

Research Papers
Columbia University
New York



On Architecture
2nd Edition in English

PRINCIPIA ARCHITECTONICA

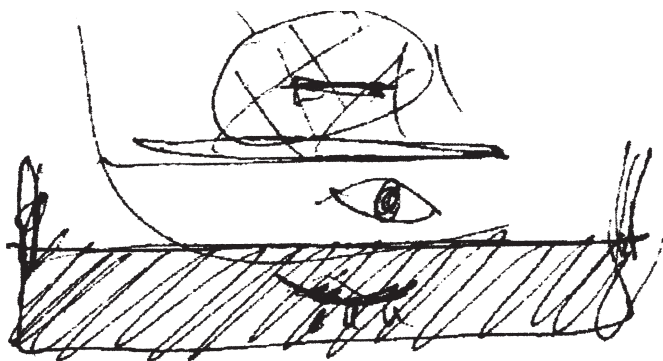


Alberto Campo Baeza

PRINCIPIA ARCHITECTONICA

On Architecture

2nd Edition in English



Alberto Campo Baeza

Principia Architectonica
2nd Edition in English 2013

1st Edition 2012

© 2013 Mairea Libros

by Mairea Libros
Escuela Técnica Superior de Arquitectura
Avenida Juan de Herrera, 4. 28040 MADRID
E-mail: info@mairea-libros.com
Internet: www.mairea-libros.com

Author: Alberto Campo Baeza
English Translation: Penelope Eades, Francis R. Hittinger.

ISBN: 978-84-940020-8-3
Legal Deposit: M-7300-2013

All rights reserved. No part of this book may be reproduced in any form by any electronic or mechanical means (including photocopying, recording or information storage and retrieval) without permission in writing from the publisher.

Printer: StockCero, S.A.
Printed in Spain

INDEX

FOREWORD	7
NOTE ON SECOND EDITION IN ENGLISH	11
PRINCIPIA ARCHITECTONICA	
On Ideas	15
ARCHITECTURE AS POETRY	
On Precision. For an essential architecture	21
PIERCING TRANSLUCENCY	
On Light. When solid light pierces translucent light	33
FLAT HORIZONTAL PLANE	
On the horizontal plane as boundary between stereotomic and tectonic	43
MNEMOSYNE VS MIMESIS	
On Memory in Architecture	53
THE CORNERSTONE	
On the corner. Where architecture and ground converge	63
OF ELEPHANTS AND BIRDS	
On structure. On architecture becoming lighter	71
ARCHITECTURE AS ARTIFACT	
On the relationship between architecture and nature	83
SUSPENDING TIME	
On time. On the ineffable detention of time	93
INTENSITY	
Dialogue with Kenneth Frampton	107
NOTES WRITTEN ONLINE	113
NOTES	115
BIBLIOGRAPHY	129

FOREWORD

I wish I could say those famous words, as Cervantes once did: *“Idle reader: thou mayest believe me without any oath that I would this book, as it is the child of my brain, were the fairest, gayest, and cleverest that could be imagined”*. This I cannot write, nor do I seek to try. But it is my earnest wish that these essays provide their readers with food for thought and pleasure.

The essays gathered here are the fruit of a long period of reflection stretching over a good number of years. Some of the ideas that appear here were partially formulated in previously published texts. They were revised and ‘fine-tuned’ during the 2010-2011 academic year in the Avery Library of Columbia University, New York. My university, the UPM, *Universidad Politécnica de Madrid*, and specifically its Rector, Javier Uceda, and Vice-Rector, Emilio Mínguez, kindly granted me a sabbatical year in order to pursue this work at Columbia, where Dean Mark Wigley and Ware Professor of Architecture, Kenneth Frampton, supported my research. I owe them all a debt of gratitude. I would also like to thank my colleague Jesús Aparicio, full professor at ETSAM, for his generous and helpful suggestions; Felipe Samarán and Ignacio Aguirre for their precise corrections. And that ‘fine-tuning’ process has continued in the most natural way made possible with Word Perfect, which can so deservedly be termed ‘perfect’.

While the issues treated here are various, I wanted to put more emphasis on those that directly relate to the works I’ve designed and built. In fact, all are related to my works, which I treat explicitly in the addenda at the end of each text. I am convinced that no architecture is possible, save that which originates in thought, in reason; nor an architecture that does not possess the will to be built, to have the constructed work as its end.

