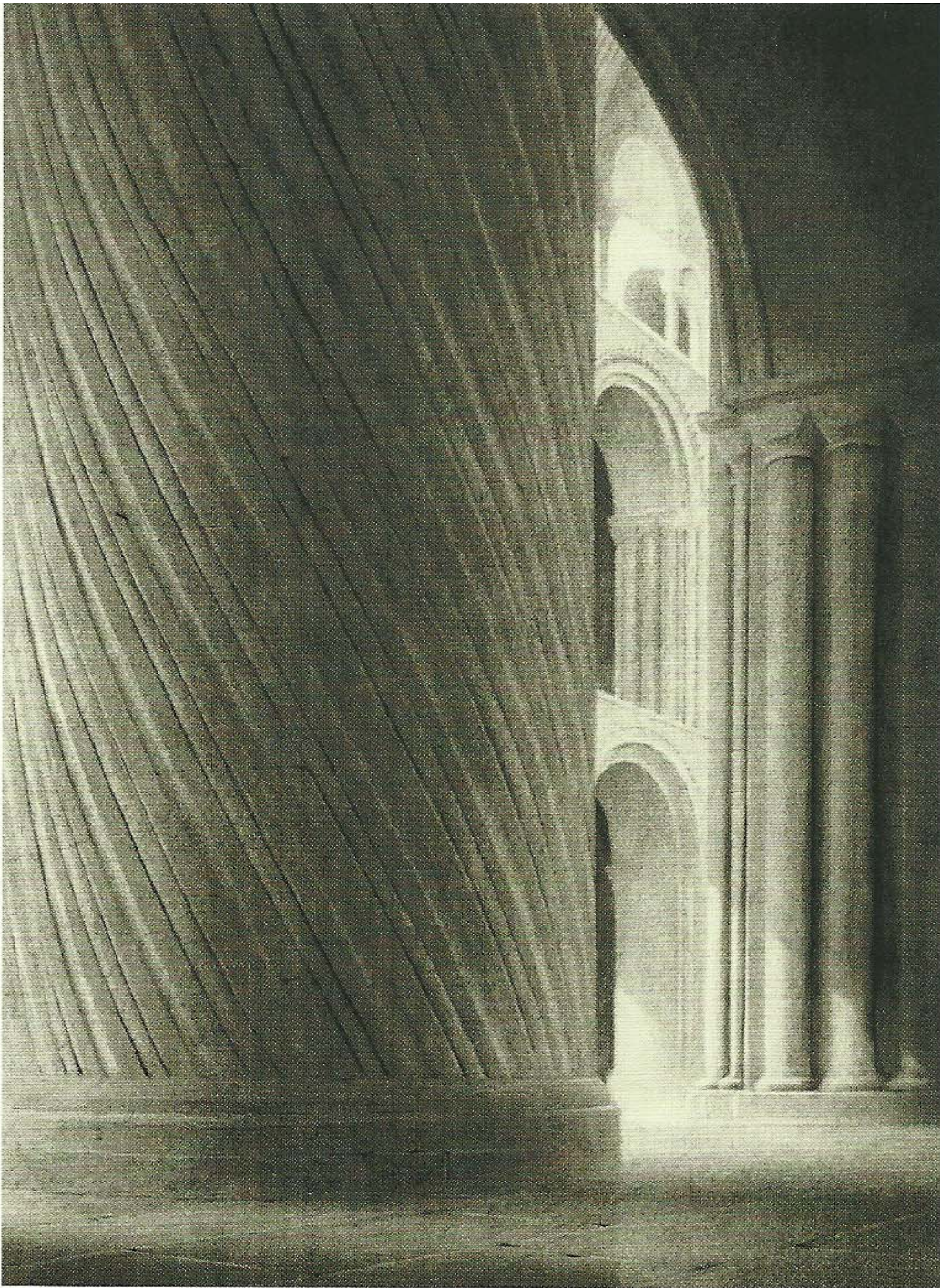
⁷⁶ Otto, *The Idea of the Holy*, p. 25.

CHAPTER THREE.

TWO SACRED BUILDINGS, ONE ANCIENT AND ONE MODERN.

It might seem that churches were buildings which automatically fostered a sense of the mystical, as I am calling it. Alas, this is not the case. There are many churches of the Gothic revival, and also of the post World War II period which, for one reason or another, do not do this. I am not going to ask why they do not succeed. Rather, I want to examine two buildings which I think succeed magnificently. The first is Norwich Cathedral, where I lived in the cathedral close to for many years; the second is one of Le Corbusier's most successful buildings, the chapel of Notre-Dame-du-haut, Ronchamp, in France.

The Eleventh Century Cathedral at Norwich



THE NAVE OF THE CATHEDRAL FROM THE NORTH AISLE.

Charcoal drawing by Gerard Stamp, Artist. Gunton, Norfolk

Photographs for the Cathedral are found in

Volume 2. Figs. 32-52.

Medieval building

In any epoch the range and scope of the architect's vision is governed by the materials and technical skills available whilst in the realm of ecclesiastical art there is also the challenge of the changing views on the possibilities of representing transcendental truth in art forms.

The main material in the middle ages was stone, which is trustworthy only in its resistance to compression. The Medieval builders had the most thoroughgoing experience of this material and their structural achievements in its use, says John Fitchen, "have never been surpassed or indeed even closely approached in any other period of the World's history, the present included."⁷⁷

Although architects as such were not known in the Middle Ages, and there was no professional training as there is now, it is clear that certain individuals, both amateur and professional, performed a very similar function to the modern architect. The amateurs consisted of gentlemen of leisure, churchmen, sculptors and in some cases crowned heads. At Norwich, for instance, Bishop Wakelin of Winchester, Ralph the chaplain, and Sheriff Roger Bigod were overseers of the site survey work. The professionals were master masons as in 1170, at Canterbury Cathedral, William of Sens undertook most of the work assumed by an architect and as such was concerned with pure or abstract architectural spatial and massing values, relationship of forms and visual solutions to practical problems. On-site difficulties increased in magnitude due to the length of construction

⁷⁷ John Fitchen, *The Construction of Gothic Cathedrals* (Chicago: The University of Chicago Press, 1961), p. 3.

time, the changing of teams of craftsmen and because techniques and institutional controls were relatively crude. The training of a medieval architect lasted seven years and it took place within the masons' lodge where apprentices were taught in an oral tradition through a series of exercises which they had to put in practice while assisting the masons in their building work. It was craft based, empirical, and seems to have involved little theory. Thus Villard de Honnecourt, a thirteenth-century French professional, promised that students would find all they needed "in the art of drawings which the principles and the discipline of geometry requires and teaches."⁷⁸

Masons were taught a wide range of skills, from gauging the diameter of a column to building a bridge with timbers no longer than six feet. The empirical nature of geometrical knowledge was emphasized. No other theory than this was required and it was known from Plato's *Meno* and paraphrased by Vitruvius⁷⁹ in his *De Architectura*, which in the Middle Ages was a working text. The application of geometry was fundamental to the working practices of the lodge and in the design of cathedrals the simplest system was a layout or grid of squares to delineate the plan, and its subdivisions into major and minor bays with piers located at the intersections of the grid, known as the *quadratum*, which commonly resulted in the main bays of choirs, transepts, and naves being twice the span of their side aisles.

⁷⁸ Fitchen, *The Construction of Gothic Cathedrals*, p. 21 cites Vide, the *Album de Villard de la Honnecourt*, pp. 63f and 86-89. He reviews and comments significantly on the scholarly studies that have been made of this precious collection of drawings.

⁷⁹ Vitruvius, Book 1X, Preface 5.

Once the plan was laid out the architect's giant compass was used to design his constructional details such as arches, window tracery and mouldings, which were produced in the tracing house, the floor of which was faced with plaster onto which the details were drawn and inscribed. Tracing houses and their floors survive at Wells Cathedral and York Minster whilst architectural details are often found inscribed on walls of monuments in England and France.

The system known as quadrature employing the square was described by Lorenz Lechler,⁸⁰ a German architect who set out these geometrically constructed details which masons do once they have the ground plan and dimensions, which simply consists of the inscription and rotation of squares. A key dimension is assigned to the system in the form of a module such as the thickness of the choir wall of a church. The module defines the side of a square which then has an equal square rotated over it and is subdivided into nine to produce a lesser square which is used to generate the buildings details. Squares are successively inscribed and rotated within the initial square to produce the plans, in ascending stages, of such vertical elements as, finials and pinnacles. By extrapolating selected lengths from these figures and multiplying them with compasses, the heights of each stage of its elevation are set out. This system can describe the profiles of windows, mullions, door and window jambs and all parts of a building in size, profile and elevation so that all are in proportion and related to each other and to the whole within the controlling figure of the square. But Augustine had described the discipline of geometry as a tool of reason in observing the

⁸⁰ Lorenz Lechler, Unterweising, 1516, ed. A.Reichensperger, *Vermischte Schriften Uber christliche Kunst* (Leipzig, 1856).

universe.⁸¹ He appealed to the text that “God had ordered all things by measure and number and weight”⁸² As a Christian Platonist he doubtless also remembered that God, the Divine Architect, had created order in the Universe by the application of mathematical laws. The understanding of the universal order derived from Plato’s abstract model of the universe, described in his *Timaeus*. Polyhedra were associated with the elements and the encompassing universe. Solid elements were represented by equilateral triangles, the tetrahedron for fire, the octahedron for air, the icosahedron for water, earth by a cube and the universe by a dodecahedron constructed from pentagons. Anterior to the geometry was number for it was believed everything exists in number, and without number, everything perishes. This cosmological construct was taught to the Latin Middle Ages in the form of Christian Platonist thought, by way of the liberal arts, specifically the quadrivium of arithmetic, geometry, music and astronomy. These figures underlay the design of architectural elements and are profuse in architecture. The equilateral triangle underlying the vesica piscis , the almond shaped figure consisting of two equal circles each through the others centre, its upper and lower halves circumscribing an equilateral triangle, one base to base with the other. This would have been seen by medieval masons as demonstrating the radii of equal circles and further, the geometry of hexagons, commonly used in religious paintings, architecture and art. The two circles, if completed, represent heaven and earth with Christ seated as the governor where they overlap. The figure bridged geometric theory and

⁸¹ Augustine, *De Ordine*, in *Divine Providence and the Problem of Evil* (translated by R. Russell in FC1, 1948).

⁸² Book of Solomon. X1.20.

practice as well as the mathematics and metaphysics of the equilateral triangle and the hexagon, along with their root numbers 3 and 6. It could also be seen as the symbol of the scholar embracing geometry, and the mason with his compass, whilst the patron in between transmitted his instructions to the architect who, increasingly literate, was able to conceive the building. The pentagram can be found in window tracery, and finally all three figures in floriated tracery as trefoils, quatrefoils and cinquefoils.

Frederik Macody argued in 1929 that such a Platonic or Neo-Platonic philosophy,

“was the very core of the theology and symbolism of the Middle Ages and an examination of all churches through the course of the time shows that the principle of construction ‘ad quadratum’ runs through them absolutely without exception.”⁸³

Von Simpson insists on the overwhelming importance of the geometrical element in Gothic design, constituting the very principle of its order and aesthetic cohesion.⁸⁴ The search for geometric uniformity, when consistent, gives medieval cathedrals their characteristic features of organic unity and a logical, harmonious and proportional linkage to the whole; but what distinguishes them from all others is the central defining element of light, the reaching for which led to the replacement of the solid, sombre and ponderous structures of the Romanesque churches by the translucent, almost porous walls of the later Gothic, infilled with coloured glass. ‘Light which is ordinarily concealed by matter, appears as the active principle’ wrote von

⁸³ Frederik Macody, *Ad Quantum* (London: Batsford, 1929), p. 8, Vol.1.

⁸⁴ Otto Von Simpson, *The Gothic Cathedral*, p. 8.

Simson, “and matter is aesthetically real only insofar as it partakes of, and is defined by, the luminous quality of light.”⁸⁵ According to Von Simson, Gothic architects sought to represent the splendour of the city that according to the Book of Revelation was of “pure gold, like to clear glass”, and, ‘an image of heaven’⁸⁶

The Cathedral

The architect or designer of Norwich Cathedral will never be known but in 1096 Bishop Herbert Losinga laid the foundation stone at the eastern end of the nave and the immense building work began. Bishop Herbert was undoubtedly the inspirational leader because planning, building work, and money raising proceeded at great speed. By 1101 enough had been completed for the building to be consecrated and worship began. The bishop died in 1119 and there followed a delay of two years before construction recommenced followed by completion, except for the tower, in 1145 under Bishop Herbert’s successor, Eborard Montgomery. The cathedral was established as a Benedictine monastery with its ‘rule’ based on worship, hospitality and learning.

The body of the church was built by Herbert from east to west and consisted of an east arm with side-aisles and an ambulatory and three radiating chapels, a crossing, and an aisled nave which extended to three or four bays to the west.⁸⁷ The main central vessel had an elevation of a main arcade

⁸⁵ Otto Von Simson, *The Gothic Cathedral*, p. 4.

⁸⁶ Revelation XX1. 2-5.

⁸⁷ Eric Fernie, *Norwich Cathedral* (Oxford: Clarendon Press, 1993.), p. 19. It is probable, due to the discovery of burials between the cathedral and the bishop’s palace, that a church, possibly the Holy Trinity mentioned in Doomsday, as having been given to the

supported on alternating major and minor piers, a gallery and a clerestory, whilst the transepts contain a spiral stair in the east walls and two chapels at ground and gallery levels. The crossing was surmounted by a lantern tower and bell chamber and indications are that Herbert built the tower up to the level of the ridge enabling him temporarily to make the roof weatherproof due to a pause in the building. The tower was completed in the next phase by Eborard and it has been suggested that it was considerably taller than at present, being reduced in height in the fifteenth century when the spire was built. Similarly a break in the construction of the nave, marking its continuation by Eborard, is evident between bays three and four westwards and Fernie notes that a deterioration of workmanship in this area coupled with numerous changes in design and perpetration of errors might substantiate this assumption. At this point he states that a layer of rubble with indeterminate boundaries has been excavated which could indicate a break in the technique of construction, seeming to extend just beyond the usable part of the church defined in the records as being up to the altar of the Holy Cross, now called the altar of Saint William. This is the altar in the nave to the west of the choir screen, where it was mostly situated in the Middle Ages and is where Herbert's construction is calculated to have terminated.⁸⁸ Further confirmation that this was a sensible point for a break is that the position allows for sufficient buttressing for the crossing arches

bishop by King William, existed on the site to accompany the cemetery. Sufficient indication of the forms of those parts destroyed showed that they had no influence on the fabric of the Romanesque church, almost all of which remains standing, and as far as present day excavations and examinations are concerned, the Norman project is unlikely to contain any earlier work

⁸⁸ Fernie. *Norwich Cathedral*, p. 19. cites W. St. John Hope and W.T. Bensley, *Recent Discoveries in the Cathedral Church of Norwich*, pp. 115, 126 with plan facing.

and the tower which was supported on the other three sides by the transept arms and the eastern arm.

The position of this break appears to be predetermined because the structural evidence of the logically stepped nature of the construction westwards from bays three to five coincides with the documentary evidence of the extent of Herbert's phase of building. In his letters, Herbert complains of the slow rate of building,⁸⁹ but this does not support the fact that he continued to build up to the time of his death in 1119 which Pevsner assumes.⁹⁰ Fernie comments, "His death in 1119 should, then, be taken only as the very latest date for the completion of the first build, and not the as the year in which it was completed."⁹¹

The plan of the cathedral (Vol.2.Fig.32.p.45) shows that moving from east to west, or from the most liturgical areas to the less, it consists of the presbytery filling the whole of the east arm with an apsidal end and with the choir to the west, under the crossing and into the fourth and fifth bays of the nave. The high altar was the main focus, placed in the sanctuary, filling the apse and the adjacent straight bay of the presbytery. Other than the high altar, the most important liturgical item of furniture was the bishop's throne being situated in the central arch on the axis of the apse instead of at the side which was the more usual position. The bishop's throne is thought to be much older than the cathedral and was probably considered to have a great

⁸⁹ E.M. Goulburn and H. Symonds, *The Life Letters and Sermons of Bishop Herbert de Losinga* (Oxford: Oxford University Press, 1878), pp. 131-135, letter 14.

⁹⁰ Pevsner, *North-East Norfolk and Norwich: Buildings of England*. (Harmondsworth: Penguin Books, 1962), p. 220.

⁹¹ Fernie. *Norwich Cathedra*, p. 49.

symbolical influence hence its position in a specially prepared niche facing the ambulatory and in such an important and visually prominent part of the church accessible to processions. It is arguable that the throne, because it was very old when the cathedral was begun, could be classified as a relic as its very position at the head of the apse, supports this. The position on the axis in the centre of the east wall can be traced back to the earliest surviving Christian church at Dura on the Euphrates, and was common throughout the Christian world in the first millennium.⁹² It is possible that it was placed in this position to emphasise the connection with the arrangement to transfer the see in 1071 or 1072 or simply a political token to prove the Norman bishops' legitimate inheritance of the ancient see of the East Angles.

Unusually, the floor level of the presbytery and sanctuary is raised 600mm above that of the ambulatory aisles and transepts, a feature further accentuated by the downward slope of the aisle and ambulatory floors, thus this change of level emphasises the sanctuary and its importance. This is given further prominence by the five arches forming the curve of the apse (Vol.2.Fig.33.p.46.) which have much narrower supporting piers than those of the straight bays. Slimming the piers in section not only overcomes the difficulty of forming arches on the tight curve of the apse but allows for five arches at the termination of the sanctuary, giving an essential arch in the centre. The slim bays, stilted arches and piers, in contrast to the heavier, ponderous straight bays, give a mystical delicacy with an increase in verticality to the apsidal end which becomes a visual relief from the massive structure of the main vessel.

⁹² Fernie, *Norwich Cathedral*, p. 66.

