

Russell Walden

# TRIUMPHS of CHANGE

Architecture Reconsidered

Peter Lang



This book is born out of a sense of scepticism with self-indulgence in architecture. It seeks a new prescription for readdressing architecture as an expression of human need. *Sense, Sagacity* and the *Sublime* define the architectural realities of its organizing principle, while *Gods and Goddesses; Princes and Prelates; Corporate Clients and Citizens* identify strategic shifts in Western Civilization. The book carries the judgment of democracy derived from Greek Goddess Athena. This is followed by the measured building world of Le Thoronet which advances unswervingly towards the Paris Opera – the greatest processional triumph of the 19<sup>th</sup> Century. The finale deals with Frank Lloyd Wright at “Falling Water”, Le Corbusier at Ronchamp, Renzo Piano at Kansai Airport, Japan, and Santiago Calatrava’s winged vehemence at Milwaukee, USA.

The book concludes with a thoughtful reminder – emphasizing the values of human engagement while providing philosophical support for the social contract in architecture.



**Russell Walden** carries a Doctorate from the University of Birmingham, and is an architect with designed and built buildings in England, Scotland, and in his home country New Zealand. He is also an elected Fellow of the New Zealand Institute of Architects. Recently retired from Victoria University of Wellington where he taught History and Design. His books include (ed) *The Open Hand, Essays on Le Corbusier*, 1977 and 1982; *Voices of Silence*, 1988; *Finnish Harvest*, 1998.

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PETER LANG

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*Dedicated to Helen –  
and to my students far and wide.*





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# Triumphs of Change: Introduction

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In many senses this is a European book with a humanitarian message. In a radically changing world *Triumphs of Change: Architecture Reconsidered* seeks a prescription for readdressing architecture as a practical activity embracing human beings. Faced by the market economy of speculative developers who want to turn architecture into a saleable commodity – destroying the architect's discipline in the process – *Triumphs of Change* provides a powerful affirmation against such an outcome. It is not an architectural history per se. But it does take up the humanitarian challenge, an idea first mooted in Classical Greece and it uses this democratic energy to advance an architectural narrative – from antiquity to the 21<sup>st</sup> century – drawing upon civilizing examples of great architecture in history. Read today in a world context of volatility a new cutting edge of inspiration in architecture is long overdue.

With the benefit of humanitarian insight, a humanized world-view provides a clear alternative to the urban ugliness which pollutes most cities of the world. In activating such a perspective, I have taken the opportunity to critically reconsider the discipline in a more realistic manner free from artificial labels, stylistic concerns, and the empty rhetoric of shape-making. This disciplinary boundary does not in itself rule out criticism. But writing a readdress with this title invites dispassionate scrutiny, allowing distinction in architecture to be intellectually discussed and judged with the perception it deserves.

Arguably art history does not possess the tools to comprehensively engage in a multi-faceted discipline of architecture, so I have sought a new heterogeneous grouping using valued notions of *sense*, *sagacity* and the *sublime*. This allows me to carefully redefine the realities of architectural creation in history. *Sense* equals the tangible craft of good building. *Sagacity* seeks the intelligent application of sense to a specific situation and – while these two concepts are to some degree quantifiable – *Sublimity* encompasses the intangible in content: political, social, economic, and the very difficult art of actually building buildings that work. Any writing that does not deal with the realities of architecture simply misses the point.

While one of my concerns has been to convey much of the narrative significance in the social, intellectual and cultural history of the period, I have used my Prologue to establish an essential framework for understanding this critical development across history – from democratic Greece to some dynamic buildings of the 21<sup>st</sup> century. Into this perspective I have positioned original buildings that personify examples of humanitarian liberation. I have tried to write about these in an enjoyable manner which personifies the organizing principle.

Of necessity this involves rejecting most of the art history labels that fill the majority of books on architecture. Such an approach is as compelling as it is urgent if architecture is to advance as an intellectual discipline. With this adjustment in mind, I have taken the opportunity to divide Western Civilization into three people centered strands: *Gods and Goddesses*, *Princes and Prelates*, *Corporate Clients and Citizens*. This allows one to identify how change in architecture impacts upon global achievement, and how strategic shifts in Western Civilization affect the condition of architecture across space and time. These divisions are all *people centered* and embrace ideas of how buildings are made, work, and become imaginatively useful.

While my *Prologue* and *Epilogue* provides the reader with the contours of what this book is about, the individual buildings in the central part of the manuscript identify human strands in architecture. These investigations have all been researched and photographed many times over a long period of my professional life. While these selections are avowedly personal my *Prologue* defines an accelerating situation of reference and invention in Western Civilization.