Thus, in *ARCHITECTURE AS POETRY* that deals with precision, I seek to show my more general position towards architecture, defending a concept of “essential architecture”, as if it were poetry. In *PIERCING TRANSLUCENCY* I speak of light and the novelty of piercing translucent space with solid light. In *FLAT HORIZONTAL PLANE* I discuss the

fundamental importance of the horizontal plane as the limit between the tectonic and the stereotomic. In *THE CORNERSTONE* I focus on corners and the importance of materials and their construction, of stone and the cornerstone. In *OF ELEPHANTS & BIRDS* I analyze how contemporary structures tend to be lighter. The use of memory in architecture is developed in *MNEMOSYNE VS MIMESIS*. In *ARCHITECTURE AS ARTIFACT*, I explore the reasons for a proper understanding of the relationship between architecture and nature. And in *SUSPENDING TIME*, I attempt to provide the keys to understanding the ineffable suspension of time in architectural creation. These essays conclude with an interesting conversation I had with Kenneth Frampton in which we discuss, as the title indicates, *INTENSITY* in Architecture.

Ortega writes with proverbial clarity in the opening to his lecture in Darmstadt: *“One can only speak of mankind and life if one speaks from within. If we want to seriously discuss mankind this can only be done from within, from within oneself, and therefore one can only speak of oneself”*. The invariably deep personal tone of my writings from Columbia echoes such sentiments. If these thoughts are the *raison d’être* of my architecture, I cannot ‘hide’, when it comes to revealing them. I have been told on occasion by my friends that I should strive for greater detachment. But in following their advice I would not be true to myself. Besides, artistic creation has never been detached.

And Cervantes in his delightful prologue to *Don Quixote* tells us: *“Some times when a father has an ugly, loutish son, the love he bears him so blindfolds his eyes that he does not see his defects, or rather, takes them for gifts and charms of mind and body, and talks of them to his friends as wit and grace”*.

Almost all of the topics discussed in these papers have arisen in conjunction either with my constructed work, projects that never came to fruition, or during the many courses I’ve taught over the years at the Madrid School of Architecture (ETSAM) and at many other architecture schools throughout the world. My works, my projects, and my classes were all forged in the heat of these ideas.

I would like to also express my thanks to Alison Hughes for the translation of these papers as well as to Carol White and to Andrew Finegold, of the Language Department at Columbia University, for their helpful

comments and suggestions on style. I would like to thank Francis R. Hittinger for his linguistic clarifications. It is a gift and a joy that Columbia University not only has such excellent resources, but also generously puts them at the disposal of their researchers. And I would like to thank Penelope Eades for her collaboration in this in-depth revision of the original text and for giving overall unity to the present edition, a task she has carried out with great success and precision.



Apart from being a privilege, putting the words I have written in the language of Cervantes into the hands of Hamlet, Shakespeare's language, is a guarantee of universal circulation.

I have also decided to make all my 'footnotes' strictly references to the World Wide Web (WWW) and QR codes.¹ I understand that the third millennium, into which we have already embarked, demands this kind of note. While I admit that this decision stems, in part, from a desire to provoke the readers of these texts, I am also convinced that many readers will access them directly from their laptops, iPads, Smartphones, or eBook readers and that this is the most logical and natural means of accessing this information.

Alberto Campo Baeza

Columbia University

New York 2013

NOTE ON 2nd EDITION IN ENGLISH

This publication represents a revised and enlarged second edition of these texts in English.

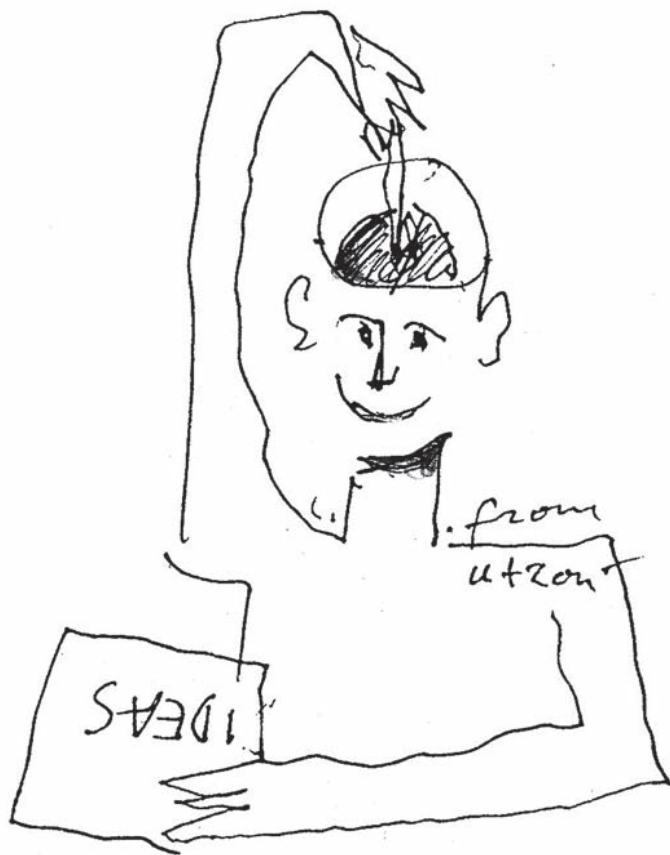
The new translation is the work of Penelope Eades, who not only translated the amendments and variations into English, but also carried out a careful overall review of the book.