The ambulatory is a continuation of the aisles in the east arm round the sanctuary allowing for processions to circum-ambulate and giving access to the radiating chapels and relic niche at the head of the apse. The sloping, lowered floor level to the east and the relic is reminiscent in its sunken approach of the earliest ambulatories in ring crypts and the outer crypts of the eighth and ninth centuries.⁹³ Whatever its cause, it creates an air of mystery and a subtle separation from the main apse and chapels to which it gives access.

The radiating chapels each side of the east arm take the form of two intersecting circles each a geometrically independent unit like the apse on each transept, which is a clever feature to allow the altar to face east as in the main church, unlike in normal chapels opening off an ambulatory which have an axis radiating from the centre of the main apse, through the apse of the chapel. The introduction of the second circle in plan however, fails in this case because the axis is not placed on that of the main church but is in fact ten degrees towards that axis, northwards and southwards respectively. Since it is such a considerable displacement and occurs equally in both chapels it would seem that it is the result of some obscure aesthetic demand and not simply an error in setting out. The altars of the chapels are placed in the east but not on the axis of the second segment of the chapel which seems to defy the normal geometric logic of the architect. Only one earlier building has chapels designed in this form with two intersecting circles in plan and with the inward turned axis, the small church at Mehun-sur-Yevre near Bourges,⁹⁴ dated approximately mid eleventh century, of which perhaps the

⁹³ Fernie, *Norwich Cathedral*, p. 69.

⁹⁴ Fernie, *Norwich Cathedral*, p. 125.

designer of Norwich was aware. The intersection of nave and transepts is dominated by the crossing marked by four massive piers, the largest in the building, with arches defining its interior space, and by a tall lantern rising within the tower. The width of the nave equals that of the transepts, giving a square tower base and therefore, an assumption that the four arches of the crossing would be equal. Reference to the sections through the four piers shows an inequality in the shafts on their east-west faces to their north-south sides which reduces the arches north and south, giving prominence to the east and west arches of the nave. The subtle handling of the shaft's rhythm and the rising of the crossing piers to the base of the clerestory whilst the crossing arches rise to the same height of the church, emphasises the sense of verticality and lightness away from the standard arrangements of the crossing space. (Vol.2.Fig.34.p.47) The directional crossing allows the eye to travel comfortably east to west which appears to be an exclusively English phenomenon giving a strong east-west axis, stressing the importance of the main vessel of the building over the subsidiary arms. It would be a reasonable pragmatic assumption that Herbert built the tower at the crossing up to the level of the main roof ridges, enabling it to be made weather-proof during the pause of the building works between himself and Eborard. Fernie suggests that the tower was built much higher and reduced in height in the fifteenth century which is possible since there is always difficulty for architects in determining the height of any vertical feature, even on scaled drawings because of foreshortening.

The symbolic significance of the transept giving the building the shape of the cross is accepted and in fact, seems obvious, which possibly accounts for the few scattered references to this in the first millennium, even when

the cross-shaped basilica was popular in the eleventh and twelfth centuries. In addition to its symbolic significance the transept must have been an architectural feature of considerable importance because the arms were separated from the main design visually and functionally by placing the choir under the crossing. At Norwich the north transept's function is to act as a vestibule for the Bishop's Palace whilst the south transept is a vestibule from the church to the monastery. Both arms have been richly decorated because of these functions, noticeably so in the case of the north arm because of its connections with the palace. Each arm contains two semi-circular chapels, one at ground level, the other at gallery floor level. Galleries were provided for service in all great Medieval buildings and established the means of easy circulation at different levels for surveillance and maintenance of the building's fabric, roof coverings and stained glass without the provision of inconvenient and often harmful scaffolding. (Vol.2.Fig.35.p.48) They provided an indispensable use during construction giving a high level platform from which to work on the upper structures as the building rose. The gallery at Norwich is intriguingly linked by a narrow passage built into the wall thickness around the perimeter of both transepts allowing a complete circumambulation of the cathedral at this level. The gallery was obviously intended to be used other than for access to the chapels because of the amount of decoration and features contained within it, but not suited for processions because of the narrowness of the linking passages. Significantly the entrance to the main floor of the bishop's palace is from the fourth bay of the gallery which would enable the bishop to approach a service without having to take part in it.

Within the gallery are the spiral staircases or ‘vices,’ one in each arm, ingeniously built into the wall thickness so that their presence is not easily suspected. This is evidence that originally they were not always intended for public use, but they were essential features at Norwich, providing access to chapels at gallery level. The stairs always turned to the right as they ascend to give ease of sword handling to a defender against an attacker trying to ascend.

In most Norman cathedrals the tendency is for increased length and in France a nave that has twelve bays such as Cluny Abbey or St. Sernin at Toulouse is considered very long. Ely and St. Albans have thirteen bays but Winchester and Norwich have fourteen. Pevsner comments,

“excessive horizontalism appears as early as the most English Early Anglo-Saxon churches. Monkwearmouth nave is sixty five feet long, Escomb forty three feet long, All Hallows Barking-by-the-Tower in London seventy feet long.”⁹⁵

The nave of fourteen bays with a length of two hundred and fifty feet six inches, gives a spiritually calming and elegant elevation, and demanded a massive element at its west end to stop the directional thrusting line of the structure giving balance in mass and elevation to the crossing tower and eventual spire. Anything shorter in length would have arguably destroyed its organic quality, its elemental relationships, especially with the west façade and the monastic buildings.

⁹⁵ Pevsner, *The Englishness of English Art* (Harmondsworth: Penguin Books, 1955), p. 108.

From the plan of Norwich City c.1050 there is evidence of a road running north-south, part of which no longer exists and it seems a possibility that it was the original road in the Anglo-Saxon town, subsequently altered by the Normans to the south, giving access to the palace on the north side of the cathedral. This would account for the strange, uncomfortable and otherwise unaccountable linking angle from the axis of the cathedral that the palace takes. Also the palace joins the main vessel between bays four and five which is where Herbert's building programme finished, at an obvious point in relation to the old road. The palace has been greatly altered in its use as part of the cathedral school but its period can be suggested as part of Herbert's structure by the similarity of rectangular profiles and tooling of the transverse arches in the undercroft and those in the aisles of the cathedral. The palace consists of two elements, quite different in character, one a large rectangular block with thick walls, castle-like in appearance and a narrower three storey link building to the north aisle wall of the cathedral containing apartments and a first floor access to the cathedral gallery which gave easy communication between buildings for the bishop.

The east range of the monastery was sited on the south side, linking with the south transept and cloisters and has been almost totally destroyed. Where it originally abutted the south wall of the transept it has been re-designed to form an entrance to the cathedral. The chapter house with a semi-circular apse joined the cloisters and beyond that was the dormitory over a ground floor, its east end surviving to a great extent with a barrel vaulted passage or Dark Entry giving access to the cloisters. (Vol.2.Figs.36,p.49,37,p.50, and 38.p.51.) According to Fernie, it is not clear how much of the claustral

layout Herbert completed but it seems that the walk was single storey according to early plans.

The cathedral has the advantage of having almost all of the Norman layout and the original fabric in existence along with sufficient indications of the forms of those parts which have been destroyed. Also the building was a completely new conception, unconditioned by anything that preceded it. A survey conducted on behalf of the dean and chapter of the cathedral by the Historic Building Research Unit of Reading University was made by tachometry using local station theodolites to record a network of reference points. A laser distance measurer used the building as a reflector to record it in relation to these reference points with data stored and downloaded to an Auto Cad programme. Measurements were made and stored and a control network produced with a computer programme used to produce median values in order to refine accuracy. The result is a bank of data that is accurate, objective and retrievable to any scale, in any combination of layering and to the same accuracy as the survey.⁹⁶

The use of the figures of Platonic geometry in planning Norwich cathedral would have been consistent with the beliefs held by the Church and with working methods known to be available to medieval masons. It was established that a correlation existed between the same geometry and the published specialist survey of the cathedral, to an accuracy of 1.5 down to 0.5%⁹⁷ demonstrating virtual exactitude but to a degree that would have appeared exact to anyone limited to the drafting and surveying techniques

⁹⁶ Dr. Nigel Hiscock, Lecture at University East Anglia, 3 December, 2007, 'The Plan Geometry of Norwich Cathedral', extracted information from notes at lecture.

⁹⁷ Dr. Nigel Hiscock, Lecture 2007.

known in the Middle Ages. It answers to grid generated by the three figures of Platonic geometry, representing a complete design method that is wholly geometric and mystical.

Summary

The inspirational architecture of the great cathedrals in that epoch was developed by free and energetic experiment, by careful reasoning and with great daring. The life and beauty of the great cathedral at Norwich stems not only from the pattern language which governs its centres of general structural components such as nave, aisles and transepts in a cruciform pattern, but in the scaled down detail of the components into the smallest parts, the sensitive mouldings and carvings, the delicately related structures of ribs, vaults and buttresses together with the completed structural system, soaring into the air, flooding the building with light. (Vol.2.Fig.39.p.52.) Such a structural system allows a spatial conception of varying volumes with a wondrous variation of light, bringing together a quality of oneness, unity and a sense of God. (Vol.2.Fig.40.p.53.) The galleries with their deep recessional structural bays or centres are responsible for a great sense of mystery and four dimensional space which gives an inspiring perception of movement to places unknown. (Vol.2.Fig.41.p.54 and Fig.42.p.55) Structures like Norwich Cathedral enabled the spaces they enclosed with their varying relationships and controlled admission of light, to cause, in my view, the vision of the 'Blazing One' behind all phenomena. ⁹⁸ (Vol.2.Fig. 43p.56, Fig.44.p.57, Fig.45.p.58, and Fig.46.p.59) This continually repetitive sensation occurs on the immediate entry to the cathedral (Vol.2.Fig.47.p.60, and Fig.48.p.61) when eyes are raised with a pause in

⁹⁸ Alexander, *The Nature of Order*, Book 4, p. 143.

the step at the experience of the space and the light. The four drawings on various parts of the cathedral by a local artist in Norfolk which are shown in Volume 2, perfectly express this sensation in a personal way (Vol.2.figs.49 p.62, Fig.50 p.63, Fig.51 p.64 and Fig.52 p.65.)

Much has been written of the great cathedrals of which Norwich is but one of the forerunners but the relation between spiritual practice and the building is often taken for granted

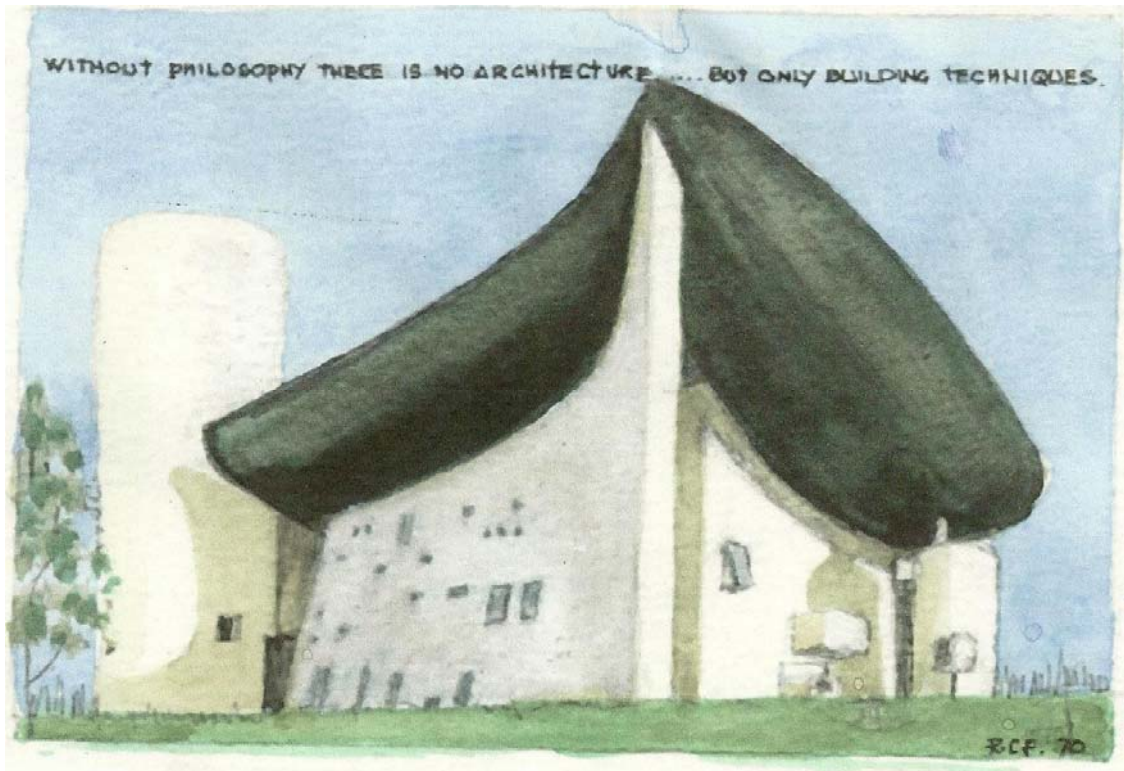
In his book, *The Hermeneutics of Sacred Architecture*, Lindsay Jones explores world cultures and religious traditions as a patterned response to sacred architecture according to the human experience.⁹⁹ He provides a new way of thinking about religious architecture by connecting the buildings with the events that happened within them. Following on this, in *Places of the Soul*,¹⁰⁰ Christopher Day writes of the creation of sacred places and 'ensouling buildings' which explains how the spirit of a building is built by people, ritual, structure or form.¹⁰⁰

In this sense, the religious import of Norwich Cathedral stems from its purpose to house religious rituals and the ability of the architecture to make the place and experience to provide an appropriate setting for such religious practices. Thus the religious import depends on the application of this purpose and the interpretive scheme generated invites a distinctive perceptual sense of God.

⁹⁹ Lindsay Jones, *The Hermeneutics of Sacred Architecture* (Portland: Harvard University Press), Vol.2.

¹⁰⁰ Day, *Places of the Soul*, Chapter 9.

An analogous purpose exists with contemporary architecture for with this same pattern language, the creation of sacred places of life and a sense of God through wholeness and unity can be seen and understood. Modern structures allow more flexibility in space conceptions to regain that connection with 'The Blazing One'. To instantiate that I turn to the small twentieth century pilgrimage chapel at Ronchamp.



A watercolour sketch of the chapel made at Ronchamp March 2007 by R.C.Furze.

The Chapel of Notre Dame-du-Haut, Ronchamp 1950.

Architect, Le Corbusier.

Photographs for the Chapel are found in

Volume 2 Figs.53-60.

Le Corbusier's real name was Charle Édouard Jeanneret, changed to the 'crow-like one' in 1923 when he published his first book, *Vers Une Architecture*. Le Corbusier's architectural life began in the studio of Auguste Perret in the Rue Franklin, Paris, in 1908 where he could sense in the streets, *l'esprit nouveau* which is the title of a magazine he later co-edited with the poet Paul Dermée and whose theme was *l'esthétique de la vie moderne*. It was a journal of new ideas that glorified the machine age, the primitive, and psychoanalysis. It embraced efforts to blend the atomic theory of physics with hermeticism. It was the time of the new art form, 'cubism' of Picasso and Braque, and the attempt of Cézanne and other artists trying to show that natural forms had a geometric basis. In architecture we find an unsentimental realism such as with Peter Behrens in Germany who used steel and glass in his industrial buildings.

Perret believed that reinforced concrete was the key to the new kind of architecture, as it had a far greater potential in its plasticity and lightness than steel. Almost anything could be built with it. Perret's use of concrete, his functional approach, and disregard of ornament, which he said was used by others to cover their mistakes, was a significant influence on Corbusier's work, as was the later development in his architectural life when he moved to the studio of Peter Behrens. Behrens was a painter and craftsman and a disciple of *Art Nouveau* which he soon discarded for the Modern Movement. For Corbusier this was a significant move because he was now working with two other young men, Mies van der Rohe and Walter Gropius. All three were in their mid twenties. With the exception of Frank Lloyd Wright in America, who was considerably older, it could be said that the

Modern Movement in architecture was now concentrated in Behren's Berlin studio.

Le Corbusier was a painter almost before he was an architect and influenced by Cubism. The Cubist Movement is based on the dimension of movement where the object or figure is depicted from different angles in an attempt to depict three-and-four dimensions. In architecture time can be expressed with glass and the ability to see through and beyond into spaces which create movement with the colour of interiors, furniture, the movement of people and spaces in relation to one another in the building and its surrounds. This interpenetration of space by form without centre brought buildings to life. The *façade* in the sense of a carefully contrived two-dimensional arrangement of features on a wall, was dead. The wall as a load bearing element was eliminated by supporting the building on a structural framework. Now a three-and-four dimensional architecture was designed on the basis of the interpenetration of volumes solids and voids with the wall as a sculptured mass, free of the role of support. Corbusier's chosen material and great love was concrete, but this proved difficult to maintain because of shrinkage and weathering. In his later work he used timber shuttering to pattern the surface of the concrete, to a fine powerful effect.

The Modulor

During the Second World War years and the German occupation of France Le Corbusier developed a system that sought to re-establish a unity of measurement in the modern era. He was looking for a tool of linear or optical measures similar to that which had been re-invented in Renaissance classical architecture and given value in the later baroque period. What he

came up with was the Modulor, a system not based on a single unit such as a foot or a metre, both of which are arbitrary, because they are not three dimensional, but upon a scale of differing, mathematically related, dimensions, any one of which can be used in conjunction with any other one, enabling the scale to be taken to infinity in any direction in an harmonic scale of dimensions related to each other. The key to this harmony, when used in the design of a building, is that the dimensions of any rectangle be it an entire façade, a room or space, a window or opening can be made up from the dimensions on the scale and no others. There is infinite variety, but being within the discipline of the system, not infinitely varied in proportion. The Modulor is intended to realise architecturally the view that man is the measure of all things.¹⁰¹ The chapel at Ronchamp is laid out by means of the Modulor.