Three sections define the central chapters: *Gods and Goddesses*; *Princes and Prelates*; *Corporate Clients and Citizens*. These open distinctly with *Athena's Immortality: A Democratic Goddess* which personifies the self-governing world-view of the Parthenon. Under the visionary genius of Pericles, Athens epitomised the clearcut European dream of what democratic architecture could and should be. *Princes and Prelates* follows with a measured Cistercian complex: *Unadorned Stones: From Cluny to Fontenay and then to Le Thoronet*. From the medieval world of southern France to the 19<sup>th</sup> century is a long span of geometrically based building in stone, and this unswervingly culminates in the Garnier's Paris Opera – the greatest processional prize of the 19<sup>th</sup> century. From the perfection of execution of Le Thoronet's stones to the sensuous delights of the Paris Opera, it is hardly possible to imagine an even greater contrast in architectural positions. Finally the *Corporate and Citizens* world opens with Frank Lloyd Wright's "Falling Water" in the wilds of Pennsylvania – a melodic retreat interpreted within the intensity of Beethoven's *Pathétique* piano sonata. Not surprisingly the warmth of music has become a sub-theme within this book since its heartrending links with humanity. The spiritual hunger of Beethoven rises again with Le Corbusier's curvaceous joy at Ronchamp. By the end of the 20<sup>th</sup> century, and in a time of great turmoil Renzo Piano completes an astonishing Japanese testament at Kansai Airport. From the wave-like canopy of Piano's stainless steel roofing panels, to the layered ribs of Santiago Calatrava's Milwaukee's Art Gallery communicates a sense of exultation with the melodic genius of Mozart's late clarinet concerto. Both examples display not only a development in technique, but also a growth in human sensibility and thought. Without doubt Calatrava's hovering creation moves architecture into a new age – and like the uncorking of a good bottle of champagne – summarizes the dynamism and cultural impulses of the dawning 21<sup>st</sup> century.

*Triumphs of Change: Architecture Reconsidered* concludes with the philosophic significance of social and ethical concerns in architecture. The sensibility of a growth in human engagement identifies the social contract as the future hope and imaginative existence of the architectural profession.

Russell Walden, New Year's Day: 2011.

## *Prologue*



# Architecture: Another Perspective

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[...] it is not difficult to see that ours is a birth-time and a period of transition to a new era. Spirit has broken with the world it has hitherto inhabited and imagined [...] Spirit is indeed never at rest but always engaging in moving forward.

Georg Wilhelm Friedrich Hegel [1770–1831], *The Phenomenology of Spirit* [*Die Phänomenologie des Geistes*], Bamberg and Würzburg, 1807.

The purpose of history is to impart instructive truths, not to satisfy idle curiosity, and this can only be done by studying the peaks of human achievement, not the valleys.

Isaiah Berlin, *Against the Current: Essays in the History of Ideas*, Edited by Henry Hardy, Princeton University Press, Princeton and Oxford, 2001, p. 90.

This book is about an inclusive search for human order and direction in a mutable world. Based on a lifetime's experience in architecture, teaching, travel, music, and photography, this book seeks to provide a solid basis on which to build a human future. It is born out of a sense of scepticism with the iconic trends of “signature architect's” and their developers, and the standard architectural discourses which fail to address architecture as an intelligent activity embracing human beings.<sup>1</sup> *Triumphs of Change* attempts to formulate a creative way of identifying great architecture throughout the ages, free from the conceptual baggage of fashion and art-historical minutiae.<sup>2</sup> Architecture as an intellectual discipline is not a dead stylistic formula – it deals with people, life, sensibility, and human energy. By maintaining an open dialogue with great architecture of the past, we may establish a way of evaluating creativity in architecture that expresses human realities, aspirations, and is intimately connected to the needs of people (Fig. 1.1).

## Reasons for seeking a change

Art history and – by association – architectural history were forced into the same straitjacket of historical labelling during the 18<sup>th</sup> and 19<sup>th</sup> centuries. Architectural history is still mired in these modes of categorisation, now over two centuries old.<sup>3</sup> Labels borrowed from art-history – ‘Romanesque’, ‘Gothic’, ‘Renaissance’, ‘Baroque’ and ‘Rococo’ – prop up an unwieldy chronological structure that has long outlived its usefulness. Contemporary art-history, however has moved towards a more relevant and flexible approach, recognising that there is far more to be learned by investigating the diversity of art production in any era, and the wide variety of the functions and meanings of art, rather than contriving similarities that conceal more than they reveal.<sup>4</sup>

Art-history is a fundamentally different study to architectural history. Art-history deals for the most part with the surfaces of painting and sculpture that change comparatively little over time. Though the commentary surrounding a particular piece of art, or its physical context, may radically alter the ways in which it is seen, the art object itself rarely does, unless that is the intention of the artist. However, architecture always exists in four dimensions, length, width, height and time<sup>5</sup> and is constantly changing to fulfil new functions or accommodate new ideas and technologies, or fluctuating environmental conditions. Art-history simply does not possess the tools to engage meaningfully with the multi-

faceted discipline of architecture. Yet architectural accounts continue to employ 18<sup>th</sup>-century methodology, and contemporary architects continue to ignore this straitjacket. The great risk is that the architects of the future will ignore the lessons of the past, and make buildings empty of voice or vision.



Fig. 1.1: Thorncrown Chapel, Eureka Springs, Arkansas, USA, 1980. Architect: Fay Jones. A kaleidoscope of timber, leaves and sky – seen through tall clear walls – animated by top light. Photograph: Russell Walden.