It is my hope that in the near future these texts in English may provide the basis for video conferences, in the form of classes, so that the ideas expressed here may reach out to wider audiences.

Alberto Campo Baeza

ETSAM UPM

Madrid, March 2013



PRINCIPIA ARCHITECTONICA

On Ideas

"It will be convenient to distinguish them into absolute and relative, true and apparent, mathematical and common". Isaac Newton, 1687.

The above quotation is taken from Isaac Newton's *Principia Mathematica*¹ whence we borrow our title. Newton pleaded for the capacity of discernment in mathematical work. It is that same discernment that we demand in architectural creation.



When things are seen in the calmness and serenity that full retrospect provides, we architects, who are also professors, feel the obligation to impart the essential core of our ideas to our students, as if it were a matter of distilling the most important aspects of our lives into one testament.

I've presented many of the ideas summarized here in other texts published over the course of several years. The first collection of these essays, written in Spanish and titled *La Idea Construida*, (The Built Idea) has already run to over 20 editions. And a second anthology titled *Pensar con las manos* (Thinking with Hands) is now in its fifth edition. And both have been translated into English, French, Portuguese and Japanese with the recent addition of Italian and Chinese. However, with this revised collection of texts I would like here and now to attempt to distill all of them in order to communicate them better.

In the busy waters of Architecture, when one decides to remain on the shore of silence and reflection, far from the media torrent of celebrity, noise and superficiality, choosing to be closer to the philosopher's and architect's pursuit of truth, one feels the need to put the foundational principles of one's work, one's *Principia*, into writing. This is precisely what Newton did in his *Philosophiae Naturalis Principia Mathematica*, and it is from him that I have dared to borrow the Latin title.

The aim of these *Principia Architectonica* is to provide a basic introduction—a summary and synthesis—of the key themes with which I continue to work and which I increasingly understand to be central to architecture.

In that regard, they are not so much personal discoveries as they are essential concepts inherent to architecture itself.

Thus, from the outset, this text also aims to be ever clear, specific, and sharpened, just as the surgeon's scalpel must be continually sharpened and ready for surgery. Thus with my writings, each time I return to reread and study them, I introduce variations that seek to clarify, ever more precisely, what I have written.

I seek the greatest clarity both in my ideas and in the words that bear their meaning. These ideas must explain why we architects design and build, since architecture must be grounded in reason. That *adecuatio rei et intellectus* so necessary for the philosopher's pursuit of truth is, in the case of architects, the synonymy between what is thought and what is built. Perhaps Goya expressed best the monstrosity that arrives without such synonymy in the fitting title of his engraving *The Sleep of Reason Produces Monsters*.² This is more than appropriate when applied to architecture. In my *Principia*, I would like to underline how basic and fundamental it is for reason in architecture, its fundamental logic, to be permanently wide awake and alert, lest architects be caught napping in the studio or on the construction site.

Some architectural principles may seem obvious: that light needs shade in order to be recognized; that structure, besides bearing weight to the earth, also serves to establish the order of the space, what I have called *the structure of the structure*; that gravity builds space; that light builds time, and so on.

But architecture is like poetry: when one discovers that one can realize seemingly abstract concepts in palpable, understandable, and material sonnets, epics, and hendecasyllables, one has not just become a poet, but also an architect thanks to the mysterious ability human beings have of materializing and building their ideas. Michael Bockemühl expressed this notion so clearly when speaking of Rembrandt and his art: "*He makes the intellectual comprehension of the painting into his visual perception*". That same sentiment is expressed with even greater clarity by Stefan Zweig in *The Mystery of the Artistic Creation*³ where he states that the maximum virtue of the human spirit consists in procuring to render comprehensible to itself what in principle appears incomprehensible.