All the parts of the building are disciplined within a single system of dimensions. They are related to each other by being based on that single harmonious progression of dimensions which is the basis of the Modulor. Corbusier says in his book on the Modulor, that the individual chapels within the main chapel at Ronchamp can be regarded as ridiculously small but by their harmonious relationship with the rest of the building they do not seem so because of the unity created through the ‘modulor’. Thus it seems that a small building such as the chapel can assume a scale and majesty usually associated with the great cathedrals through a system of increasing dimensions.

¹⁰¹ *The Works of Plato, Vol.4. Theatetus* (Frome: The Prometheus Trust, 1996), 152a.

The unity thus achieved, Le Corbusier believed, related to the human form that is created by God and therefore helps us to relate to God. Le Corbusier was also interested in the Pythagorean/Platonic idea of musical harmony. It is possible that the design of the chapel and the use of musical harmonies and proportions may have had a dual alchemical and Pythagorean basis as well as Christian connotations.

History and Genesis of the Chapel at Ronchamp.

Le Corbusier benefited from the powerful renaissance of religious art taking place in France after the Second World War which included the restoration of some four thousand churches. Several leading clergymen took up the defence of modern art and these campaigners were interested in having truly contemporary religious buildings constructed.

The pilgrimage Chapel at Ronchamp, on the hill of Bourlémont, had been bombed during the Autumn of 1944. The body of commissioners consisting of parishioners from the Notre Dame du Haute property development Company originally considered restoring the bombed chapel but in view of costs decided on complete reconstruction and Le Corbusier's name was immediately put forward by Canon Ledeur, Secretary of the Besançon Commission d'Art Sacré. Earlier work by him had been bitterly criticised, and at first Le Corbusier declined, but Ledeur persuaded him to change his mind.

Corbusier visited the site on the hill on June 4th 1950 with his sketchbook and stayed for several hours. Le Corbusier was apparently bewitched by the site with its rolling views over the Vosges foothills and the Saône plain.

His instructions from Ledeur were simple. The Church needed a main nave, three small chapels, an outdoor sanctuary for open air ceremonies, a sacristy, a small office and the incorporation of a seventeenth century sculpture of the Virgin and Child from the original chapel. It was also vital that water should be collected on the site since it was no supply on the hill.

The architect's initial sketches made at this meeting on site are lost but we have a small tracing believed to be a copy from the architect's sketchbook, which shows an immediate response to the landscape and his first dialogue with it. (Vol.2.Fig.53.p.67) The principle of linking interior and exterior and the flow of one to the other so beloved of the architect are apparent even in this initial sketch. All the requirements come together in two curved strokes back to back and opening outwards, closed by two straight lines meeting in an obtuse angle. It shows the movement up to and around and through the building to the great open space for the open air ceremonies giving an instant appreciation and knowledge of how the building would be and function in relation to its site and surrounds. This was an appreciation and an inspiration that varied little in the completed chapel. The extremely thick, curved and battered South wall is indicated as a 'leading in' feature to the main entrance as it also is to the altar.

The plan is a product of an 'organism', as Corbusier called it, of a living whole linked with activity, its shape composed of curved and supple lines. It is designed to facilitate movement, receiving its visitors on a daily basis and gathering the moving pilgrims to celebrate mass on religious feast days to its receptive open sanctuary beneath the partly sheltering, sweeping overhang of its roof. Already, even at this preliminary stage, there appears

to be in the architect's mind the great mass of roof that will ultimately dominate the building, overhanging, sagging, upward sweeping, disciplining the walls majestically. Ronchamp would be not only a chapel for services but a stage, a rostrum, a proscenium for outdoor mass and worship with processions from the great South door, satisfying Corbusier's sense of drama.

The chapel towers and the principle of their rounded calottes, which are born of a concept noted on his travels in the Orient in 1911, are sketched with their three base shapes articulated in relation to the curves of the roof. The infusion of light from hidden sources in the vertical surfaces of the towers combined with the general principle of allowing light to filter in from all sides occurs very early in the conceptual design. Such an organic conception in plan, dictated by the nature of the site and the requirements of the building, demanded an equally informal roof structure and from inception the now familiar crab-like shell structure was envisaged. It is always described as a crab shell but only because of its construction as a hollow structure with two skins similar to that of a crab. It does not have a formal shape but its form is expressed in direct relation to the plan elements and their required functions, either as a shelter or an emphasis to the plan element. Early sketches show this although the exact form of the roof is not determined until much later. Corbusier seems to show at the outset his intentions to treat the walls as apparent buttresses to the roof, but at the same time, divorced from it structurally, leaving the walls as individual expressions of spatial containment, pure sculptural pieces in their own right, an expression of the wall dear to Le Corbusier. Such treatment with the loads of the roof structure taken to the ground by columns hidden within the

thickness of the wall, and therefore unseen, allows the architect free rein over the design of the wall with its varying thickness, battered and pierced randomly, curved and shaped form, creating an abstract piece of sculpture and no where a dictate to the architecture of façade. Again from the early sketches the architect indicates the effect of buttressing in his thoughts for the South wall with its heavy battering and the treatment of the roof where it generates a difference in perception of this and the East side of the building. Here the roof is emphatic on these elevations whilst it is not visible on the North and West sides giving a much less degree of importance to these two elevations.

The South wall is given prominence in the initial sketches because of its sweeping line into the main South door and it seems that there was always the intention for a random scattering of apertures here as opposed to windows because Corbusier had always insisted that there would be no windows for light purposes, relying on a much more subtle introduction of light to the building. This wall is crowned by a protuberant mass of roof forming a canopy and taking the eye unconsciously down to the South door entrance culminating in the highest of the three chapel towers which acts as a visual stop to the roof sweep at the entrance door.

The Approach and ‘promenade architecturale’.

The hilltop of Bournémont reaches a height of approximately five hundred metres and occupies a commanding position over the village of Ronchamp surrounded by a vast green and gently rolling landscape falling away to the plain of the Saône below. It is flanked by trees through which a steeply rising access road has been cut up to the rounded plateau at the summit

called a “high place” upon which the chapel has been built. At its completion Corbusier wrote to Archbishop Besançon

Excellency:

“In building this Chapel, I wished to create a place of silence, of prayer, of peace, of spiritual joy. A sense of what was sacred inspired our efforts. Some things are sacred, others are not-whether they be outwardly religious or otherwise. Our workmen, and Bona the foreman, Maisonnier from my office, the engineers and calculators, other workmen and firms, and also Savina, the sculptor, are among those who have brought this project into being. It was a project difficult, meticulous, primitive, made strong by the resources brought into play but sensitive and informed by all embracing mathematics which is the creator of that space which cannot be described in words.

A few scattered symbols, a few written words telling the praises of the Virgin.

The cross- the true cross of suffering- is raised up in this space; the drama of Christianity has taken possession of the place from this time onwards.

Excellency: I give you this chapel of dear, faithful concrete, shaped perhaps with temerity but certainly with courage in the hope that it will seek out in you (as in those who will climb the hill) an echo of what we have drawn into it”. Le Corbusier: 25.6.55.

The architect attached great importance to the approach route towards and through the chapel. He explained his attitude to the importance of approach at a conference held in Rome in 1936:

“Outside: we approach, we see, our interest is aroused, we stop, we appreciate, we turn around, we discover. We receive a series of sensory shocks, one after the other, varying in emotion. the ‘*jeu*’ comes into play. We walk, we turn, we never stop moving or turning towards things. Note the tools we use to perceive architecture...the architectural sensation we experience stems from hundreds of different perceptions. It is the ‘promenade’, the movements we make that act as the motor for architectural events”¹⁰² .

The promenade begins from the village of Ronchamp up a steep narrow road, previously only a pathway, to the summit, thereafter by another path shaded by trees and hedges until unexpectedly and disconcertingly the chapel suddenly emerges from the foliage, mysteriously small but at the same time monumental and reassuringly familiar. Most people express the deep sense of awe and mystery at this approach to the chapel which was deliberate and carefully engineered.

The Chapel

Peter Blake said that after 1950 Le Corbusier’s buildings have a plastic inventiveness and grandeur comparable with most powerful monuments

¹⁰² Danielle Pauly, *Ronchamp: Lecture D’Une Architecture* (Paris: Apus/Ophrys, 1980, republished 1987).

produced by man since the beginning of recorded history.¹⁰³

(Vol.2.Fig.54.p.67) The chapel is orientated in the traditional manner with a stone altar to the East and a full size wooden cross placed at the side of the altar. The nave is designed to accommodate two hundred people, most of whom remain standing, whilst some benches are provided on the South side. Entrance to the nave on the South side is through a brilliantly coloured steel sheathed door pivoted at its centre. The altar wall is slightly curved and rises in height to a peak in the South East corner, taking the eye upwards to the square slanting window ablaze with sunlight in which the figure of the Virgin and Child are placed on high, visible to all the congregation inside and to the area outside. The Virgin and Child can be turned to face inwards or outwards as required and the window has a scattered halo of small openings.

The South wall's massive, curved thickness and battered face is intended to evoke stability since it stands, full height without any buttressing from other walls. (Vol.2.Fig.55.p.68) It is pierced with openings of different sizes very and abstractly but carefully placed in relation to one another and the whole wall, giving a tension and movement to the elevation that could be broken if even one element were moved or omitted. A strong unity, equally apparent externally and internally, where the inclusion of small pieces of coloured glass set within the deep embrasures heighten the tension and aid the sense of movement created by glimpses of the landscape, clouds and passers-by. The deep and varying recession of these openings cause a strange mystical sense of time which is apparent throughout the building and one of its chief

¹⁰³ Peter Blake, *Le Corbusier: Architecture and Form* (Harmondsworth: Penguin Books, 1963), Introduction, p.9.

causes of tranquillity and meditative quality. Although the openings could be termed windows they do not convey the sense of light source which is subtly introduced elsewhere in the gap between wall and roof and the hidden sources of light from the three chapels falling very unobtrusively into the nave. The floor of the nave is allowed to act as a foil to the curving roof and walls sloping with the ground towards the altar and is surfaced very simply in concrete panels laid out to the Modulor with a directional influence down the centre line of the nave, branching off to the chapels.

The three chapel towers are cell-like in plan, the South Western chapel being the largest in size and height, linked with a curved wall to the North Western chapel, the two forming a unit, completing the West wall.(Vol.2.Fig.56.p69) Each chapel is small but because of the Modulor system there is a quiet sense of sufficiency. Each has a simple altar in white Bourgogne stone with the curved textured white walls rising out of sight, admitting light from an unseen source, immediately inducing prayerful meditation and atmosphere of peacefulness. (Vol.2.Figs.57.p.70 and 58.p.71) The third chapel is part of a similar cell-like structure but seemingly smaller because the steps up the pulpit rise up from its entrance. This chapel differs from the others in that it is coloured a blood red whilst further on the wall leading to the sacristy is coloured an intense violet. No other colour exists in the interior except for that on the South door, every other surface is white in a coarse grained textured finish to the concrete. The chapels are constructed as towers with semi-domed heads, not easily visible from within, and the lighting panels on the vertical faces are designed to light from three directions and with varying intensity throughout the day. There is a distinct difference in quality and intensity with the light from the

chapels to that in the nave and the spatial sensation received when moving out of the chapels into the nave is uplifting because of the great upward sweep of the all- embracing roof which descends to a very low level at the entrance space to each chapel. (Vol.2.Fig.59.p.72)

The roof design was considerably refined in shape and extent as the work progressed. The original sketches and the two models that were made before construction show that in places, to the Southern elevation especially, its line and depth looked distinctly weak and stilted in its curvaceous line, giving too much verticality to the structure and an unworthy meanness. However this was seen and rectified and the power that is generated by the form of the roof was allowed its full expression. The massive double- barrel gargoyle to collect rainwater is placed at the Western end, discharging to a circular basin containing three sculptural elements reminiscent of Le Corbusier's roof garden for the Marseilles Unité d'Habitation (1947-53) under which is an underground cistern. (Vol.2.Fig.56.p.69) The generous overhang of the roof on the East side protects the exterior altar and pulpit, giving an air of mystery to this activity. (Vol.2.Fig.60.p.73)

Corbusier was asked to design a monument on the site to commemorate those Frenchmen that had been killed on the hill at the time of the liberation. A stepped pyramid was constructed of the surplus stones from the bombed church surmounted by a bronze dove that the architect had made several years before.

Structure

The initial difficulty was the lack of any road to the hilltop with which to bring building materials to the site. Le Corbusier decided to use 'sand and

cement' plus the stones and rubble from the ruin of the bombed church as a basis, together with a small band of men, an integrated team and masters of their craft. The main structural element was a frame made of reinforced concrete columns supporting the roof. These columns are buried in the wall thickness but give no apparent support to the roof structure because they are set back in the massively thick wall. The roof was made up in a hollow section similar to an aircraft's wing with seven curved ribs covered with a thin skin of reinforced concrete to the top and underside surfaces. The raw timber planked shuttering was deliberately applied to allow the grain to express a pattern and texture to the surface of the concrete when the shuttering was struck and the joint lines between the lifts of the shuttering give a primitive rustic strength to the shell.

The South wall is also made up with reinforced concrete shaped vertical ribs connected horizontally with reinforced concrete spacers allowing for its shape, incline and varying thickness. It is then clad both sides with a metal lath or heavy gauge mesh, which braces the structure, and sprayed with a cement gun to give a protective coat with a coarse grained finish. The other walls are constructed in masonry taken from the old chapel ruins as are the three chapel towers up to the concrete calottes, and finished in the same manner.

Light

Le Corbusier described architecture as 'the masterly, correct and magnificent play of volumes brought together in light.'¹⁰⁴ It is light which links the terms of language expressed in Ronchamp. Light sources are used

¹⁰⁴ Le Corbusier, *Esprit Nouveau Vers une Architecture Oeuvre Complète* (publié par W. Boesiger et O. Stonorov: London Architectural Press, 1920) Vol. 1, 1910-1929, p. 35.

sparingly but their position is of supreme importance when defining the interior volumes of the chapel for the play of light and shadow is the key to the internal composition. Light plays with the forms and the finishes of materials, accentuating shapes, animating spaces, creating moods which are ever changing with the degree of light and the time of day. Light lends a spiritual dimension to the interior and the statue of the Virgin which is so placed in a window to be a brilliant square of light on a relatively dark altar wall mysteriously suspended and surrounded by a series of tiny squares of windows abstractly placed as a halo around her. Yet the main altar light and Eastern wall is carefully regulated by the *brise-lumière* above the Eastern door to outline the elements of altar, cross and candelabra. The sensitively regulated and proportioned openings to the South elevation are deeply recessed and differently splayed in their varying sizes so that sunlight is admitted at differing angles and in a subtle, differing brightness with some having coloured glass inserts introducing minute gleams of colour to an otherwise all white interior. Although light enters directly through these openings, it is subdued by the varying depths of the splayed surrounds which diffuse a reduced supply of light to the interior. The side chapels have a soft natural light with unseen sources and light is subdued by the *brise-lumière* and projected on to the heavily textured walls finally falling on to the brutally plain stonework of the altar. The main tower or God tower and chapel is oriented to take North light and has therefore a symbolically constant light whilst the other two have West and East light so are constantly changing in intensity on the stippled walls throughout the day. Because of these permutations, light and life is gently breathed into the building and changes its appearance and alters its receptivity to its

congregation whilst creating a constant spiritual atmosphere of quiet meditation.

The separation of the roof from the walls by 10 centimetres is not very apparent from the exterior but inside it astonishes with its dynamic line emphasising and underscoring the image of the roof, allowing it to express its flowing, floating shape without causing it to overpower or oppress. It also possesses an uplifting experience as its sweep is always in an upward movement especially at the Northern end and then the roof descends to its lowest point centrally, to curve upwards in each direction to the tower chapels, taking the eye upwards to the soft descending light from the towers.

Numbers

Le Corbusier said,

“Abstract art which, rightly, nourishes so many passions in these days is the raison d’être of Ronchamp, the language of architecture, plastic equations, symphony, music or numbers (but devoid of metaphysics) the compass needle pointing to that space which is beyond written description.”¹⁰⁵

Although the architect denies metaphysical connotations, Robert Coombs suspects that there may be such.¹⁰⁶ Le Corbusier’s sources for divine numbers include Matila Ghyka’s *La Nombre d’or* and her earlier work *Esthetique Des Proportions*. He was also a friend of Dr. René Allendy, author of *Le Symbolisme Des Nombres, Essai D’Arithmosophie* whilst

¹⁰⁵ Le Corbusier, *The Chapel at Ronchamp*, English version ed. (New York: Praeger, 1957), p. 123.

¹⁰⁶ Robert Coombs, *Mystical Themes in Le Corbusier’s Architecture in The Chapel Notre-Dame- du -Haute at Ronchamp* (New York: The Edward Mellen Press, 2000), p. 114.

Huysmans book, *La Cathedrale*, which documents the significance of mystical geometry at Chartres, was in Le Corbusier's collection.¹⁰⁷ Corbusier explored numerical symbolism at Ronchamp in great detail, specifically the Marian numerological context, but also, what seems more important to the architect, the numerical interpretations of the covert alchemical programme for the chapel reflecting mystical traditions, unification of spirit and soul in a state of divine perfection.¹⁰⁸ The reference to the compass by Corbusier is associated with its mystical powers by Freemasons and he interprets its role at Ronchamp as "a mystical opening of the door to the boundless and joys of symbols and metaphysics."¹⁰⁹ He achieved this "By the play of proportions, by the play of relationships, unexpected, amazing."¹¹⁰

Corbusier, like Allendy, regarded the numeral 1 as the symbol of unity¹¹¹ likewise the circle which also represents the sun or deus solus; in alchemy presented as a solar disc in the circular window in the top location of the tower to God the Father chapel, and again on the top left inside panel of the great south door. The crab-like roof also has significance as the crab is,

¹⁰⁷ Coombs, *Mystical Themes in Ronchamp*, p. 141. The edition in Corbusier's collection was J.K. Huysmans, *La Cathedrale* (Paris: Librairie Plan, 1908), in the 1939 edition, pp. 98-102, 132.