## Triumphs of Change: A Human Approach

I want to rethink the position of architecture in history by employing the values of *sense*, *sagacity* and the *sublime*. This allows one to approach and define great works of architecture, free of the tired convention of stylistic labels and thought. *Sense* applies to the tangible craft and technology of good building, addressing structural endurance, effective systems and the intelligent use of materials. *Sagacity* is about wisdom and experience, and deals with the application of sense to a specific brief. Sagacity can be



evaluated by the success of a building's relationship with its occupants and environment. The *Sublime* is a difficult concept to quantify because it is always open to interpretation and influenced by cultural and individual sensitivities. Sublimity embraces the poetic qualities of intuition and emotion in architecture. Sublime architecture captures the imagination, and elicits a profound, human response. It is the manifestation of the senses and spirit in built form; it is about music, it is about art, it is about philosophy, and it is about life. Without sublimity, architecture is either stone dead or dead stone.

In support of the need to avoid categorisation by style, I have divided the history of western civilisation into three, loosely chronological, ideological bands. They are: *Gods and Goddesses*, *Prelates and Princes*, and *Corporate Clients and Citizens*. My purpose is to identify the main temporal, paradigmatic shifts in western culture. By identifying how these shifts became evident throughout the history of architecture, we are able to engage with the power of architecture to influence both cultural and individual experiences and insights.

An essential tenet of this book is the belief that great architecture is grounded in content, humanistic, political, social and economic. This book is also about the extremely difficult art and science of building buildings that work technically and holistically. Any writing that does not deal with the factual and emotional realities of what architectural culture is about simply misses the point.

## Meaning and Significance

*Triumphs of Change* is a book about the humanity and complexity of some of the greatest narratives of architecture in history. The poetic unity of distinctive architecture may be exceptionally difficult to explain; nevertheless an attempt must be made to understand its enduring qualities. Frank Lloyd Wright was in no doubt about the authenticity of distinctive architecture. (Fig. 1.2) Wright believed deeply in the idea that: "Architecture is that great living creative spirit which from generation to generation, from age to age, proceeds, persists, creates according to the nature of people and their circumstances as they change. That is really architecture."<sup>6</sup> As a guiding principle, enduring architecture celebrates the primacy of the human spirit functioning within the technological and cultural parameters of a specific time and place.



Fig. 1.2: Herbert Johnson Residence, Racine, Wisconsin, 1937.

Architect: Frank Lloyd Wright – who regarded “Wingspread” as the best-built and last of the Prairie houses.  
Photograph: Russell Walden.

Human imprints also reveal a vivid and interactive vision within the currents of history, constantly opening up new ways to review our environment. The acceleration of change induced by a technological society demands that architects work within a continuum of shrinking budgets and expanding

building codes and zoning laws. By definition, great architecture that carries the spark of genius is a rare commodity, but it does exist. Courage and imagination are required for it to evolve and endure, but in the end a living architectural masterpiece establishes its own rules and enables men and women to seek their own answers to life's ultimate questions. The very idea of enlightenment in architecture is a major factor in defining cultural patterns in history. Compelling buildings in light, space and materiality cannot be evaluated by science alone; they arouse feelings of awe, wonder and exultation. The moral value of important architecture lies therefore in the exercise of a glorious intelligence, vividly superimposed against the unpredictable storms of worldly existence.<sup>7</sup>

While the monastic impulse of St. Bernard called for "things of greater importance" this uncompromising vigour can also generate change in architecture.<sup>8</sup> In an age that makes sense of the seeming paradox of virtual reality, people still need human things to experience and identify with, for no culture with an ordered existence can function properly without some illuminating forms of classification. In this instance three essentially different eras of triumphant mutability in architecture can be identified. The vitality and force of human architecture provokes questions and answers to the paradigmatic emphasis of the ancient world of *God and Goddesses*, the self-congratulation of *Princes and Prelates*, and the contemporary dynamism of *Corporate Clients and Citizens*. While it may seem that in architectural culture the cascade of patron-praise is never-ending, people need to come first in design activity.

A nation's heritage can be read and interpreted by examining its most meaningful achievements at different points in history, and it is imperative – especially in times of disillusion, despair and confusion – that we do not shrink from recognising creativity in architecture. At an abstract level, great architecture is never a 'quick fix', but it can be a permanent route to higher ideals and intellectual strength. Enduring architecture can be viewed as an illustration of the qualities that animate and sustain the character of humanity.

Recognising the significance of great architecture has always been a challenge, especially in audacious works by those who design in the present, but dream of the future. Where innovative architecture is successful, and recognised as such, it stands for much more than a utilitarian or merely functional commodity. It involves relationships and connections, and by crossing boundaries it communicates on a variety of levels. Making architecture should not be a self-centred or purely design oriented occupation, isolated and stripped of meaning by disassociation with its human context. A building that achieves humane status is always a provocative celebration of shared meanings.<sup>9</sup> In the end, enduring works of the imagination that exalt the human spirit become the joyful signs of genius operating within, and occasionally transcending, the vicissitudes of history.