ARCHITECTURE AS BUILT IDEA.

In these Principia Architectonica I continue my staunch defense of the need for a clear idea before embarking on any architectural creation. Some time ago I wrote that “*Architectura sine idea vana Architectura est*” when trying to spell out just how much of an utter banality architecture becomes, as any human creation, when it is built without an undergirding idea.

We cannot construct anything if we have not thought of it and conceptualized it first, and we shouldn't conceptualize anything that we cannot build. One must dream, but at the same time be capable of making those dreams a reality. Architecture can mysteriously materialize ideas; it is the *Built Idea*. Louis Sullivan expressed this so well when he wrote in 1901: “*You cannot create unless you think, and you cannot truly think without creating in thought. Judge our present architecture by this standard and you will be amazed at its poverty of thought, its falsity in expression, its absence of manhood*”.⁴



While forms decay, passing into oblivion, ideas remain: they are immortal. The history of architecture is a history of ideas, of built ideas—of forms that materialize and put these ideas on solid footing. In short, forms without ideas are vacuous; without ideas architecture would be pure reduction to *simulacrum*, empty form devoid of any truly useful function.

GRAVITY BUILDS SPACE

These Principia also envisage gravity as a specific constituent element of architecture. The building blocks of poetry or music are not heavy, but those of architecture are inexorably subjected to the laws of gravity. Gravity builds space.

Therefore, when I speak of the structure, I want to underline that the importance of structure lies not merely in its bearing of loads, but also in something much more important, namely in establishing the order of the space. The “*structure of the structure*” relates to the need to establish an order proper to the structure itself.

LIGHT BUILDS TIME

Similarly in these Principia light emerges as a principal element of architecture. Light that builds time. Without light, architecture is nothing: *Architectura sine luce, nulla Architectura est.*

Natural light illuminates space and empowers the functions that are developed there. On the other hand, we can also control the light within a space thereby tensing it and summoning beauty.

Light, like air in music, goes through the space created by the architect so that it resounds and can be heard, and when light arrives in it, something almost miraculous happens: a power is produced by which time itself is made manifest. Something seemingly ephemeral like time is now within our reach and can deeply move us. The dictum "*light builds time*" is much more than a stock phrase for a pedagogical text, this spatial miracle is a tangible reality within our practical reach.

ACHIEVING BEAUTY

With these Principia Architectonica we are trying to approach the concept of Beauty in architecture. Because by starting out from ideas guided by reason, and getting them off the ground, materializing them, constructing space with gravity and time with light, we can achieve Beauty. That same Beauty which, in the words of Plato and echoed by Saint Augustine, is the splendor of Truth.⁵





Soliman
de Jambou

21 octobre 2007

23

ARCHITECTURE AS POETRY

On Precision. For an essential architecture

I wish to propose an essential architecture that limits itself to an indispensable number of elements. Architecture that is precise and well-founded, logical and simple.

And because I wish to highlight the importance of precision in Architecture I dare to compare it to Poetry. Architecture is poetry, but would anyone dare propose architecture as poetry? If so, it would have to acknowledge a conception of architecture that goes to the very heart of the questions that the discipline itself poses.

This is exactly what I propose to do here. I will propose that architecture as poetry, without adjectives, is an “essential architecture”, as essential as poetry is to literature as a whole. I'd like that my architecture be poetic, in the deepest sense of the word, so when I propose architecture as poetry, I mean that architecture arises neither from sudden impulse nor fit of ecstasy.

Good poetry, like good architecture, is implacably precise. It not only requires an idea of what we want to say with it, but that its generating idea be expressed –translated– with very accurate words which, moreover, are judiciously placed in relation to each other within the verse and stanza. Once constructed, besides representing its meaning with the utmost naturalness, the poem's delicate verbal precision must be able to move our hearts –to rupture and suspend time. That is poetry, and likewise architecture.