¹⁰⁸ René Allendy. *Le Symbolisme Des Nombres, Essai D'Arithmosophie* (Paris: Charcornac, 1921), Vol..XIV.

¹⁰⁹ Le Corbusier, *The Chapel at Ronchamp*, p. 35.

¹¹⁰ Le Corbusier, *The Chapel at Ronchamp*, p. 35

¹¹¹ Le Corbusier, *The Chapel at Ronchamp*, p. 10: 'Tout ce qui existe, dit la Kabbale, tout ce qui a ete forme par l'Ancien (dont le nom soit sanctife!) subsiste par un male et par une femelle.'

“a symbol of death; related to the Summer -solstice and the death of the Sun -hero through Cancer (the House of the Moon)”¹¹²

The numeral 3 is probably best emphasised at Ronchamp in the plan with the tri- partite organisms of chapels, nave and sanctuary, and outside chapel. The great door on the South elevation has three divisions to the panels and the top panel has three prominent symbolic shapes whilst the central panel has five distinct features and the third bottom panel again has three symbols. Many interpretations have been given to the door and its paintings by the architect on both sides but all the themes are recognisably those of Le Corbusier’s many cubist paintings which generate thought and mystery and imagination.

There are three distinct wall systems or units to the plan which compose the chapel.¹¹³ These are linked by three entrance doors, the South portal, the North portal and the Eastern door to the outside chapel. The circle, square and rectangle and the circle, square and triangle appear in various combinations at Ronchamp for instance on the great South door and the windows to the God chapel tower. Coombs refers to an illustration showing the three tables of the grail theory, the circle, square and rectangle superimposed on the plan of the chapel as a basis for the conception and plan form.¹¹⁴

¹¹² J.E. Cirlot, *A Dictionary of Symbols*, translated by Jack Sage (New York: Philosophical Library, 1971), p. 114.

¹¹³ Le Corbusier, *The Chapel at Ronchamp*, illustration, p. 102.

¹¹⁴ Coombs, *Mystical Themes Ronchamp*, Figure 111, Charpentier’s three tables of the Grail Theory, Le Corbusier c.2000 Artists Right Society, Paris/FLC.

Another basis for the plan form can be seen in its remarkable resemblance to the mystical symbol of π . This points to something being irreducible to rational formulae.

At the Western end the sculptural egg-shaped pool for the collection of rainwater from the roof was part of the design brief for the chapel. The group of three units within the pool are the cistern, a dominating feminine symbol in cylinder form positioned to catch the rainwater giving enough ejaculatory potential under the right climatic circumstances from an assertive masculine phallic gargoyle. Two small pyramids form the third element of the feature. The whole unit could be said to represent the moment of conception situated as it is between the God chapel tower and the lower Virgin Mary tower¹¹⁵. However, Coombs suggests that this is a manifestation of the architect's alchemical programme where the two tower chapels show a clear bi-polar masculine and feminine unit through the height and size of the Solar Kings chapel to the smaller and lower Luna Queens chapel, connected in sexual union and loving embrace by the lower wall between them. Thus symbolising the conjunction and the existence of Christian and alchemical systems existing together in the structure. But was Corbusier influenced by alchemical sources or physical objects? I believe the latter. The three towers could provide an answer since in alchemy the furnace or athanor takes various forms, one of which is a circular tower surmounted by a dome, a form which Corbusier uses at Ronchamp. He could not overtly express alchemical symbolism at Ronchamp because non-Catholic or occult symbolism in a chapel dedicated to the Virgin Mary would not be countenanced. However, the title of his book, *Les Carnets de*

¹¹⁵ Coombs. *Mystical Themes Ronchamp*, p. 30.

la Recherche Patiente; Ronchamp, indicates that he expects patient inquiry into his reasoning and careful interpretation of the various clues he has built into the project and its symbolism discovered. This would satisfy the fundamental tenant of Hermetiscism which is, “regarded as a divine and sacred art, enveloped in mystery. Its adepts held its secrets inviolate, enshrouded their operations with symbolism.”¹¹⁶

Coombs endeavours unsuccessfully to relate the chapel plan to a pentagon and to the mystical powers that Corbusier and his friend Allendy attribute to the numeral 5. He asks if the pentagon is a false lead by Corbusier to throw the reader off his real purpose of being a hidden geometric system at work at Ronchamp but I would argue that the centre-less and interpenetrating spaces of the chapel owe everything to the Modulor for their three-dimensional impact and proportion and although the architect used the pentagon and the double square and the golden section to arrive at a harmonious composition in other work, he admitted that it was purely two-dimensional and owed nothing to the human form or the relationship of volumes, unlike his modulor in Ronchamp on which it is based. If the pentagon is covertly present at Ronchamp, where is it expressed?

The most powerful use of the numeral 5 at Ronchamp is in the five large splayed window openings at ground level on the South elevation, but these do not register alone because of their abstract relationship with the many other openings on this wall.

¹¹⁶ C.J.S. Thompson, *The Lure and Romance of Alchemy* (London: Bell Publishing Co., 1990), pp. 9-10.

The numeral 7 is probably the dominant number at the chapel since it is the valued symbol of the Fathers of the Church for virginity and also Mary experienced seven joys and seven sorrows. In Catholicism there are seven theological virtues, seven capital sins and opposing virtues and there are seven sacraments which are the means of redemption. Mary is the door between earth and heaven, the bridge concept linking the natural world with the divine and she is often depicted as the protector of Christians leading to her being known as the tower of protection which equates with the towers of Ronchamp. The Virgin Mary chapel has seven light slots which, at certain times of the day, cast a bright sunlit pattern of seven rectangles on the curved vault opposite the West-facing windows confirming the power of seven as light in a gentle and mystical manner. The roof is constructed with seven ribs and there are seven steps up the pulpit whilst the external memorial ziggurat has seven steps.

Architectural appraisal

In his letter to the Archbishop Besançon quoted earlier, Corbusier used the word 'primitive' in his description of the chapel. Ronchamps could be said to be primeval and strong in its simplicity, sophisticated in its three dimensional quality maintaining an ever-changing visual harmony with every step taken around and through it. Ronchamp is timeless, because it is primitive and it belongs to all times. It owes nothing to styles. The Architect lived for a while in Greece but there is no direct historical association with the chapel and classic architecture, or even a hint of Gothic or Byzantine. But Ronchamp seems to be possessed of the spirit of these things that seem to be somehow momentarily suspended in the mind and then disappear at

the turn of the head with the drama that is continuously unfolded. Frank Lloyd Wright coined the phrase ‘organic architecture’ meaning simply the organic growth of the plan out of the function or the organic relation of the building with its site. Usually in architecture the organic and the geometric are strictly separated. In some ways, the Chapel at Ronchamp could be criticised for being falsely expressed as a reinforced concrete structure since its flowing plastic form announces that it is so, and a structural purist would expect it to be in solid concrete moulded in that form, especially in the hands of an architect such as Le Corbusier whose medium it was for the whole of his career.

Ronchamp was created, not by a contracting company but by a small team of craftsmen picked by Corbusier and loved by him. The love and devotion to the work and to each other and the outpouring of creativity has been left behind in the chapel. It can almost be felt from the first glimpse of the building at the top of the hill as it can with the great Cathedrals and it is possibly this creation of the spirit that is architecture. As I observed in the previous chapter, wholeness is essential to any building which can evoke the sense of God for us. In my view, Le Corbusier has here established a spatial wholeness that could be described as being not of this world.

Summary

In this chapter I have examined two religious buildings separated in time by some nine centuries, each quite different in their conception but both true to the spirit of architecture which Corbusier spoke of as,

“A thing of art, a phenomenon of the emotions, lying outside questions of construction and beyond them. The purpose of construction is making things

hold together, of architecture to move us. Architectural emotions exist when the work rings within us in tune with a universe whose laws we obey, recognise and respect. When certain harmonies have been attained the work captures us. Architecture is a matter of ‘harmonies,’ it is pure creation of spirit.”¹¹⁷

Though both buildings present vast differences in size, construction and visual aesthetics they have a common bond in the criteria for ‘the mystical’ that I have set out in the second chapter, which is the sense of unity and spatial wholeness that make them live. Both buildings instantiate the faith which we find in contemporary Muslim architecture, in Neoplatonism, but also in Christopher Alexander, that the order which architecture creates echoes, or makes a bridge to, a fundamental order which stems from God. In providing that echo it mediates the divine.

The chapel at Ronchamp can be linked with the cathedral through Corbusier’s thoughts on geometry which he described as the foundation of architecture, “It is also the material basis on which we build those symbols which represent to us, perfection and the Divine.”¹¹⁸ Ronchamp was designed with the ‘Modulor’ and Medieval builders searched for geometric uniformity, unity and wholeness through the use of certain regular polygons, predominantly the square from which all proportions of the structure could be obtained. Quadrature, the modular use of the square, is similar in principle to Corbusier’s ‘Modulor’ except that this was distinctly related to

¹¹⁷ Le Corbusier, *Towards a New Architecture*, translated by Fredrick Etchells (London: Architectural Press, 1946), pp. 116-117.

¹¹⁸ Le Corbusier, *The City of Tomorrow* English translation by Etchells of *Urbanisme*, 1925, cited in Agrest (1991), p. 64.

the human dimension. Common to both buildings is the way that space and light has been exploited albeit in different ways. In the cathedral, spatial expression is more direct and comes from a majestic repetition of the structural bays, each designed to reach for the heavens and to admit as much light as possible with a dramatic effect. The chapel is much smaller and its spaces moulded intimately. Light is more subtle and controlled and the total drama is maintained. Although architecturally they are far apart, there is nevertheless an equal sense, brought together in differing ways such as space conception and symbolic representation where both buildings use the categories of a particular religious or philosophical tradition. There exists in both, a quality of peace, the subjective, and unapparent or allusiveness, the numinous, or a sense of God.

CHAPTER FOUR

Two Secular Buildings

In the last chapter I took two examples of religious architecture, one from the 12th Century the other from the 20th century, each an expression of their time in conception, construction, and ritual, and each, in my view, inducing the numinous or what I choose to call the mystical. As religious buildings they are both created to the glory and worship of God, and they both incorporate the symbols, rites and teachings of the religions they represent. They are intended to evoke the numinous, therefore, and I have tried to show how they do this through the use of space. I now want to argue that this can equally apply to secular architecture and I have chosen two quite different secular buildings by eminent architects of the Modern School that I think realize this.

Falling Water. architect, Frank Lloyd Wright.



Donald Hoffmann..*Frank Lloyd Wright's Falling Water*. (New York: Dover Publications, 1978), front cover.

Photographs for falling water are in **Volume 2. Figs. 61-66.**

Wright was born in Wisconsin U.S.A. in 1867. His father was a preacher, musician, public speaker, and school superintendent, skilled at many things except continuous employment which took him and his family to many places in search of a permanent profession. Lloyd Wright's fundamental beliefs were formed by American transcendentalist thinkers and at the time he was growing up Herman Melville, Walt Whitman, and Ralph Waldo Emerson were all alive. Emerson was an especially important influence and through him he came to seek a harmony with nature through his buildings. Wright's belief was that the true function of architecture was to tell us about our own nature, where he followed Emerson in believing that nature was the result of an endless combination and repetition of a few fundamental laws and forms.

“All form has moral meaning and is modelled on nature and is an effect of character.....esteem nature a perpetual counsellor, and her perfections the exact measure of our deviations.”¹¹⁹

Wright sought to build accordingly. At the same time he insisted on individualism:

“Insist on yourself’’Your own gift you can present every moment with the cumulative force of a whole life’s cultivation’’Whoever would be a man must be a non-conformist’ ...‘nothing is at last sacred but the integrity of your own mind’’To be great is to be misunderstood.”¹²⁰

¹¹⁹ Robert McCarter, *Frank Lloyd Wright* (London: Phaidon Press, 1997), p. 14.

¹²⁰ McCarter, *Lloyd Wright*, p.14.

Wright's designing principles of integrity and natural order had both formal and moral implications in his vision of the world and they illustrated a belief in the ideal of a perfect simplicity and the possibility of its realization in architecture. In his search for this vision he was profoundly influenced and affected by Emerson's belief that only through the individual's powers of perception and analysis could this be achieved and one's own beliefs, strengths and abilities were vastly superior to those of society at large.

Emerson had in turn been affected by the writings of Horatio Greenough, a sculptor and writer who, in 'Form and Function', a phrase he coined, wrote extensively on learning from history and held that 'the edifices in whose construction the principles of architecture are developed may be classed as organic.'¹²¹ The architect with whom Wright studied, Louis Sullivan, had been influenced by him.

Wright understood that architecture is a framework for human existence, contributing dignity to daily life, calibrated to the human body, providing and combining use and comfort. The plan was balanced by the physical and spiritual engagement of the user so that concept and experience were one. From his earliest house designs he worked fundamentally as far as possible with the house as one room, with a massive chimney at its centre rising through two floors. Rooms became spaces off the main room with the minimum of solid division differentiated to meet special needs such as dining, reading or special privacy. This windmill or cruciform plan with spaces radiating from the central hearth or massive kernel is an interpenetration of two parts cutting each other transversely, often at

¹²¹ McCarter, *Frank Lloyd Wright*, p. 14.

differing heights. Wright's plans tended to be flexible and openly spreading across the site and this wandering plan form brought light, movement and freedom to the interior of the house so that each room should get light from three sides and satisfy the desire to treat the several rooms or spaces as a unit.

A turning point in Wright's career was in 1891 when the Chicago firm of Burnham and Root (later Burnham and Atwood) were selected to produce a master plan; and coordinate the design for the World Columbian Exposition held in Chicago in 1893. They opted for classicism, which Wright regarded as a mistake.¹²² He and Sullivan wanted an indigenous form of architecture instead. "Who are you, indeed, who would talk or sing to America?" asked Walt Whitman.

"Have you studied out the land, its idioms, and men? Have you learned the physiology, phrenology, politics, geography, pride, freedom, friendship of the land?"¹²³

Of course North America is not one place, and Wright was influenced not by industrial or East Coast America, but by the great plains.

The land, he said,

"is the simplest form of architecture. It is man in possession of his earth. It is the only true record of him where his possession of earth is concerned.

While he was true to earth his architecture was creative."¹²⁴

¹²² McCarter, *Frank Lloyd Wright*, p. 22.

¹²³ Walt Whitman, ed. John Kouwenhoven, *Leaves of Grass and Selected Prose* (Modern Library Edition, 1921; New York: Random House, 1950.)

“Conceive now that an entire building might grow up out of soil and yet be free to be itself, to live its own life according to Man’s Nature. Dignified as a tree in the midst of nature but a child of the spirit of man.”¹²⁵

The Prairie House

The Prairie House, the name given by Wright for the American suburban home characterized by its formal order and spatial freedom, was introduced in 1901 through the ‘Ladies Home Journal’ as an attempt to communicate directly with the American family. It was based on Wright’s own house of 1889 which used free flowing space, omitting corridors, and using low screen walls to interlock spaces without giving up privacy. The idea was to create intimate interior spaces for living, whilst giving a sense of belonging to a larger family.

It can be seen that the plan for Falling Water was a direct development of the early Prairie House in the basic organization of a cruciform interpenetrating a square, the asymmetrical spiralling of the perimeter walls and the entrance not placed in an obvious position but allowing for a purposefully guided, defined, hidden admittance to the house.

Wright’s spatial conceptions could be described as plastic in form. His ‘Lieber Meister’, Louis Sullivan, used the word ‘plasticity’ in relation to his idea of ornamentation but Wright uses it in a larger application relative to the structure of the building as a whole. The principle that form follows function could be realised by omitting features such as pilasters and cornices, allowing walls and floors to become seen as component parts of

¹²⁴ McCarter, *Frank Lloyd Wright*, p. 203.

¹²⁵ Frank Lloyd Wright, *The Natural House* (New York: Horizon Press, 1954), p. 39.

each other, their surfaces flowing through and defining space, giving continuity and expression as a wholeness, the promotion of an idea from the material to the spiritual plane. Wright termed his style 'organic'.

“Organic Architecture, sees actuality as the intrinsic romance of human creation or sees romance as actual in creation.In the realm of organic architecture human imagination must render the harsh language of structure into becomingly human expressions of form instead of devising an inanimate façade or rattling the bones of construction. Poetry of form is as necessary to great architecture as foliage is to the tree, blossoms to the plant or flesh to the body.”¹²⁶

Coupled with physical continuity and the organic principle was his use of glass as the material to awaken sensibilities, to diffuse, refract or reflect life itself. With glass, he believed, the outside could become the inside, the building could reach out and relate to the characteristics of the site, creating vistas and a oneness with the earth and its growth in openness, intimacy and freedom. No longer an outside and an inside, or a building placed upon the ground as an object, but a closeness with, and an awareness of God's creation, an interior space concept using the natural ground levels and features to create dynamic space enclosures and a new sense of earth as a great human good.

He thought the materials used for building should be varied in accordance with a building's purpose. Mass should not be restricted to masonry but other material used in accordance with its natural structure, as in large areas

¹²⁶ Pfeiffer, Bruce Brooks, ed., *Frank Lloyd Wright. Collected Writings, Volumes 1-5* (New York: Rizzoli International Publications, 1992), Vol.1. p. 4.

of un-pierced brickwork, carefully detailed timber structure, glass or concrete. He demonstrated through his work that all materials can be beautiful if their own inherent nature is respected and can be seen and sensitively used in outline, detail and proportion, by the architect.