Architecture has embarked upon the 21<sup>st</sup> century amidst confusion and plurality; a position that is reflected in much of the fashionable discourse on architecture and in the chaotic condition of our built environments. Cities are consumed by unimaginative transport strategies and political agendas that either ignore or clash with the needs and values of their inhabitants. Social and environmental ideals are brutalised by inner-city developments that serve only to externalise their occupants' isolation. The long-term value of people orientated architecture is not cost effective in the short-term. Cheap, sterile urban developments make developers rich – and we all the poorer for such negativity (Fig. 1.3).

A prime case in point of anti-human urban development is recounted in Professor Clausen's history of the Pan Am building in New York, subtitled 'The Shattering of the Modernist Dream'.<sup>10</sup> Though the main events took place from the fifties to the seventies, the central theme of conflict between public and corporate needs is ongoing. This clash of values and priorities occurs in cities around the world every day.<sup>11</sup> One of the most disturbing inconsistencies exposed by Clausen is the cynicism of the building's architects and consultants concealed behind a façade of pseudo democratic rhetoric. The architectural firm in charge of the project was Emery Roth and Sons who were, in the words of Ada Louise Huxtable, "as responsible for the face of modern New York as Sixtus V was for baroque Rome".



Fig. 1.3: The urban reality of Park Ave, Manhattan, New York. The Pan Am building at the end of the avenue defines the "demise of modernism". Photograph: Russell Walden.

Described fatuously by *Business Week* as an 'executive landmark',<sup>12</sup> the Pan Am building [now the MetLife] generated a ground swell of public criticism and controversy that was largely ignored by its developers and the civic bodies entrusted with urban planning. Its architects trotted out the techno/economic determinist argument that sensitive, aesthetically pleasing architecture is too expensive, and that academics critical of the design were elitist and unrealistic. One of those historians was Vincent Scully, whose essay entitled 'Death of the Street' – outlining the changing nature of post war Park Avenue – was highly critical of the Pan Am megalith.

The same journal that published Scully invited Richard Roth to give the architects' perspective on the new-look Manhattan. He emphasised the political, economic and legal prerequisites that had a bearing on contemporary architecture, and argued that: "In the past, it [architecture as an art] had represented the image of the patron; today it expressed the desires of the masses. Whereas this may not be good for art, [he said] it was not bad for people." He added soon after that "[...] no matter how much critics carped, that was the way New Yorkers wanted it. New York was congested, but congestion was good for business."<sup>13</sup>

Influential architectural critic Ada Louise Huxtable offered a stinging analysis when she wrote that the Pan Am building was a "colossal collection of minimums. Its exterior and public spaces used a minimum of good materials of minimum acceptable quality executed with a minimum of imagination." She concluded that the Pan Am building was 'a lesson in how to be mediocre without really trying.'<sup>14</sup> In stark contrast, and representing the opposing perspective of a corporate patron, was Nelson Rockefeller's grandiose observation made when the building opened in 1963. He said that the Pan Am "rose over the city as a symbol of the genius and the creativity of the free-enterprise system."<sup>15</sup> Rockefeller was no architect, but he was one of the free enterprise system's greatest beneficiaries.

Despite the spiritual bankruptcy and pessimism of buildings like Pan Am, the positive examples of architectural achievement throughout history still provide timeless challenges. While planners and developers have seriously eroded the power of the architectural profession, the special status of architecture should never be forgotten. Architects have a continuing responsibility to explore uncharted territory and to use their skills to participate in a dialogue with discord in society. Architects have a chance to revitalize the barren fragments of urban life because they have unique opportunities to express a visionary universality. This is the humane summons before the profession today.

It is important to remember that architectural history has bequeathed to us many examples of human ingenuity and courage in adversity. In some times and places, the elevated consciousness of gifted individuals has given architecture its ethical direction. However enduring architecture needs more than the gift of understanding and the poignancy of temporal relevance; it needs the miracle of survival. Frank Lloyd Wright had more reason than most to recognise architecture's vulnerability: "Architecture, more than any of the arts, is the most susceptible to the hazards of nature, time and man [...] architecture, for all its apparent sturdiness and supposed permanence, has no such degree of immortality."<sup>16</sup>

Ludwig Wittgenstein wrote that "Architecture immortalises and glorifies something. Hence there can be no architecture where there is nothing to glorify."<sup>17</sup> Architecture can transform a situation, point to a summit in human experience and be a receiver of peoples' needs. It must be democratic, inclusive and committed to excellence in principle and practice. Architecture has the power to enhance peoples' lives and elevate their expectations, but where architecture lacks intellectual fortitude and the practical, political support of a vibrant culture, scepticism becomes a dominant force. When a society is off-course, weighed down by consensus mediocrity, its architecture reflects this state of affairs. Yet when architecture speaks of "things of greater importance" then it acquires a communal significance, powerfully extending and reflecting cultural sensibilities, life and beauty.

Where architecture is an exultant, liberating force, society re-learns the meaning of creativity as a spiritual force. The abstract painter Wassily Kandinsky identified architecture as "one of the most powerful agents of the spiritual life",<sup>18</sup> The sad fact of today is that parochialism and bureaucracy – both old enemies of high-minded intellectual endeavour – wield the most power and make the crucial decisions about what gets built. The price we pay can be seen everywhere in impoverished, confused and anesthetised architecture that lacks any sense of spirituality, or any genuine creativity. When architecture is permitted to draw upon the spirituality of a culture and the creativity of a visionary architect, and presents itself in a concentrated form, its intensity is inescapable. Artificially strained concepts lack stamina, fashions come and go, and economic and political imperatives are always subject to external variables, but the values that sustain authentic architecture remain provocatively sharp. Architecture which is sensitive to those values marks the humane character of an age.

History has its own way of dealing with significance. Architects affect only a small proportion of our built environment, and an even smaller part of this by works of distinction that challenge or inspire people. Then there are the disagreements among architects themselves of what is good and what is bad in architecture, and although lively debate and exchange of ideas is essential to a dynamic architectural 'scene', some truisms stand the test of time. For example Ludwig Wittgenstein was speaking to his own era when he observed that: "Today the difference between a good and a poor architect is that a poor architect succumbs to every temptation and the good one resists it."<sup>19</sup> Wittgenstein would have had a supporter in John Ruskin – who in *The Seven Lamps of Architecture*, London, 1849, and in *The Stones of Venice*, London, 1851–1853, contended that architecture was an aid for social improvement. Ruskin thought: "Great art is the expression of the mind of a great man, and mean art, that of the want of mind of a weak man."<sup>20</sup>

Ruskin was certainly influenced by the moral manifestoes of Pugin, who in turn was influenced by the social impact of the French enlightenment. Ruskin thought that the life-spirit and creative capacity of great artists was determined first by their sensibility, second by their imagination and third by their industry.<sup>21</sup> Both Ruskin and Pugin thought great art and architecture needed to make a social statement. No work could be considered a masterpiece unless it contributed to a better understanding of the human condition. They both believed that significant architecture depended on inner principle, and that this was at the root of raising standards in architectural achievement.

Viollet-le-Duc too, was in no doubt that the architect's nobility of character and intelligence needed to be prophetically grounded in social and technical reality. Hector Guimard and Antonio Gaudi, then Le Corbusier, Auguste Perret, and Frank Lloyd Wright, all said how much they owed to *Entretiens sur l'architecture*, 1863–1872 ("Discourses on Architecture").<sup>22</sup>



Born into an intellectual and lively family in Paris, Viollet-le-Duc's training was not shaped by the *Ecole des Beaux Arts*, but by his precocious talent for observation, drawing, travel, analysis of principle, and admiration for the virtues of economy. As a theorist he wanted his abstractions on medieval architecture to serve as a basis for the renewal of the contemporary scene. In short Viollet-le-Duc, like Ruskin and Pugin, was a human architect with a sense of an aural imagination.

## Edifices of Sound

The message of these 19<sup>th</sup>-century theorists finds a temporal parallel in romantic music. The resonant aspects of music uncover and celebrate the spiritual in both human experience and nature. Music actively expresses human meanings which are difficult to express in discursive language. In this celestial process, thought and feeling are ultimately realized through musical sound. Listeners at these intuitive depths are encouraged by the capacity of a musical window to reveal to human values.

Masterpieces of music and architecture both begin with people, and evoke imaginative feelings that transcend language. In a multitude of ways architecture has an effect upon our senses and has a role in shaping human behaviour. We need to remind ourselves that there is much in the world of music – structure, tonality, harmony and expression that can teach us about exaltation. Like architecture, music is also a source of harmonic inspiration where the bodily senses are involved. A musical masterpiece in architecture evokes a total experience of mind, body and soul. (Fig. 1.4)



Fig 1.4: West front of the Abbey of Fontenay, Côte d'Or, France.

This abbey was founded in October 1118, with building beginning in 1139. The Abbey was completed in 8 years, and consecrated by 10 Cardinals, 8 Bishops, and the Abbots of the Cistercian Order, 21 September 1147.

Photograph: Russell Walden.



In architecture today, aural perception is almost completely overwhelmed by the visual. As a component of good building, the potential of sound for moulding human experience is not addressed in most architectural histories. The sound of space provides us with vital sensory knowledge on an almost unconscious level, though arguably our unconsciousness of sonic information is a learned omission – as members of a post-literate culture we are taught only to trust our eyes. Aural perception gives us important information on the dimensions and purpose of a space as we enter it. What we hear characterizes our experience of architectural volume, whether in solitude or in public, and orientates us to our surroundings with as much accuracy, though different detail, as what we see.<sup>23</sup> Contemporary architecture is often oblivious to the power of sound, the main exceptions being buildings designed specifically for musical or spoken performance and the necessity for sound-proofing in high-density urban housing. This disassociation is a relatively recent phenomenon. Throughout the history of architecture musical associations and aural experience have been closely linked with the form and function of buildings.