Falling Water

I have chosen 'Falling Water,' not necessarily because of its accepted high ranking in the portfolio of Wright's works, but because it singularly realises all my thoughts on mysticism in secular architecture, mainly due to its inspired conception for an extremely difficult site. I will show how, through the criteria I have discussed, Wright's retreat house satisfies the conditions that create life and a sense of the reality of God in architecture.

It was in 1934 that Wright came to know Edgar Kaufmann, the owner of a Pittsburgh department store. Kaufmann wanted to develop a weekend retreat in an area known as Bear Run. Bear Run is a fast moving stream, fed by mountain springs, its entire flickering course only four miles long, but falling from about 2500 feet to about 1400 feet above sea level, down the western slopes of the ridge called Laurel Hill to join the Youghiogheny River in Fayette County south western Pennsylvania.

Apart from the majestic configuration of the great boulders and streaming waters of the run, the area has a richness of plant life, the most predominant of which is the great laurel or common rhododendron which is prolific because of the moisture from the stream, the shade of the taller trees and the enrichment of the soil from the fallen oak leaves. Mountain laurels mix with white, red and black oaks, birch, tulip, apple, hickory, butternut, wild

black cherry and other hardwoods, while giant ferns from ancient times give a sculptural effect. (Vol.2.Fig.61.p.75)

After Wright's visit to the Bear Run, the music of the stream, the falls, the effect of the rock formations, ledges and boulders, the trees all remained with him and a vague shape of the house was already conceived having as its main feature that it would overhang the stream so that its sound could be heard constantly. He wrote of the magnetism of rock ledges, their strata and formational character and how he could see and feel the material as it is, as a story of a continuous sculpture constantly moulded by wind and weather, into forms and styles enough for all the ages for all humanity.

He told Kaufmann that a complete survey of the site was required showing all contours, and the position and size of all boulders and large trees. From the resultant survey Kaufmann thought that the house was to be downstream from the falls but Wright was keeping his initial thoughts to himself. In the event Kaufmann was surprised that the house was to be above the falls, expecting it to be on the opposite side of the Bear Run looking at the falls from below. Typically, Wright waited for some time before committing his thoughts to paper, until the whole idea was in his head.

Having left any commitment of his thoughts to paper for many weeks he was suddenly surprised to learn that his client intended to visit him within two hours in order to view the plans for his house. Within that extremely short period, Wright completed the sketch designs and was ready for the meeting and amazingly the initial sketches varied little from the completed building, showing how utterly the total concept was in his mind in

extraordinary detail. There was a close relation in this conception to Wright's earlier work as the architect freely admitted.

“The ideas involved here are in no wise changed from those of early work. The materials and methods of construction come through them. The effects you see in this house are not superficial effects, and are entirely consistent with the Prairie House 1901-1910.”¹²⁷

Due to the lack of preliminary sketch designs in all his schemes, it could be said that he designed buildings in sequence, as variations on a common theme. These sequential designs could be seen as the embryo of Falling Water, as part of a constant accumulation of formulae or of the development of spatial types, structural themes or the approach to site specifics. Wright hinted at this method of designing as part of the development of spatial types from which evolved a particular building when in 1909 he completed a house at Oak Park for Thomas Gale which involved horizontal planes and balconies projecting from a vertical slab like core, which was “the progenitor as to general type for Falling Water.”¹²⁸

His initial thoughts for the house were as a broad shelter integrated with the rock, trees and water that made up this rugged, natural site.

“We start with the ground. In any and every case the character of the site is the beginning of the building that aspires to architecture. All must begin there where they stand.....In the stony bone-work of the earth, the principles that shaped stone as it lies, or as it rises and remains to be

¹²⁷ Frank Lloyd Wright, ed. F. Guntham, *On Architecture* (New York: Dunlap, 1941), p. 232.

¹²⁸ Donald Hoffmann, *Frank Lloyd Wright's Falling Water* (New York: Dover Publications, 1978), p. 73.

sculpted by winds and tide, there sleeps forms enough for all the ages, for all of man.”¹²⁹

It was realised with the massive stone walls to the northern and dark side which was the hidden entrance. This treatment gives the required sense of repose and planes parallel to the earth, an affinity with the ground, and a glorious contrast in the openness on the other side once inside the house, given by bands of windows which offer sunny vistas through broad welcoming terraces that overhang the falls and capture the colour, sounds and strength of the surrounding landscape. In achieving this the architect realised the key to the whole design of the house lay in the fractured rock shelf that had initially caused the waterfall, hanging in space because the earth beneath it had been eroded away. He created three levels of reinforced concrete trays cantilevered and stacked above the rock, separated by continuous windows giving the further effect of eroded space, echoing its powerful nature but in their proportion and delicateness of surface treatment, giving perfectly contrasting textures to it whilst their strong horizontality making a defining statement, complementing the surrounding natural beauty of the Run in its composition. These trays were double cantilevered concrete slabs with integral upturned beams forming the balustrade to the terrace and supporting the slate floor and with their soffites forming the ceiling below. (Vol.2.Fig.62 p.76) Due to a constructional error, no optical correction was built into the long, powerful undersides of the cantilevered terraces giving them an uncomplimentary drooping

¹²⁹ Frank Lloyd Wright, ed. F.Gutheim, *In the Cause of Architecture*. Reprint of Architectural Record essays (New York: McGraw-Hill), p. 177.

appearance but this does not detract from the romantic conception of its inspiring affinity with its site.

Some years after completion Wright said of it,

“There in a beautiful forest was a solid, high rock ledge rising beside a waterfall, and the natural thing seemed to be to cantilever the house from that rock bank over the falling water.....then came Mr. Kaufmann’s love for the beautiful site. He loved the site where the house was built and like to listen to the waterfall. So that was the prime motive in the design. I think you can hear the waterfall when you look at the design. At least it is there, and he lives intimately with the thing he loves.”¹³⁰

Kaufmann had expected the house to be built on the south side of the Run, but Wright positioned it *over the fall*, to experience it, feel part of it, hear it, rarely seeing only glimpses of it from within the house but giving all rooms sunlight for most of the day. By a system of cantilevered terraces extending the living spaces at differing levels the house was conceived expanding into the forest and above the falls, reflecting the ledges of rock along the cliff, suggesting the form of the terraces which make such a feature of the design. (Vol.2.Fig.63 p.77.) The house is essentially an extension of the cliff beside a mountain stream, making a living space over and above the stream where a man who loved to listen to the waterfall might live. A primitive homage to the site is created by the rough stone walls and dramatic flagged floors, whilst the stairs down from the living room serve no function other than to bring an intimate communion with the stream below.

¹³⁰ Hoffmann, *Falling Water*, pp. 17-18.

Such an imaginative design proved problematic to construct and before any work on the structure commenced the advice of consultant engineers was sought by Kaufmann which resulted in a blistering damning structural report which concluded,

“In our opinion there could be no feeling of complete safety and consequently we recommend that the proposed site be not used for any important structure.”¹³¹

Kaufmann sent the report to Wright who immediately asked for all his drawings to be returned to his office at Taliesin because he (the client) did not deserve the house. Kaufmann apologized and requested Wright to continue, which he did, undertaking all the work required by a structural engineer himself. The damning report was buried behind a stone in the wall east of the dining table. The massive boulder or outcrop of rock that Wright intended to use as the anchor for the house and from which the main floor is cantilevered was one of the principal causes of criticism and concern by the engineers but the architect was confident of its stability and the top surface of this rock projects into the living room forming the hearth to the strikingly large fireplace that for Wright evoked primordial associations: the hearth and safety of the home and the sense of physical well being and comfort for the family gathered around.

Wright’s conception of the house over the falls was of a series of terraces of space leaping out of the rock ledge behind which should have no sense of support in order to give a free, natural structural expression as in the branch of a tree growing from the trunk or the outstretched arm cantilevered from

¹³¹ Hoffmann, *Falling Water*, p. 24.

the body. He had an absolute faith in his design solution and of the cantilever's power to liberate space and create planes parallel to the earth, becoming the most romantic and most free of all principles of construction. He had often used the cantilever in his early Prairie House but not with such daring as in Falling Water, and although he wanted the house to have a definite masonry form he could not construct the cantilevered terraces in stone. Reinforced concrete was not of much interest to Wright except that it was essentially a plastic structural material and although passive, without any intrinsic aesthetic character, it could however provide the natural forms which did interest him. The nature of the waterfall and the Bear Run was rugged and with a vertical emphasis with the horizontal line scarcely visible making strong emphatic horizontal planes essential to give the house the expansive, liberated freedom that the architect felt was basic to American life.

To counterbalance the drama of the horizontal, the architect introduced walls of great masses of stone to shape those spaces that required security, less light and comforting warmth, a sense of shelter and refuge, but all the time enclosing the soft, calming sound of the water permeating the interior.

Living Space

Nearly half the area of Falling Water is terrace or exterior space, designed to create an interior and combined exterior living space, expressing Wright's conception of the natural house, fulfilling the function of bringing nature into the daily routine of life. In the house the architect has tried to destroy the symbol of the box as a building which he described as a Fascist model, alien to freedom and democracy. (Vol.2.Fig.64 p.78.) The corner window

and the introduction of screens internally instead of walls brought light where it never been introduced before and the box vanished as a box. The windows are of steel sashes painted Cherokee red, a colour indicative of the fire fuelled steel making process, with no attempt to make the glass appear invisible and instead its presence and its function are emphasised as a protective membrane or when used internally, as a decorative screen.

The approach to the house is from a simple bridge over the stream from which the entrance is hidden but a glimpse of the cantilevered terraces is given although the waterfall is also hidden except that its sound can mysteriously be heard. The entrance must be searched for, utilizing the fact that in architecture the path of the eye can be different from that of the body and assistance is given by a series of staggered walls that climb up and around the rock face to the dramatic loggia entrance with its massive concrete pergola. From the foyer, the living room is at a higher level accentuating and defining the change of space for upon entering, the whole spatial effect of the combined living spaces flowing from the main space with panoramic landscaped views across the terrace cantilevered over the waterfall, the sound of which is more apparent, is a contrived mystical experience. The waterfall is not allowed to be seen but is felt as part of the calculated space sensation, heightening its mystery and wonder, allowing it to become an integral part of the living space, permeating all senses, in particular the hearing and haptic senses.

On the first floor, the bedrooms are grouped around further cantilevered terraces to continue the organic theme of allowing the inside to merge with the outside. The stairs appear to penetrate through layers of stone suddenly

emerge at the tree tops, and heighten the simple spatial experience that occurs in, around, down and through the house. (Vol.2.Fig.65 p.79.) Wright said, “Simplicity is a clean, direct expression of that essential quality of the thing which is in the nature of the thing itself. The innate or organic pattern of the form of anything is that form which is thus truly simple.”¹³²

Throughout the house, not only in the structure but in the interior spaces, the architect designed most of the integral furniture and furnishings which are combined with a variety of rare and beautiful antiques. Wright believed that furnishings, like ornamentation, were conceived as part of the organic whole and that it is impossible to consider the building as one thing, its furnishings another and its setting and environment another. In this sense architecture is then the sound of the ‘within’ since that within could be called the heart, and then be integral with architecture. There is no longer an outside and an inside, and form and function become one because they are in union through the use of materials.

Summary

In his architecture Wright strove to utilize the qualities of nature, which he understood, as noted, through Emerson and Thoreau – the Wordsworthian sense of the divine in nature transposed to the American continent.¹³³ At Falling Water, such powerful forms as the hearth and twelve open fires within the plan, floors set at varying levels, cave like recesses, broad, open yet sheltering terraces, flowing, differing spatial sensations, are all used in conjunction with elemental qualities of earth and water as inducements to

¹³² Brooks, *Frank Lloyd Wright. Collected writings*, Vol.5, p. 6.

¹³³ McCarter, *Frank Lloyd Wright*, p. 14.

the returning closure with nature. The bedrock floor of the living space created from the site itself makes a deeply, direct transitive communion with the earth connection.

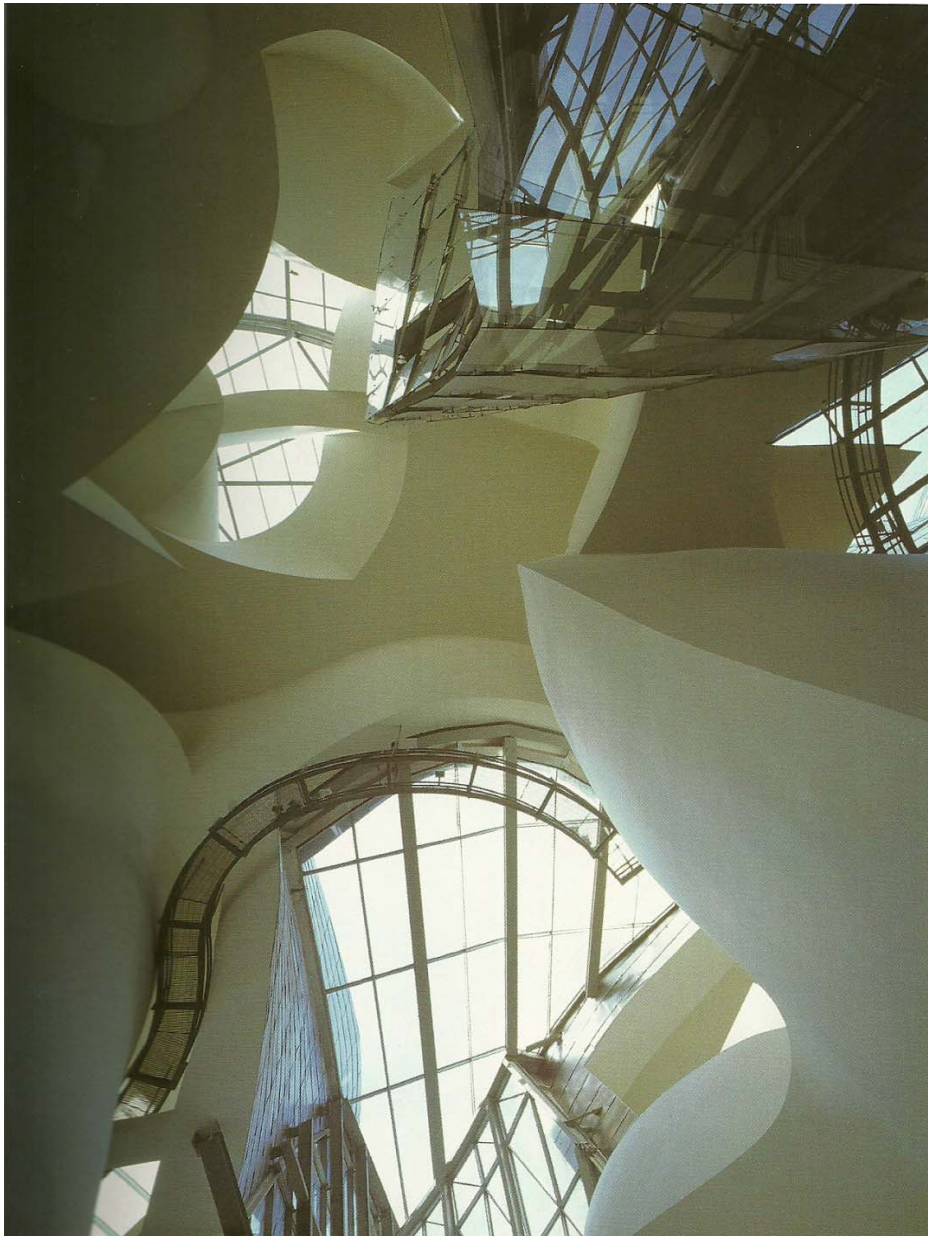
Falling Water gives the impression of tranquillity and repose, within the deeply rugged outcrop of sandstone, with water rushing over a rock ledge on to the stream floor below. In line with the transcendentalism of Emerson it connects us to the divine or the World Spirit through this connection with nature. (Vol.2.Fig.66.p.80) Although the design is asymmetric it possesses a strong balanced order due to the relationship of its parts in the powerful cantilevered balconies which although strictly contrasting with the rugged nature of the site, seem to balance that difference by their sheer power of expression. Architecturally the juxtaposition of these balcony terraces would be termed 'massing' but in Alexander's terminology they would constitute 'centres'. If we think in those terms we have to say that the relation of the centres and the total spatial conception generate the experience of a religious import, a sense of the numinous, a quality that is abstract and subjective that can only be felt and only partially conveyed in terms of words, lifting the intellect, escaping classification, beyond thought.

And now, with a conception of architectural design which is completely different, I look to an architect who does not draw his inspiration from nature in the manner that Wright did, but who, nevertheless, builds in such a way that the numinous or the mystical may be invoked.

The Guggenheim Museum, Bilbao.

Architect, Frank O. Gehry.

Photographs for the Guggenheim Museum are in **Volume 2. Figs.67-78.**



Interior of part of the Atrium for the Guggenheim Museum, Bilbao.
.Paco Asensio and Hugo Kliczkowski. *Guggenheim* (Barcelona: Loft Publications, 2004), p. 137.

Most of Gehry's adult life has been spent in Los Angeles, California, where he was influenced in the 1950's by modernists such as Richard Neutra, Ralph Soriano, Harwell Harris and where the urban junkyard of disparate styles in the vernacular of Los Angeles influenced and inspired his breakthrough in architectural conceptions involving such mundane materials as stucco, plywood, chain link and corrugated metal, all of which reflected the context of the City. A greater influence than this was Hollywood, where not so much the film industry but the characters within it, many of whom were friends or clients, caused in subtle ways his response to the exuberance of the cinematic movement, which often animate his work.