Architecture and music's estrangement in contemporary cultural theory has left both art forms bereft of some of their former affective power, but architecture has particularly suffered from the gulf that has opened between them. Once intimate, their divorce has diminished the positive human potential of contemporary building. Today, the relationship between music and architecture would at best be described as highly abstract, at worst as totally irrelevant, or simply incomprehensible.

The committee in charge of the opening ceremony of Calatrava's art museum at Milwaukee October 2001, commissioned Phillip Glass to compose music for the ceremony, but they did not see the need for Glass to know anything about the building itself – not even how it looked. Calatrava's building is an expressive, rhythmic structure, moulded in light and shadow and movement – in short, a building redolent with musical potential. Glass himself saw no need to know the building, stating that "I don't have to look at the building [...] It's the idea of the building, not the actual building that's an issue."<sup>24</sup> However the same composer when questioned about writing a film score says that "When working with a film-maker, I'm looking at his visual material. The music articulates the structure of the film. We can't say that the music articulates the structure of the building. That's going a bit too far." He seems to accept the structural relationship between film and music, but rejects as absurd the idea that architectural structure may also manifest a specific rhythmic theme. His position is not unusual – many architects would share his point of view.

Great architecture's relationship with great music can be separated into three sub-themes: the philosophical/intellectual, emotional/associative and physical/experiential, though naturally these issues will overlap. If there is a single theme uniting these three sub-themes, it is revealed in the similarities between the language symbols we use to describe architectural relationships, musical relationships and human relationships. For example 'harmony' and 'discord' are both words commonly used to describe the nature of feelings between individuals or groups. This is because, ideally, human intellect, energy and emotion are both *the source of and reason for* music and architecture. Specific pieces of music and architecture are the intellectual product of their individual creators, but both are made by, and live within, the hearts and minds of people. In their turn, great works of music and architecture communicate through time and space, inspiring, educating and nourishing future human experience. Great architecture and music can therefore be thought of as profound visual and aural projections of the personal and collective relationships we experience as individuals, families, cultures and nations.

## Musical Theory as Universal Harmony

St. Augustine [354–430], said in *De Musica* that mathematical principles apply to the visual arts as well as the aural arts. He thought that “music and architecture were sisters, since both were children of number; they have equal dignity, in as much as architecture mirrors eternal harmony, as music echoes it.”<sup>25</sup> The liberal arts of antiquity, as studied by St. Augustine, were divided into seven parts: grammar, rhetoric, dialectic, arithmetic, geometry, music and astronomy. Pythagorean mathematicians and followers of Plato emphasised arithmetic because it was ‘the mother and nurse of the rest’.<sup>26</sup> In musical theory, the French composer Philippe de Vitry (1291–1361), wrote an innovative treatise on music: *Ars Nova* (1322). He gave its name to a notational system for rhythm, and to the music of an entire age. Petrarch thought he was a great philosopher and truth-seeker.<sup>27</sup>

Pre-eminent renaissance writer and architect, Leon Battista Alberti [1404–1472] was inspired by the ideas of the ancient philosophers and mathematicians, and formulated a comprehensive theory of architecture for ‘the age of humanism’. He embraced the idea that a mathematically defined order existed in nature and that it was imperative to emulate the arrangements of nature in art and architecture. In *The Art of Building in Ten Books* Alberti discussed the ways in which mathematically determined natural forms prefigured the forms and disposition of the parts of classical architecture<sup>28</sup> (Fig. 1.5).



Fig. 1.5: Polychrome Marble facade of Santa Maria Novella, Florence, 1458–1471.

Architect: Leon Battista Alberti.

At Santa Maria Novella, harmony required a careful reconciliation of a classical vocabulary from antiquity, which needed to be fused with a Florentine medieval tradition. This design is closely related to the facade of San Miniato al Monte, Alberti's favorite building.

Photograph: Russell Walden.

The musical theorist Boethius' [c. 480–524] said that “geometry makes visual the musical consonances” which was influential in church design from as early as the great church at Cluny.<sup>29</sup> Boethius' translations from classical Greek mathematicians were an important source of knowledge to renaissance scholars.<sup>30</sup> Alberti developed a formula for architectural design based upon the Pythagorean system of ratios derived from simple whole numbers. The main goal of his formula was the realisation of a demonstrable sense of built harmony. He believed that in a numerically ordered universe the arithmetical ratios that created aural harmony in music would also create visual harmony in architecture.<sup>31</sup>

Palladio's treatise, *The Four Books on Architecture* [*Quattro Libri*], was written approximately one hundred and twenty years after Alberti's ‘ten books’. There was a spiritual rationale behind Palladio's use of harmonic proportions. In *Book IV* Palladio refers several times to the special responsibilities of the architect in designing churches. His intention was to imbue a church building with metaphysical truth, even if it was perceptible by God alone. In fact Palladio conceptualised a church as a miniature universe,

signifying the interaction of the macrocosm with the microcosm in *quattrocento* architectural theory.<sup>32</sup> Palladio was convinced that the ‘inaudible music’ of the cosmos, used as a basis for design, would attain his spiritual and aesthetic ends. The correct use of harmonic proportion was a way to vouchsafe the blessing of God’s participation in the life of the building. Palladio’s architecture was about much more than surface and ‘style’ – he conceived of architecture, at least in part, as an act of devotion to God, and as a service to the religious community. Palladio’s search for harmony is still valid even today.

For both Alberti and Palladio the use of harmonic proportions in architecture were not merely exercises in formalism or ego-driven doctrines. What is important to us, as architects and historians working in the 21<sup>st</sup> century, is that they wanted to create architecture with *integrity* and *veracity*. They did not see architecture as separate from its natural or constructed surroundings. What they sought to realise was the multi-dimensional integration of architecture into the living, moving universe – the macrocosm. As humanists, they knew that the basis for successful worldly design was people – the human body and the human spirit. They believed that veracity in architecture could be realized by designing buildings as humane microcosms, whose values and laws reflected the machinery of the heavens. The vital, umbilical link between the heavens and humanity was mathematics and music. Alberti and Palladio extrapolated that connection into architectural design. By translating harmonic proportion into a visually comprehensible language they attempted to literally adapt the issues discussed by Vitruvius and build musical architecture in their own time. In this search for accuracy, we need to remember that between the 15<sup>th</sup> and 18<sup>th</sup> centuries, proportion was considered the key element in representing architectural order.<sup>33</sup>

In these following centuries, Italians like Sebastiano Serlio<sup>34</sup> and Vincenzo Scamozzi,<sup>35</sup> produced books which were largely based upon Palladio’s quest to examine problems of harmony in architecture. But this spirit of enquiry was soon followed by a new call to order which came from France. First, there was the famous treatise by Roland Fréart de Chambray.<sup>36</sup> Fréart wanted to demonstrate how various authors used the classical orders differently and he pleaded for a rigorous purity. Following him was François Blondel,<sup>37</sup> a teacher in mathematics who believed in the proportional rules of Vitruvius. Blondel contended that architectural proportions, like musical consonances, emanate from feelings for harmony. Blondel believed that number and geometry embodied beauty, music and spirit. He was particularly sensitive to analogies between music and architecture.<sup>38</sup>

Claude Perrault,<sup>39</sup> a founder member of the French Royal Academy of Science (1666), followed Blondel. Perrault was commissioned to translate Vitruvius (1673). He advocated visual judgment in matters of proportion and harmony and in various ways questioned the metaphysical justification of classical architecture. Perrault was followed by Abbé Cordemoy<sup>40</sup> who wanted to free architecture not only from distortion, but also to strip away all the linguistics of architecture. Cordemoy believed in economy and honesty of expression, and he wanted to liberate architecture from much of the traditional writing on proportion of the orders. All these treatises – which shaped theory in classical architecture – can be traced back to Alberti’s and Palladio’s preoccupation with the need for harmony.

This concern for harmony and musical ratios was all very rational, but fifty years later, it was left to another French Jesuit abbé Laugier<sup>41</sup> to argue that architecture should be the result of the rational ordering of structure, rather than the result of applying formal ideals taken from classical imagery. From this position it was but a short step to the ordering quest of Jean-Nicolas-Louis Durand (1760–1834).<sup>42</sup>

Durand rejected metaphor in architecture as a legitimate source of knowledge. He also disagreed with Laugier’s anthropomorphic explanation of the classical orders. In his search for perfection Durand believed in modular elements and the use of the grid. He thought this was the rational generator of the plan, section and elevation in architecture. Durand’s use of geometry encompassed values which simplified the expression of architectural ideas, and he advocated drawing as the “natural language of architecture.”<sup>43</sup> Durand’s search for rational principles is as modern today as it was 200 years ago. His natural concern for the composition of harmonic values and rhythmic ratios influenced the pioneers

of the modern movement, and it is Durand's attempt to create a universal method of design – along with the rationalism of Viollet-le-Duc – which punctuated the early polemical writing of Le Corbusier and the compositional and human preferences of Alvar Aalto.

## Aalto and Sibelius

Some of the most inspiring contemporary parallels between music and architecture come from the Finnish example of Jean Sibelius [1865–1957] and Alvar Aalto [1898–1976]. Their human experiences in the wilds of Finland – with its sublime abundance of granite rocks and pine trees set in a glacial landscape of lakes, forests and snow, and with ephemeral glimpses of sunshine appearing in between the inevitable winter storms, had an almost mystical effect upon the sounds of Sibelius and the compositional spaces of Aalto. As articulate voices of the North, Finnish nature was central to their whole dialectical and human achievement.

Sibelius and Aalto were born into Swedish-speaking families in the latter part of the 19<sup>th</sup> century, at a time when Finland was under the influence of the Russian Czar. Their childhood experiences and personal struggles were imbued with psychic experiences from the rural wilderness. In music and architecture both romantics were preoccupied with expressing character, mood and feeling. Both possessed an unusual capacity for living and responding to the Northern saga, its mythology, and its compelling humanity. Musically Sibelius used horns and tremolo string passage sounds in such a way that their aural effect on the ear parallels that of the eyes and the distinctive idiosyncrasies of Aalto's architecture in timber and brick.