In the 1980s Gehry began to use computers not just for visualisation or rendering computer programmes but to get buildings built. For such is the complexity of his designs, the contorted curvilinear walls with hardly a horizontal or vertical line that it is almost an impossibility to draw it accurately with conventional instruments and equipment. It is therefore equally difficult to construct, to estimate for quantity of materials and methods of fixing components, as well as conveying to craftsmen exactly what is required of them and what is in the mind of the creator. These problems were eventually solved with appropriate computer software and developing techniques which would allow him as the architect to fit into the new process. In fact, his working method did not change with the development of the computer, which only made it easier for him to achieve most of his eccentric forms, for initially he always used sketches and a long series of physical models from paper or cardboard as many other architects do in the course of designing. The design process appears to be one of cutting and pasting shapes of card or paper until a form emerges which is

acceptable. Gehry says, 'I sit and watch and move things. I move a wall, I move a piece of paper, I move something, and look at it and it evolves.'¹³⁴ The advantage of the model over the sketch is that it is three dimensional and the sketch requires much more imaginative skills. It would be a near impossibility to sketch with any accuracy some of the shaped forms and their relationship with one another that is the resultant of a Gehry conception. A computer device then digitises the model information with complete accuracy and a virtual building is built in the computer with the added ease and ability of further refinement and amendment down to the finest detail. He seldom works alone. When designing he watches and talks to his assistant who adds and subtracts to the model of the project in response to his few words and the whole process is one of complete empathy.

The sense of movement or time is very apparent and powerful in Gehry's work, his fascination with the folding drapery of the Bellini Madonna and Child and similar works of Giotto, the relationship or groupings of the main figures in Renaissance paintings, particularly the shapes of the spaces between them, the quality of the fluttering movement when the sails of a sailing boat luff as caught by the Dutch seventeenth Century painter, Van de Veldt, intrigues and influences him. His work is sculptural, which he partially attributes to his studies of fish stemming from a childhood fascination of watching them move after being placed in a bath by his Grandmother during the interim period from purchase to eating. The excitement of their movement in water, the purity and colour of their

¹³⁴ Mildred Friedman, *Gehry Talks: Architecture + Process* (London: Thames and Hudson Ltd., 2003), p. 12.

surface scales, the stimulating, moving, liquidity of water and its organic qualities were eagerly assimilated and later quietly but excitingly expressed in his buildings. He continually watches all that surrounds him. Situations and objects to which most would not give a second glance or appreciate, even the contents of the waste paper bin, particularly the shapes between the various articles of waste in the bin, inspire building forms.¹³⁵

Gehry's architecture is often criticised as indeterminate, unsettling and disturbing in its uncertain, ever changing forms some of which could be described as the rippled edges of torn paper or the form that a crumpled sheet of paper takes after its expansion following crushing in the hands, or the energy and unpredictable forms of moving water. Such transient forms cannot easily be remembered and can assume a different shape and vibrant beauty each time they are seen. "Now how do you get that into the final form? he is asked. The reply: "Water and crinkled-up paper; they are just another form of decoration in my opinion, it is baroque."¹³⁶

But it is arguably not Baroque because the other forms of decoration are intrinsic and not applied to the surface. He uses steel structurally together with a varying, often small scale, sheet cladding material to achieve the desired form and to follow the intricate lines and curves of the buildings' fabric. Thus the desired plastic form is obtained but not with a plastic structural material, with the result that sensuality and the wringing of every ounce of sensation from what is often functionless form is the reason for the structure and what holds it together is very much secondary in importance. In that sense his conception could be Baroque for it can give

¹³⁵ Friedman, *Gehry Talks*, pp. 10-22.

¹³⁶ Friedman., *Gehry Talks*, p. 48.

that same sense of joy, freedom and mystery without the discipline of structural expression.

Analysis of Gehry's design techniques and approach

In the design of a conventional building, the conception is considered as a whole and the rooms or areas inside or outside are its parts. Gehry's approach can be seen to invert this view by reinterpreting the relationship between part and whole by making programmatic parts into distinctive wholes. For example, recent Gehry buildings including the Bilbao Guggenheim Museum, seem to be made up of discrete segmental units each with its own form or shape, containing its functional elements and made up in its own materials. The various segments are carefully composed and related to one another and become programmatic parts or distinctive wholes which become parts of the greater scheme as a house for example becomes part of the city or suburb. The intriguing question is not so much how he groups these wholes but how they participate with one another in relation to the city, as in the case of Bilbao where the complex appears in contextual appropriateness from many vistas through streets and from the river as one moves about within its confines. This focus on relationships rather than on objects does not mean that he designs these elements first and then fits them together. Rather, he uses more subtle arrangements to achieve such participation as using an interior space enclosed by what appears to be several different segments to achieve a totality of wholes as a part of a greater unity.

Complexity and contradiction are important in Gehry's architecture although he interprets them in a different manner from his Neo-Classical

predecessors. In his unique treatment of a part made up of wholes, perception has a different orientation than more conventional architects and perceptual space is relied upon by the architect in the form of his buildings. Paul Emmons reviews two primary systems in his discussion on the nature of space. He explains that space is substantival and relational, where substantival theories suggest that space is real and independent of the material objects within it. In this view, space itself is an entity with a particular shape whereas relational theories hold that there is no separate entity that can be identified in space since what shape would space be if it existed without any objects in it, thus it is only definable by the objects within it.¹³⁷

Gehry takes in both substantival and relational theories. His work depends upon the observer's point of view much more than that of many other architects and his understanding of space can therefore be understood through the so-called Monadic system, according to which the individual's viewpoint is a series of shifting perspectives. Often he designs simple wholes almost equal in visual weight and therefore more or less equally balanced which creates a formal tension, with each claiming about the same degree of attention. The views and emphasis change with every change of viewpoint, and coupled with his use of materials and deconstruction of planes, forms and of the building itself, creates an indeterminate projection

¹³⁷ Paul F. Emmons, *Whole Amidst Part. Perceiving the Architecture of Frank Gehry*, *Midgard Journal of Architectural Theory and Criticism*, 1986. Paul Emmons is an associate professor at the Washington-Alexandria Architecture Centre of Virginia Tech. *Midguard* is a non profit journal, published biannually by the University of Minnesota School of Architecture and Landscape Architecture. Printed in U.S.A., quoted with the written consent of the author.

of the building which means that we cannot form a once for all view of it.

Uniquely, he brings an element of indeterminacy into architecture

The History and Genesis of the museum at Bilbao

In April 1991 Thomas Krens, the director of the Solomon R. Guggenheim Foundation visited Bilbao in company with Carmen Giménez, the Guggenheim's Curator of Twentieth Century Art and the former Director of National Exhibitions for the Government of Spain. At that time the Guggenheim Institution were planning to develop a museum in Salzburg but progress on this had been delayed because of serious problems connected with its construction. Bilbao was facing a severe recession and trying to transform its economy from its past as a lively industrial and mercantile city to a future in high service industries and as a cultural centre . A pedestrian suspension bridge over the river Nervión was part of a general scheme of urban renewal. Included in this scheme to upgrade the city was a proposal to convert the abandoned Alhòndiga, warehouse building which was a remnant of early twentieth century industrialism, into a cultural facility for the exhibition of contemporary art. The problem was that the Basques did not possess an internationally recognised reputable collection of art to put on exhibition neither had they the money to create such a building or the expertise to manage and promote an ambitious project of this nature, all of which prompted their courtship of the Guggenheim Institution which did possess such expertise.

One problem with the museum envisaged by the Basque government was that it did not meet the cultural requirements of the twentieth or twenty first centuries, where contemporary works of art due to their often complex

nature and size, require large volumes for their display and the circulation of people. Further to this, there is the argument that if the art collection is of importance then people will travel to see it as a form of pilgrimage and if the building enjoys a vast and flexible space it will command large scale art forms impossible to see in many large cities. Krens was not convinced that the Alhóndiga and its proposed glass box interior could fulfil this function so he decided to get another opinion and asked Frank Gehry to visit the City and the site. The choice of this architect was not an unnatural one for Krens since Gehry had been engaged by the Institute in 1988 in company with other architects to develop a feasibility study and master plan for the Massachusetts Museum of Contemporary Art building at North Adams Massachusetts, another of Krens' projects for an extended Guggenheim. In addition, Gehry's reputation for the transformation of fifteen thousand four hundred square metres of warehouse space in the Little Tokyo area of Los Angeles for the Museum of Contemporary Art, in 1982, was well known because it was meant to stay open for three years until the new permanent museum was built but was so successful it remained open long after the completion of that building . Gehry confirmed Krens' doubts and when asked to choose a site for the museum he said, 'By the river', because he had been continually told that the river area was to be re developed. It seemed that the Alhóndiga project was doomed but on the night before leaving Bilbao, he and Krens looked at the City from the high ground on the North side of the river to a site on the opposite bank with its collection of cranes and dilapidated structures with abandoned cars. Gehry felt convinced that there was the possibility of building around and under the sweeping moving lines of the bridge that spanned part of the site, alongside moving

water, bringing the City next to the river within what Krens called the geocultural triangle of Bilbao. This triangle contained the cultural facilities of the Bellas Artes Museum, the University and the opera house. To the Basques, Gehry's disapproval of the Alhóndiga caused dismay because the alternate river site seemed to be fraught with problems of land ownership. In time these concerns were dealt with, so the way was cleared for the development to go ahead.

Following the Basque Administration's possession of the site, an access road had to be planned and built from the Puente de la Salve to the East of the site together with the Muelle de Evaristo Churruga, a road along the North of the river frontage. It was then agreed that the Executive Committee of the Guggenheim Museum Bilbao Foundation should select the architect from a brief competition between an American, and Asian, and a European firm of architects and Doctor Heinrich Klotz, former Director of the Deutsches Architecturmuseum in Frankfurt, a specialist in contemporary architecture, should act as referee and advisor.

The invitation to submit presentations only required each architect to submit an impression of their overall vision of the museum complex without specifying numbers and sizes of galleries. One implicit requirement was that the new complex should provide a connection to the Puente de la Salve and the another for provision of a one hundred and seventy-two ton steel sculpture in an extremely large gallery. Only rough ideas on scale and general ideas on types of exhibition spaces were asked for since the executive committee wanted to avoid over design in the early stages to avoid protracted arguments about making changes when the explicit design

process would begin after selection. It was fundamental to the selection committee that the new complex should be greater than the sum of its parts so that it would be compelling to see in itself as well as its exhibits.

The conception, programmatic translation and modelling of the Guggenheim Museum at Bilbao, for competitive presentation

On July 5th 1991 Gehry returned to Bilbao, this time as a competitor in the competition for the Guggenheim Museum on the site of his choosing, where he began to sketch and familiarise himself with its detail, responding to the features, scale and toughness of the bridge and its surrounds. Also the industrial character and feel of the waterfront at the base of the city which he wanted to retain, to complement the large industrial volumes of exhibition space for which Krens was asking. On a map of the area Gehry drew three red arrows, one from the North indicating a strong visual presence of new building from across the river, another from the West indicating a strong visual connection from the Museo and the other from the East stating that it is important to have visual presence from City Hall bridge.

A series of first impression sketches executed on the aircraft flying back to America show the main elements blocked up in relation to the bridge and river. (Vol.2.fig.67.p.82) This was obviously done in haste and more to set up a thinking pattern in readiness for the schematic model that was being prepared in Los Angeles to enable the architect to 'get into scale' and to get the preliminary programme with the quantity of 'stuff' that was to go on the site so that he could start to 'carve it into his head.' The scheme was composed roughly of three components: the south element towards the

Alameda de Mazarredo, he determined to be rectilinear in form in order to integrate easily with the existing late nineteenth and early twentieth century office buildings and apartments close by. The central part with main elevation to the north shows some highly sculptural elaboration having a strong connection with the bridge in what he singles out as the great hall covered by sail like white shapes and running under the bridge and with a 'high reader' or vertical feature on the other side of the bridge which could house galleries devoted to individual artists. The other sketches appear to generate the physiognomy of the concept albeit in a disjointed manner translating the ground plan or disposition of various elements into some first thoughts on how the elevations might appear from the river. He likens this method of sketching to moving the pen, thinking about what he is doing but not thinking about his hands. This is rather like spiritual or automatic writing, or endeavouring to move the pen in response to feelings rather than thoughts. He only thinks of his 'scratchings' as drawings after looking at them when he then disentangles potential forms enmeshed in the complexity of line and shapes caught within, thus assuming the role of interpreter from that of author. Gehry intuitively combines the conscious with the unconscious in that the conception based on his knowledge of the site and the parameters of the design brief together with his semi-automatic drawings, continues the process and in his returning role as reader, new forms can be discovered to be used or discarded later. This refinement continues by looking for chance images to occur, balancing and composing the drawings even with unintentional lines simply added to improve the look of the drawing without interrupting a train of thought.

Developing the design, Gehry used torn up paper and blocks of wood to model the roof. The sky-lighting or light scoops covered the entry, the warehouse type building of the west elevation, the headpiece of the gallery running underneath the bridge and the area above a canopy at low level, and were now assuming the form of an unfolding flower at different levels with great metal fabrications, curving mullions and fenestration of square glass surfaces. The design of this element was so intricate that the design team took Polaroid photographs every day to show the trajectory of the thought processes and to allow earlier thoughts to be reinstated if necessary thus giving the architect freedom to move ahead intuitively rather than logically. The strength of this flower like form and its success in its relation to the cityscape was realized and soon the 'flower' was being considered in other parts of the building. The tower or vertical feature took on several structural formations and shapes but remained indeterminate until after the success of the scheme. The competition memorandum did not ask for final solutions and it was at this stage in the middle of July 1991 that Gehry submitted his concept for the museum at Bilbao.

The Museum at Bilbao

A major factor in the acceptance of Gehry's conception was the introduction of water on to the site platform next to the river thus creating a broad, curved river walk or causeway around the north of the site between river and museum. (Vol.2.Fig.68.p.83) The water, at a higher level than the river, reflects the gleaming, metal sheathed, ship-like building rising calmly from it, with its controlled collection of sculptural wholes that become the part, in the greater whole of the city, enfolded by the river waterfront and

engaged in an emphatic flourish, with the sweeping elevated bridge and roadway to the south. (Vol.2.Fig.69.p.84) Using materials characteristic of its industrial origins, the concept of the soaring atrium and the large exhibition spaces coupled with numbers of interesting, integrated interior and exterior plazas, and through vistas that would interact with the public, were further reasons for Gehry's success in the competition.

The design of the museum now took a more detailed and concentrated move towards its final form of a vast, rising, central atrium (Vol.2.Fig.70.p.85) from where a system of curvilinear bridges, glazed lift shafts and stairways generate the communication between three floors of exhibition galleries in a concentric fashion. The central atrium feature, fifty metres high, filled with light from a series of 'light scoops' or flower-like skylights of immense dimension, with sculptural structural elements framing the glazing, highly reminiscent of cathedral construction, was to be the dominant visitor attraction into the complex. Radiating from this at ground level, the long gallery for the permanent sculpture exhibit forms a secondary waterfront feature and visual link to the bridge. (Vol.2.Figs.71.p.86 and 72.p.87)

The Guggenheim Foundation commissioned various spaces, one of which was a permanent exhibition of Richard Serra's 'The Matter of Time', planned by the architect in an elongated rectangular gallery extending eastwards, stretching under La Salve bridge ending in the vertical feature containing the lift from the bridge to ground level. This work, a staggering series of rusting shaped sheet steel structures predicated on the assumption of a mobile viewer, walking beside the fluid forms of the walls or blocks of steel, moving through thereby activating the spaces surrounding and

between them, causing a continuous series of personal sensations, inventing a journey in a prolonged sculptural moment. (Vol.2.Figs.73.p.88, 74.p.89, 75.p.90, and 76.p.91) It is a behavioural space where the spectator is in a state of interrelation with the sculpture in its setting and where the spatial sensations develop in relation to the scale of the viewer's body causing imbalance and partial disorientation. An all- embracing experience in sounds echoing from the varying placements of the steel walls and the powerful sense of danger from the leaning sheets, their association with beached wrecks and the almost taste of the rusting metal vertically streaked with soft colour and texture. What emerges from the mentally exhausting physical involvement in the work is a fundamental realization of the perception of space through an experience in time, contrasting balance and imbalance, heaviness, lightness, the reliving past experiences and a brief glimpse of eternity. Significant to the sensitivity and the creativity of the architect is the manner in which the gallery structure vertically emerges and is horizontally glimpsed as the sculpture is traversed, and becomes a perfect foil to the work.

Gehry continued to refine the design internally and externally up to the structural stage, in particular the area under the bridge and the vertical feature or reader which continued to be undefined in the architect's scheme until the end. The disposition of the plan elements more or less remained constant, the two ziggurats as in the competition phase on the south and west sides with ramps descending into the centre, but the architect continually searched for an articulation of the atrium in terms of its function and sculptural presence. At this stage he saw as his main problem the engagement of people in a physical manner through the manipulation of the

building's components into human scale whilst relating conceptually with the waterfront and the city, always focussing on the sculptural study models for this. He understood he was pushing at the limitations that the set rules of well mannered architecture gives to a certain architectural attitude and wanted to give innovative movement and feeling by making the sculptural functional in terms of use.

Functionally, the atrium had to contain two elevators, two staircases, vertical mechanical ducting and access catwalks for technicians and cleaning. It was raised in height by one third to accommodate the sculptural flower configuration, its relation in height and mass to the surrounding buildings and the bridge thus creating a great ascending sculptured spatial sensation, directing people flow to and from the galleries and providing at second floor level, a spectacular balcony look out on the city. A metaphor for the ideal city, a central space to put sculpture in scale with its surroundings and not dwarfed by its environment. A giant artist's studio composed of positive and negative curves, dynamically transposed in ever changing form, rising towers, columns, glazed shafts, merging to the roof structure, curving, hanging, partially covering the glazed light scoops, partially exposing them in a continuous movement as the floor is traversed but not preventing their flood of light which intensifies the verticals as occurs in a Gothic cathedral, all invoking a sense of God.

(Vol.2.Fig.77.p.92)

Gehry's sketches of the development of the atrium taken from the north bank show the three main components of the complete river elevation with the long sweep of the permanent exhibition gallery running under the bridge

topped with its skylight in roughly its final form but seemingly struggling with well-defined massing which was to take some time to resolve. He talks of being drained of all energy in the excitement of the creative work, when thought interchange between sketches which are ephemeral and models which are specific and then when the models become like sketches in the next phase. He struggles always with aspirations to achieve scale, what the building looks like from eye level, how the spaces between components react with the whole, which the model cannot always give. The reality of the model is a fiction, not real, only a tool, and he returns to sketches when the models take him into a blind alley, propelling his thoughts forward only to return to the model for sculptural analysis.

At a late stage, Gehry was offered a proposal by the Bilbao planning officer to move the site a bridge further west, closer to the Museo de Bellas Artes, with the Universidad de Deusto across the river suggesting that the Guggenheim museum could be combined with a projected Congress Hall making the whole development a gateway to the older part of the city southwards coupled with a park by the river. An exciting possibility was that the bridge could then be involved with pedestrians and traffic alike at two levels combining access for the people of Bilbao and visitors to the city. Gehry was tempted to discard all his work and begin again but the new project was eventually abandoned after an exploratory model was made.

A final overall scheme was evolved involving three concentrically located rectilinear galleries radiating from the atrium with, for the first time, the long gallery becoming curved like a boat form with its upswept lighting scoop peeling off from its roof. The atrium was tightened and given a

pronounced canopy and the leaf- like forms of the galleries engage the ziggurat building components to the west.

The tower structure on the other side of the Puente de la Salve, or vertical feature or high reader, to give some of its definitions was still to be resolved. Many would think that it has never been satisfactorily conceived and it will forever conflict with the high steel framed structure supporting part of the bridge in a most unfortunate manner. Gehry made many alternative suggestions for its use but it lacked a function and only limited money was available for its construction. Finally it came into its own becoming an autonomic sculptural elemental link by lift and staircase from the bridge to the river front, mutating from architecture into sculpture and back again.

The main finishing material used on the museum was titanium, rarely used on buildings at the time of its conception because of its costs. Gehry originally planned to use lead copper because it could play with the light but was a toxic material. Initially thought unsuitable because of its cold industrial look, stainless steel was also rejected in favour of titanium because of its warmth, possible variations in colour and the changes of colour in varying degrees of light. Mined in Russia and Australia it had to be rolled which was found to be a very delicate operation and could lead to a dead surface or, what was sought after, a wonderful light receptive one, achieved with careful attention to the right mix of oil, acid, rollers and heat. It took a year of research and experimentation for the architect to realise the ideal material that he wanted. Finally the sheeting used was one third of a millimetre thick with a billowy texture, that does not lie flat and flutters in a

strong wind. These characteristics are all expressed on the surface of the building with the change of colour in different light or weather conditions, the slight movement of the surface giving an affinity to its waterside location and its texture emphasizing the small scale-like skin enabling it to follow the disciplined curves demanded of it. (Vol.2.Fig.78.p.93)

By contrast, limestone is used in the more traditional masonry ziggurat blocks of the classical galleries which give functional logic to the opposition of the convulsive geometry, titanium swaddled, free-form of the contemporary galleries and atrium. Overall the imaginative use and care in selection of all the building materials and their suitable juxtaposition contributes to the sense of unity which ordinarily in such a complex structure could have been ruinous through interruption of the unfolding of the centres.

Summary

During its construction, many architects wrote of the intricate armature of the skeletal structure of the Museum and Gehry often writes of his love of construction sites and the inspiration drawn from buildings that are best when they are half done. The Guggenheim Museum survives and maintains the vigour of its skeleton, revealed in the towering, triumphant, order of the atrium that makes one want to throw one's hat in the air on entering. Gehry has written that his intention was to translate the beauty of sculpture into the building.¹³⁸ Of all the buildings analysed in this thesis the Guggenheim Museum illustrates the complexity, the sense of mystery, awe and

¹³⁸ Coosje van Bruggen, *Frank O Gehry, Guggenheim Museum Bilbao* (New York: Guggenheim Museum Publications, 1997), pp. 33-42.

fascination in its employment of space to give a complete sense of spatial unity and it is these which point to the numinous quality, the sense of ‘The Wholly Other’¹³⁹ in an inexpressible experience pointing to a culture-transcendent conception of the religious import of the building.

The architect had a distinct advantage in that he was designing a museum, basically one space, albeit for differing exhibitions. What he has produced is a total space, sympathetic, monumental, thrillingly vibrant and resonant to its purpose, in spatial groupings that are external to themselves. I describe the space designed for the Richard Serra sculpture ‘The Matter of Time’ as being a total unity with the work, and the whole building echoes this flowing, unfolding spatial unity and oneness with interpenetrating, almost bewildering spaces at various levels intricately woven around the central atrium,

In doing this, I would argue, he has created a building which lifts our spirits as the Cathedral and Chapel at Ronchamp moves us, and taking us into another realm, giving a glimpse of that conceptually- transcendent order which can be called the mystical.

Falling Water, although different in conception, displays that same spiritual affinity with the site as does the museum. Both buildings possess a sense of belonging to their surroundings; both are asymmetric and yet possess a strong balanced order due to the relationship of their centres or parts. As a result of this both display varying scale related to their purpose and the

¹³⁹ Otto, *The Idea of the Holy*, p. 25.

functions of their centres, creating a wholeness or oneness, the subjective and unapparent, the numinous.

CHAPTER FIVE

THE DESIGN OF A TEMPLE FOR THE FINTRY

TRUST.

Architect. Rodney Furze RIBA

Drawings and photographs for the Temple are found in

Volume 2. Figs. 79-86.



Japanese Zen calligraphic drawing, beautifully shows 'creation' through the simple progression from the Unity of the circle, through the triangle, to the manifest form of the square. By Gibon Sengai.¹⁴⁰

¹⁴⁰ <http://lukesdtorms.wordpress.com/2007/12/07/gibon-sengai-1750-1837>.

The Fintry Trust.

The Fintry Trust was set up in 1911 by an anonymous founder.¹⁴¹ The origins of The Trust are not made public but they draw on the translations of Plotinus made by Thomas Taylor in the eighteenth century. In Plotinus' teachings the primeval Source of Being is the Infinite One, who is absolute causality and the only real existence. The One is eternally above and beyond all things that are, have been, or ever will be, the all-sufficing Plenitude for which all things thirst.

The system of the Trust follows Plotinus in believing that reality is divided between the phenomenal, objective world or that which appears or is apparent, and the noumenal, invisible, subjective and formless, from which emanates an eternal, perfect, essence, (*nous*) which in turn produces the world- soul. According to Plotinian thought, the *Nous or Demiurge* (the Great Architect of wholes or Artificer of the Manifested worlds) is the perfect image of the One and the archetype of all existing things. It is simultaneously both being and thought, idea and ideal world, corresponding perfectly to the One, and is then the critical component of idealism, manifesting or organizing the material world into perceivability. This image, which stands between the Demiurge and the phenomenal world, created by the former but in contact with the latter in an intermediate position, is Plotinus's *world-soul* and might be said to have some similarities with the 'I' that Christopher Alexander writes of and which is discussed in the first chapter. As a single world-soul it belongs in essence and destination to the intelligible world but it also embraces all individual souls. Neo Platonic

¹⁴¹ Scott Cyril, *The Initiate: Some Impressions of a Great Soul* (published anonymously, 1920).

thought also believes that inherent in every human soul is a principle of unity, a primary idea of oneness or individuality, which makes each human being what it is, gives it its definite identity, its distinctive potentialities, and its peculiar and special capacities. The system thus argues that the human soul has a divine origin, has lost that, but may return again to the Eternal and Supreme by Mystical Participation preceded and accompanied by purification and regeneration through the heart, mind, and will to the perfective union and intimate communion with the Infinite One.

The Universal Order

At the heart of the activities organised by the Fintry Trust is a graduated system of training in what it takes to be the ancient and universal wisdom, offered under the name of the Universal Order, which was developed in the first half of the twentieth century to meet the needs of those who seek to understand the unity and coherence behind all religions and philosophies. The teachings of the Universal Order presuppose the unity of Eastern and Western religions. Those interested in the Trust accept that there is a perennial philosophy which has been the goal of mystics, saints and philosophers of all ages.¹⁴² The Universal Order is not a cult, a creed, a sect, a particular school of thought, or a political institution. It is not a secret but rather a private society since it does not seek membership but is sought by those attracted by its principles. Its training system underlies all aspects of science, art, philosophy, and religion in their broadest and most comprehensive aspects. Membership does not require giving up any beliefs

¹⁴² This is a reference to the Fintry Trust website: www.thefintrytrust.org.uk

or teachings, but it is hoped that members will come to see a deeper more universal significance embedded in those beliefs and teachings.

The Universal Order exists to promote aspirations to integral wisdom which is interpreted here as the synthesis of various aspects of knowledge, of practical and ideal utilities, and standards of truth, goodness, and beauty. Adherents believe that these ideals exert a universal appeal because all human beings in all times possess or have possessed a certain desire to attain some form of unity, goodness, truth, and beauty. By the term 'Ideal' is meant certain characteristics of a group of occurrences which combine to form a coherent or unitary whole.¹⁴³ Fundamentally, the goal is one and the pathway is triple. Ideal Unity is the goal, and the pathway corresponds with the Ideal Truth, Goodness, and Beauty which are the objects of attainment of all energies of the human mind, will, and heart respectively. The Ideal Truth is to be known, the Goodness to be lived, and the Beauty to be admired. The System which provides a means for their cultivation and realization is a synthesis which embodies the essence of the Teachings of those who are taken to be Great Masters and Trainers of Souls.¹⁴⁴

The Ideal of Unity

Members of the Universal Order believe that without an underlying unity of some kind, no system of any description can possess any coherence. The Ideal of Unity points to the source and origin of all things, to the one and only object and purpose of all life and existence, which is God, the final goal of all endeavour. Thus this ideal may become so established in the

¹⁴³ Morris Ginsberg, *On the Diversity of Morals* (New York: Macmillan, 1957), p. 206.

¹⁴⁴ The Editors. Universal Order. *On the Ideals Purpose, System for Membership of The Universal Order* (Surrey: The Shrine of Wisdom, Fintry, Brook, Godalming) Leaflet No.1.

affairs of universal humanity that it provides a common meeting ground of all diversity. It is argued that everything, in order to be that which it is, must be a unity or oneness, and that which pre-subexists that thing enables it to be a oneness or a particular thing. That which enables the principles of unity to be imparted to every conceivable thing must be a principle of infinite unity. That which receives or contains the principle of unity is not in itself the same as the principle, because the principle is prior to it. Therefore all difference is posterior to and dependent on a principle of unity which is rooted in, proceeds from, and returns to, the First Principle of all principles of unity, which is the Principle of Infinite Unity.

The Ideal of Truth.

Members of the Order believe that there is one Absolute and Infinite Truth which is God, although there are countless expressions of this. Intellect or Mind is that which 'knows'. In its highest and purest aspect as 'Nous' it is that which knows Truth by such an intimate union with Reality that the knower and the known are one. In its lower aspect Intellect as the Dianoetic Mind, or that which reasons scientifically, deriving its principles from Intellect, Nous, or Spirit, is the faculty of the Soul through which we are self-conscious and rational beings, with a capacity of gaining knowledge as a result of contact with all that pertains to the manifest universe. The mind seeks Truth, but if it doubts its capacity to know Truth, it does not approach it. There can then be no knowledge of spiritual and intelligible Realities without the consent of the mind.

The Ideal of Goodness or Harmony

The Ideal of Goodness or Harmony lies behind all movements towards the realization of order, reconciliation and harmony. Members follow regular organised methods and rules of life with the resultant elimination of all that is inordinate, irregular and haphazard. Because God is the absolute Good, it is believed that all that is manifested by the Divine Will must inherently possess potential or actual attributions of Goodness. Even that which appears to be evil is, in some sense, potentially good, for it is only evil when inordinately utilised or when not made to fulfil its good and proper function.

The Ideal of Beauty

The Ideal of Beauty is the great motive of all art because it stands for the perfect expression of that Ideal Form to which everything that is perfect approaches. It is, therefore, perfect pleniformity and the integral manifestation of Ideal Form. The Universal Order seeks to make manifest that Supreme Beauty, which is the inspiration of the creative energies of the true artist, and the realization of which is the consummation of all other ideals. Many of the great sages, including Plato, regarded beauty of outward form as the starting point and sought to rise from there to the contemplation of moral, intellectual and spiritual beauty, and the eternal beauty of God. The more inward and intrinsic the beauty, the more it characterises and shines through all that is outer and extrinsic. External forms of beauty are partial outward expressions and manifestations of inner Beauty. They are the symbols which point toward the One Beautiful God and the One Beauty of the Ideal Spiritual Cosmos. Each of these adds its quota to the beauty of the whole.¹⁴⁵

¹⁴⁵ The Editors, Universal Order, *Membership of the Universal Order*, Leaflet No.1.

Members believe that these four ideals are approachable by all human beings and help perfect the human soul in all its activities.

Ideal Philosophy

The promotion of Ideal Philosophy forms the basis of the teachings of the Universal Order, and it is believed that this enables people to approach progressively and understand the nature and purpose of the universe, including the self and all beings. The Order believes that knowledge alone is insufficient for an harmonious and healthy development, therefore the Order's System incorporates a Path of Devotion to enable a complete collaboration of heart and mind. The Path of Devotion is essentially religious because its object is to fulfil the ultimate and personal realization of all mankind with its source, that is, God. Within the Order's teachings, the ethical and moral codes, and the regenerative and ideal principles contained or implied in the great world religions are unfolded so that they may be adapted and applied to the individual's conditions and circumstances of life.¹⁴⁶

What the Order avoids

The order avoids all exclusively pantheistic, dualistic, and fatalistic doctrines, and all other partitive theories which usually result from the over-accentuation of some particular aspect of truth. It also avoids anything occult, and all tendencies toward astralism, pseudo-psychic propensities, superstition, necromancy, and passive mediumistic practices. It believes that

¹⁴⁶ The Editors, Universal Order, *Ideal Philosophy* (Surrey: The Shrine of Wisdom, Fintry, Brook, Godalming), p. 2.

the more real mystery there is in any work of art, the more intrinsic is the beauty that it holds.¹⁴⁷

In chapter two we saw that contemporary Muslim architecture is close to the principles of Neoplatonism. In the West, however, the metaphysics of Neoplatonism is so distant that it might be asked why we should take it seriously. To this I have two responses. First, I identify with a remark of J.A. Stewart, writing of the impact of Neoplatonism on the seventeenth century poets. He talks of it as a ‘mood’ which appeals to those who appreciate the endless variety of this world but are ‘yet haunted by the presence of an invisible and eternal world behind’.¹⁴⁸ In my view, the best architecture is haunted in that way. Plotinus said the architect tried to make the outward house correspond to his inner ideal, and in a way this is obvious.

Secondly, it is questionable whether any important philosophy ever really dies. The contributors to a symposium on *Neoplatonism and Contemporary thought*, published in 2002, found connections between neoplatonism and postmodern thought of various kinds.¹⁴⁹ Although that is not my interest, I note that an interest in neoplatonism is not self evidently absurd.

To the objection that I am using an outdated text, I agree, but this is because this is the text used by the Fintry Trust, and it is for them that I want to design a Temple, as explained in what follows.

A Temple for Fintry

¹⁴⁷ The Editors, Universal Order, *Leaflet No.1*, p. 12.

¹⁴⁸ J.A.Stewart, *Platonism in the English Poets*, cited in J.Gregory, *The Neoplatonists* (London: Routledge, 1999.), p. 180.

¹⁴⁹ R.B.Harris, ed., *Neoplatonism and Contemporary Thought* (New York: State University Press, 2002).

The headquarters of the Universal Order is at the retreat house, 'Fintry', Godalming, Surrey, England, which is a substantial dwelling in a rural, peaceful, countryside setting. The house is built in the manner of Lutyens in traditional materials of brick, stone and with a large, deep tiled roof. The existing temple used for rites and ceremonies is a large ground floor room which is atmospheric, but which, given increasing membership and attendance in the annual retreat season, is becoming insufficient in size. Also there is always need for additional space to provide instruction and studies. Therefore a temple designed specifically for the Universal Order's system of rites, ceremonies and training facilities, whilst providing a dramatic focal point for their celebration, forms the basis for this chapter.

The conception of the temple is based on the symbols of the Universal Order where the central element of the symbolic design is the encircled equilateral triangle, which signifies the basic reality at the heart of all things, which although primarily unitive, is expressed as the three- in -one motif running through all philosophies, religions, sciences, and arts, such as the three principles of Being, Life, and Intelligence, the Static, Dynamic, and Perfective, or the Beginning, Middle, and End. The cosmic expression of this reality is represented by a larger circle and the whole enclosed in an outer square, as the ideal cosmos and the actual cosmos respectively. The triangle, circle and square are significant symbols in all the Order's teaching and therefore their expression in the building concept is important.

Because of the significance of the triangle, square and circle, I have chosen to include as the frontispiece for this chapter, a brush painting by the Japanese artist, Gibon Sengai (1750-1837), in the Mitsu Art Gallery, Tokyo,

which beautifully shows 'creation' through the simple progression from the Unity of the circle, through the triangle, to the manifest form of the square. The circle- triangle- square is Sengai's picture of the universe. The circle represents the infinite, and the infinite is the basis of all beings. But the infinite in itself is formless. All humanity is endowed with senses and intellect and demands tangible forms, hence a triangle. The triangle is the beginning of all forms to enclose space ,its first point is 'one' and although one can define a quantity, it can in its other sense, represent the creator, the first principle of absolute unity. Its second point, or 'two' symbolically represents the principle of Duality. It is the power of multiplicity that reveals unity. The number one is only definable through the number two. At the same time it has a formal sense in the representation of a line, in that two points define a line. Its third point, or 'three', also defines a quantity, but as a principle it represents the Trinity, a vital concept. With three, a qualitative transition is made from the pure abstract elements of point and line to the tangible, measurable state of the triangle, which acts as the mother of form.¹⁵⁰ Out of the triangle first comes the square or the triangle doubled and this doubling process goes on infinitely and we have then the multitudinous things which Sengai calls 'the ten thousand things', that is the universe.¹⁵¹

This, then, is the basis of the planning for the temple, the forms of the foundation of the universe on which we now have all kinds of things infinitely formed and varied.