Finnish nature was much more than an ancient background that moulded different aspects of their creativity and invention. In an era of stress, the indefatigable zest of Sibelius and Aalto demonstrated an almost mystical affinity with their natural surroundings. The primitive strength of the wind whistling through the branches brought a rustling sigh of release for Sibelius. This provided the aural energy that was woven into the symphonic patriotism of *Finlandia* [1899]. It was a turbulent awakening – an anthem whose thematic material presented an uplifting affirmation of faith in the Finnish people – in the long struggle against Russian imperialism.

Though they each experienced trials in their early life, Sibelius and Aalto both attended university, an experience which did not impair their intuitive sense of form, their humanity, or artistic integrity. Their personalities were never rooted in academia however, rather their learning was strongly characterised by emotional and intuitive sensibilities. Their celebrated vision and psychological energy marked a symbiotic parallel that was crucial to the development of a defining Finnish identity.

Sibelius' melodic reputation rests chiefly on his orchestral works.<sup>44</sup> His seven symphonies are profoundly evocative of human emotion; they are often turbulently sombre, rhythmic and ferocious documents in sound which look forward energetically to a pounding from animated nature. In Ralph Hill's book – *The Symphony* – Julian Herbage described Sibelius' vehement trend of thought: "There is none of the symmetry of architecture in his music, but rather the asymmetrical growth of nature. Yet beneath this superficial waywardness can be discerned the most closely knit musical organisation."<sup>45</sup> Paradoxically, beneath this fusion of harmonic and discordant elements in his music, Sibelius composes with the same triumphant sense of design that marks the work of Beethoven and Brahms.<sup>46</sup> Listening to the swirling sounds of Sibelius is a reminder that his closest companions were the kaleidoscopic conditions of nature. This subtlety of mind and delicacy of feeling was his central achievement.

As well as the guiding principles of his symphonies, Sibelius' tone poems drew mental energy from the Karelian Isthmus, and from Finland's national poetry. In this environment, experienced on his



honeymoon, Sibelius familiarised himself with the roots of musical language prominent in the folk songs of his native land. In his symphonic poem *Tapiola*, named after the mythological God of the forest, Sibelius' quickly changing tempo proved a creative high point in his career. *Tapiola* combines haunting storm sequences of brooding intensity, which culminate in the wind force of a hurricane. As one of his last works, *Tapiola* demonstrates the full power of the tempest as an elemental force within a storm-strewn landscape. The whole poem is a piece of musical architecture.<sup>47</sup>

Sibelius' music, like Aalto's architecture, is often described as possessing a profound logic, with meticulous attention to form and detail.<sup>48</sup> Aalto shared a concern for human qualities in design and a love of nature, impulses that found expression in his imaginative plan making.<sup>49</sup> In spite of his attention to detail, and use of well-tried materials like timber and brick, it was in the new technology of reinforced concrete that Aalto sought inspiration. His Paimio tuberculosis sanatorium and staff housing [1929–1933] was probably his most significant adventure in classic modernism; but at this point in his career he was under the influence of Le Corbusier. As the thirties advanced, Aalto became more and more his own man, freeing himself from formalism and refining materials in a more sensual direction. By the early forties his work ranged from town plans to the applied arts, where with Turku manufacturer Otto Korhonen he exploited free and elegant lines in bent-birch-wood furniture, fan-shaped stools (Fig. 1.6), light fittings (Fig. 1.7) and glassware design. His most famous glass object designed for the Paris World Fair was the Savoy vase. This applied art is an integral part of his architecture.



Fig. 1.6: Aalto's Artek furniture: a cluster of fan-shaped stools, 1954. Courtesy of Aalto Museum, Jyväskylä. Photograph: Russell Walden.

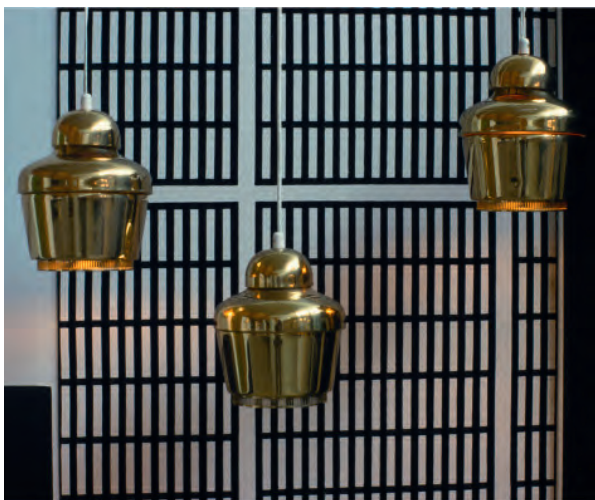


Fig. 1.7: Aalto's purpose-made lamps used to accentuate form in the Savoy Restaurant, Helsinki. Photograph: Russell Walden.