¹⁵⁰ Robert Lawlor, *Sacred Geometry* (London: Thames and Hudson Ltd, 1992), p. 12. Also Ardarlen, *The Sense of Unity*, p. 27.

¹⁵¹ Gibon Sengai, *Genkan Temple* (Kyoto: Takagamine, 2007).

The site location cloisters/ambulatory

The site chosen is at the Northern end of the house where an enclosed service courtyard exists which can, by the removal and relocation of the existing boiler house and storage buildings on its Eastern side, can become an open sided court and the cloisters/ ambulatory to the temple which projects out from this court yard onto the Surrey countryside to the East as a prominent symbol of the Universal Order. (Vol.2. Figs.79.p.95.and 80.p.96)

It is essential that a future temple should be seen to be integral to the existing house, not as a separate building on land near the house, although there is much of this available. The site is therefore chosen to allow the temple to be felt partially enclosed by the house, to provide the same unity and core to the activities of the Order, with a prominent statement for all that the Order assumes. The selection of this site is the key to the whole mystical conception in that the temple should be enfolded within the confines of the retreat house, not as a solid extension but should be part of a serene mystical, external space belonging to the house as a womb from which the temple could expand into the immeasurable air, outwards and upwards as in the great Gothic cathedrals. This space is important to the whole conception with a mystical quality that contains the intense perception of God in a silent, quiet atmospheric manner, which attunes the worshipper to that condition before entering the darkened, seductive atmosphere of the crypt. Meditation is an important part of the Universal Order's teachings and as a precursor to giving up the soul, in quiet humility, to God.

The preparation for meditation is paramount and the design of the space for this is pre-eminent and is created in two forms. The first part is as a cloistered walk, a semi-covered space, confined and close, with related landscaping to concentrate and focus the mind whilst always being conscious of the temple's proximity and its entrance. Then there is the part where the cloisters become an open ambulatory when the mind is thrown into a full experience of the breath-taking open countryside and of all God's creation before returning to the closed cloistered area. Meanwhile there are the three positions within the cloistered/ambulatory circuit for a pause in quiet thought and contemplation of the mystical union of the soul with God, whilst within the shelter of the roof of the temple. "Neath its shelter is my soul now secure, and in Strength, Life and Health made complete."¹⁵² Each of these screened areas contain a circular pool central to the seating which take rainwater from the processional area around the temple at the upper levels via gargoyle spouts and chains down to water level emphasising water as a symbol of immortality and purity, and as an essence of sacrifice. The screens are in stone and are semi-circular to give an embracing sense of enclosure to maintain the quiet, meditative experience of the cloister.

The cloistered area has no overlooking windows from the house and is therefore quite private and secluded. The entrance to the crypt is placed at one corner of this area and the surrounding volumes related to the temple and the spaces on either side are varied through the lowered roof of the cloister which gives a sense of enclosure to the walk plus an appreciation of the expansion of space beyond to the landscaped garden and the free air. The meditative sensation of the cloistered area and ambulatory is created

¹⁵² The Editors, Universal Order, Part of Nocturne Rite in relation to the Temple.

and maintained by its apparent recession and containment into the body of the retreat house. This is the main core of the conception with its receptive space beginning the aspirant's journey to the ultimate act of worship in the temple.

The genesis of the temple

The courtyard is extended outwards in the form of a double square wrapped around the ground floor element of the temple, or crypt, which is also in the form of a square. (Vol.2.Fig.81.p.97) The perimeter of the court yard and the temple then becomes the cloisters, leading to the temple entrance from the main house and from there the ambulatory with its screening walls that give occasional glimpses to the external world, complete the circuit.

The ground floor element of the temple represents symbolically, the microcosm, that is humanity, the little Cosmos or world, and the epitome of the Macrocosm represented by the temple above. Thus the Brothers and Sisters of the Order rise symbolically from the microcosm to the macrocosm or temple at the higher level, which represents the Great Cosmos or World with all orders, planes or conditions of existence..

The ground level plan is square in form with a large central square room or crypt for assembly purposes and preparation for ceremonies and also at certain times, forming part of celebratory events. Within the periphery of the crypt are small, triangular cell- like discussion rooms and a private room which are used in the retreat season for groups to discuss the teachings at whatever stage they have reached These spaces have top lighting from triangular windows to prevent any visual intrusion.

From this assembly at ground floor level, in a relatively soft natural light, the circular stair tower is entered, again softly lit from above with its source not immediately apparent, until on entering the temple, the flood of awe-inspiring light from the glass pyramid roof, soaring into the Empyrean is experienced, creating much the same sensation of light when entering the great Gothic cathedrals: “and the roof surmounteth all as a pyramid, touching the borders of Eternity with its apex.”¹⁵³ The square temple is turned to face to the East where the altar is placed, whilst the Sisters and Brethren are seated around the perimeter with the glass brick floor in the centre. “Foursquare is the house; the Universal Ideals are like unto its walls.”¹⁵⁴

The temple is placed at first floor level (Vol.2.Fig.82.p.98), entered from a circular stair tower with high level slit windows, and on the centre line of the altar in an easterly direction. It is also in the form of a square but turned forty five degrees from its centre to bring one of the flat sides of its pyramidal form facing an Eastern aspect. The temple is surrounded by a wide walk, an external ambulatory for open air processional purposes at first floor level, screened by an unusually high balustrade for privacy. The temple’s walls internally form a solid square base for the high, glass pyramid of light. The walls provide a solid backing to the seating around the perimeter giving privacy to the aspirants and a feeling of enclosure is experienced by the low, flat, overhang of the roof before it rises into the glass pyramid. (Vol.2.Fig.83.p.99)

¹⁵³ The Editors, Universal Order, Part of the Nocturne Rite.

¹⁵⁴ The Editors, Universal Order, Part of the Nocturne Rite.

The base of the structure at ground floor level is the crypt, in a heavy, solid construction of polished stone, battered walls with triangular angled windows lighting the instructional cells at the four corners.

(Vol.2.Fig.84.p.100) Externally, large, dramatic, triangular shadows are thrown onto the walls from the roof overhang at the temples corners.

Internally the central area is unlit to the external world but derives its light from the floor of the temple above, giving the mystical perception of belonging to this space whilst not being physically within its confines. This is in the form of a soft, diffused, translucent light from a thick glass brick floor of the temple, again in the form of a square, giving no visual penetration, only the perception of movement from above through the subdued light allowed to penetrate. (Vol.2.Fig.83.p.99)

At night the light in the crypt can be increased to provide a single light source for the temple above through the floor, thus giving a very subtle, soft light to the proceedings. Then, the only main light visible will be from the temple as a gleaming prism set above the ground, symbolically detached from the earth. All other external lights are soft and concealed within the surrounding landscaped areas of the cloisters. “The house of the soul is a Temple of God, its foundations built upon a rock, but its pinnacle soaring into the Empyrean.”¹⁵⁵ (Vol.2.Fig.85 p.101)

The four square walls of the temple forming the base to the glass pyramid are of a suitable height to act as screening from the immediate exterior and surrounding countryside and are finished in polished stone for carved inscriptions, quotations or decorations that may be chosen and therefore the

¹⁵⁵ The Editors, Universal Order, Part of the Nocturne Rite of the Universal Order describing the temple as a house of the soul, eternal in the heaven.

subject of later design. The altar is placed on the axis of the entrance door and in the East, flanked by the Celebrant and the Lector, whilst the central glass floor area will glow with diffused light from the crypt beneath when ceremonies are in progress.

The central idea for the temple begins with a meditative walk in the part cloister and part ambulatory for thought in a quiet, segregated place away from the bustling movements in the house, to induce a spirit of calmness and separation from the world, and a suitable preparation of the mind before entering the temple structure. To assist in this preparation, the rectangular cloister/ambulatory contains the three small, partially enclosed shelters previously mentioned where one can sit in quiet meditation, overshadowed from above by the temple structure which overhangs the area, providing a spiritual link with it from above, instilling a sense of belonging or attachment to a sacred form which is the place of worship.

The temple and its approach is the result of a managed relationship of parts to form a spatial wholeness in a conscious unity of oneness. The structure is surrounded and entered from a sculptured, landscaped space designed to induce a quality of peace and receptivity to God, and from there into a relatively confined, orderly, quiet and gently lit space, flowing and leading from there into a circular, upward movement to the suddenly contrasting, uplifting space and light of the temple for the celebration and worship of God. Spatial sensations are gradually built up from the moment of entering the court yard and cloisters by varying the volumes and controlling light in a similar manner to the great cathedrals and also to the chapel at Ronchamp which is discussed in previous chapters.

The conception of the temple is one of wholeness, unity and simplicity, with the use of traditional materials, and no attempt to copy any adjoining features or styles in the existing house, but to relate with them in use of material, colour and shapes such as the prominent triangular dormers of the house and the battered section of the walls. (Vol.2.Fig.86.p.102) This and the general proportion and massing of elements, maintain a sense of oneness and a unity with them in spirit and in the natural surroundings of a heavily landscaped site with mature trees, generating a sense of mysticism and aspiration within all beings to God. In elevation the transition from the solid base of polished stone is taken up in a ziggurat form with the sloping sides of the balcony and upwards again with the sloping sides of the temple base. This transition of elements or centres results in a unity of form, assisting the proportions of the structure. The creation of centres in the form of squares, triangles and circles, all of which are extremely significant in the teachings of the Order, add up to a further sense of unity, bringing the architecture to a completion and a oneness with God in its experience. The use of space either defined physically with the structure or 'felt' in the awareness of the temple relative to the house and the site in general, gives a sense of the numinous and a quietness of mind to promote the nearness of God. The use of light to generate mystery as for example in the crypt, and of the immediacy of the unseen temple through the translucent lighting of the ceiling gives a sense of awe and connection which is accentuated by the awakening brilliance of light when entering the temple above.

Finally, the temple is designed to promote a journey or the mystic path in much the same way as Le Corbusier introduces us to his chapel at Ronchamp through a mystical climbing of the hill and the sudden impact of

the appearing building at the summit. In this case there would be an immediate awareness and presence of God upon entering the cloistered area inducing a personal meditative state and a preparation for entering the mystical environment of the crypt, with a final great illumination and joy in the entrance to the temple itself, a sensation also created in the cloisters of the great cathedrals with their seductive ‘felt’ space. Thomas Barrie notes that the shaping of religious experience consists primarily of the formation of a spiritual path to a sacred place. In this way the individual’s spiritual journey is re-enacted in the ritual of entry, and the moment of arrival at the sacred place brings the journey to a conclusion, even if only for the duration of the ceremony.¹⁵⁶

Concepts or Ideas, The Temple, and the Universal Order

Ideas are the great realities supporting the whole of creation, because they are direct expressions of the purpose of its Author. The important thing is that there is a cause or author of some sort possessing an intelligent purpose which can be expressed in the creative act. The first stage in this case, the conception of the temple, is the production of the ideas that will ultimately create and be incorporated in it with the laws and powers by which it can be actualised. These laws and powers are secondary in potency and reality to the Author itself and are much more real and powerful than any of the creation that we contact. The Fintry Trust teaching believes that,

“Ideas are real, unchanging and eternal potencies which may be touched by the mind, and constitute a great ordered scheme of differentiated, inter-

¹⁵⁶ Barrie, *Spiritual Path, Sacred Place*, Conclusion.

related primary, secondary, tertiary ideas which govern all stages of creation, such as can be classified by the human mind.”¹⁵⁷

The Universal Order recognises that there is an ordered scheme of ideas governing all stages of creation that we can classify into species and genus of different degrees of universality which shows that these groupings exist. We do not create these relationships but we discover them through an ordered scheme which may be known by the inquiring mind. This is the theory of Forms or Ideas which is the central doctrine of Plato as a philosopher in his late period where,

“eternal transcendent realities directly apprehended by thought are contrasted with the transient contingent phenomena of our empirical existence. The Forms fulfil a number of barely compatible functions, appearing sometimes in the role of universals, sometimes as ideal standards.”¹⁵⁸

Ideal Philosophy demonstrates through these principles, that the whole scheme of manifestation is based upon an essential unity, whereby it is held together as a working whole.

Ideal Philosophy in the sense of enabling the serious thinker to approach progressively and understand the nature and purpose of the universe, shows that nothing can really be conceived without the consent of the mind, and any faith that is contrary to one’s sincere convictions is spurious and likely to fail in an emergency. It also shows that the material universe is basically related to a unity and that there is also a basic relationship between the mind

¹⁵⁷ The Editors, *Universal Order, Ideal Philosophy*, p. 2.

¹⁵⁸ Antony Flew, *A Dictionary of Philosophy* (London: Pan Books Ltd, 1979), p. 273.

and the operative ideas of the universe. Ultimately this unity derives from one Great Unity which is the source of all and which clearly surpasses all human kind, thus causing a vast intervening realm between us and this great source which remains an unbridged space for both the religionist and the materialist, which is the great unknown or the essentially spiritual realm of ideas. Ideas are real and tangible as has been previously mentioned and ideas closely related to material things are real, whilst those of a higher character and nearer to the first source can be equally or more real. Material science, although it is forced to use these ideas, does not appear to recognise them in the true sense where surety would arise from the fact that these ideas are permanent and unchanging, and therefore more reliable, more true and knowable than the material things with which it ordinarily deals. From this it may be established that by Ideal Philosophy, the unseen spiritual realm, within which is an immense hierarchical range of ideas graduated in scope or universality and also in power from the profundity of the First Source to the lowest or last of existences, can be traversed.

Christopher Alexander concludes his four books on the Nature of Order recognising these principles when he expresses his genuine desire for all things to be one, including himself as well as the things he is making. He refers to the feeling in the ground and the need to be sensitive to what it is, the fine tuning of the eye, the ear, all feelings finely tuned to the possible conditions in which real oneness could occur, and the elimination of the self to the preoccupation of receptivity to all these subtle substance. In this search for unity or oneness, all desire for separateness has to be eliminated and replaced with the struggle to become one with the world, as a maker of

things, to the Absolute Maker of Things.¹⁵⁹ Alexander, as an architect, finds the need to give up the desire to be separate, distinct, famous, and identified, in search of perfection or at oneness with God through his conceptions. He believes that from a practical point of view there is an empirical connection between building and religion because religious disciplines are those which have taught people how, practically speaking, to lose themselves, and how to be willingly 'not-separate'. Few other disciplines have taught this essential prerequisite of teachings other than the great religions. Alexander's 'not-separateness' is visible in any building that has life which arises only in the state of mind of the maker, not to be separate from the world, and it is this state of mind that produces the deepest form of order.¹⁶⁰ This concept or idea cannot be realized in a building without the absolute removal of the individual ego because the concept cannot be separated from anything else, and it attains 'not-separateness', becoming at one with the things that surround it. At the same time, because of this unity, it will, "stand out, shining with an extraordinary power which could never be reached under any other circumstances."¹⁶¹

Then perhaps it can be said that the central mystery of the universe is that things become more precious and individual as they project oneness and unity. This possession within architecture is accentuated by the unification of its internal spaces linked inextricably with its external spatial relationship or the total 'felt space' of the concept. The temple finds a religious import in its application of categories of a particular religious or philosophica

¹⁵⁹ Alexander, *The Nature of Order, Volume 4*, p. 308.

¹⁶⁰ Alexander, *The Nature of Order, Volume 4*, p. 309.

¹⁶¹ Alexander, *The Nature of Order, Volume 4*, p. 309.

tradition appealing to a culture or tradition-relative concept, linking it in mystical terms.

A summary of the thesis

I have argued that the central concern of architecture is multiplicity and unity. Multiplicity comes from the Latin *multus*, plus *plicare*, to fold, hence ‘many folds’. The clue to the dialectic of multiplicity with unity is that its ‘many folding’ only gives the impression of many, because then its ‘extension’ or its revealing is made plain and its unfolding becomes clear.¹⁶²

This possession of order and the multiplicity of unity within architecture is accentuated by the strength of what Alexander calls its centres in drawing unity from other centres and from the unification of its internal spaces linked inextricably with its external spatial relationship. The relationship of centres to one another is an instantiation of the order which is fundamental to all reality both according to Neo Platonism and to the artists and physicists cited by Alexander. Both for ancients and moderns the fact of order discloses the divine. Bad, unthinking order – bad architecture – can make the divine less easily apprehended. Good architecture, which draws on the order which underlies all things, can make the divine accessible. This has been my argument. I have tried to show how this works through analysis of some of my own work and through analysis of four great works. I have also set out my design for a worship place, a ‘temple’ for a group which still takes Neo Platonism seriously. I hope to have made the case that architecture can, when practised properly, lead people to a sense of the

¹⁶² Paul Alan Johnson, *The Theory of Architecture*, p. 107.

beauty and unity behind all phenomena which theists call 'God'. That, in my view, is the mystical experience of architecture.

I shall give the last word to le Corbusier. He wrote:

“Architecture is a series of successive events going from analysis to a synthesis, events that the spirit tries to transmute by the creation of relations so precise and so overwhelming that deep physiological sensations result from them, that a real spiritual delectation is felt at reading the solution, that a perception of harmony comes to us from the clear-cut mathematical quality uniting each element of the work to others and the whole to that other entity which is the environment. It is then that everything that serves, everything that is useful is transcended. An overwhelming event: creation. A phenomenon of poetry and wisdom that is called Beauty.”¹⁶³

¹⁶³ Le Corbusier, *Precisions on the Present State of Architecture and City Planning*, translated by Edith Schreiber Aujame (Cambridge, MA.: MIT Press, 1991.), p. 160.

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