Should someone remark that John Ruskin already wrote a text entitled *The Poetry of Architecture*,¹ I would reply that, except in name, it honestly has little to do with my own conception; its contents are in fact very diverse. The text in question, from the same author who penned *The Seven Lamps of Architecture*, is largely a meditation on some of his favorite architectural works of his time. His book, which was very influential in Victorian times, is a collection of articles (previously published in *London's Architectural Magazine*) on villas by architects like Wordsworth. However, he did not really delve into the deeper meaning of



2



the relationship between architecture and poetry. Notwithstanding in *The Seven Lamps of Architecture*,² Ruskin puts forward the proposal that “*Architecture and Poetry are the great enemies of oblivion*”, while defending Memory as their common ground.

Sometimes the most essential architectures are dubbed as minimalist. Although I hear continuous talk about minimalism in architecture, I think we would be hard pressed to find a single soul who would accuse poetry of “literary minimalism”. In fact, everyone understands that poetry is a distillation of literature itself. The best writers of literary prose have turned to poetry when they wanted to distill their ideas and refine their words, as Shakespeare³ and Cervantes did. Both were prolific writers, but equally poets of the highest rank.

3



The quality of Shakespeare’s sonnets is in every sense on a par with the immortal verses pronounced by Hamlet. Nor could he be considered minimalist. The same is true of Cervantes who, apart from providing us with his renowned Don Quixote, delights us with the charming sonnets of *La Galatea*. Writers of universal acclaim, they both reached the pinnacle of literary creation as sublime poets.

Most of the time, poetry appears in relatively short individual poems, of which we could call numerous examples to mind. The same occurs in architecture. It is good that architects also test themselves with small works, with little architectonic poems. There is no architect worth his weight in salt who has not made some small work of high quality, as if it were a poem. Bernini in his Baldacchino in St. Peter’s, Palladio in the Villa Rotonda and Mies Van der Rohe in his Tugendhat House, are as brilliant as when they produce some of their larger works.

At other times, writers choose verse for dazzling, epic texts, such as Homer’s *Iliad* and *Odyssey*, Virgil’s *Aeneid*, or Dante’s *Divine Comedy*. I insist however, that neither Homer, nor Virgil nor Dante are the greater poets on account of the size of these works. They are masters because of their capacity to invoke Beauty in each and every verse.

I think something similar happens in architecture. The quality of Architecture is not measured in terms of the large dimensions of certain works. It is measured by their capacity to stop the hands of the clock, to hold time in suspension and in their expression of Beauty.

PRECISION

When I compare or identify architecture with poetry, I do so for reasons that lead me to defend what I called above “essential architecture”. I do not just label it this way abstractly, it actually is essential. I try to go to the heart of the question, as much in the ideas that support it as well as in its forms of translation. What architecture and poetry have in common is the achievement of beauty by means of no more than the bare essential number of elements from which they are constructed. As Octavio Paz astutely observed, “*poetry must be a bit dry so it can burn well, and so enlighten and warm us*”.

On numerous occasions, I have also quoted the Spanish writer María Zambrano when she said that poetry is “*the word in harmony with the number*”. What better definition for architecture, which is precisely that: materials in harmony with measure? It is fitting because both types of creators, architects and poets, must be precise and accurate by virtue of the craft itself.

Osip Mandelstam expresses this concept so well: “*Everything in Poetry is measurement; everything derives from, rotates around and through measurement*”. In architecture it is the very same: measurements and numbers are central.

Edgar Allan Poe, in his essay *Philosophy of Composition*⁴ recalls to mind the creative processes and progressive steps in the creation of his most famous poem *The Raven* and how it attained its ultimate point of completion: “*no one point in its composition is referable either to accident or intuition ...the work proceeded step by step, to its completion, with the precision and rigid consequence of a mathematical problem*”. Not a bad definition of the importance of precision in artistic creation.



Therefore, an architect must be precise, and to be precise he must know what he wants to make and how he has to go about making it. Architecture demands he be able to respond to its questions before he begins construction: what does he want to make? What idea can respond to all the requirements that design demands in each specific case? Vitruvius summed up the key terms of these questions so well in his three principles of architectural design, “*Utilitas, Firmitas, and Venustas*”. And he told us how to go about it, how to materialize such

ideas, which requires precise knowledge of the materials and the techniques involved.

In architecture, as in poetry, the idea is not something diffuse. Both the idea and the means required to construct it, are tremendously precise. An idea is not a notion, a mere whim. In architecture, an idea is not valid if it cannot be materially constructed, just as an idea would not be valid in poetry if it could not be translated into appropriate words.

In this vein, while the invention of new technologies ensures that the architect can conceive of new ideas better, it is not valid to use an unproven technology that one has only dreamt about for constructing something that seems beautiful and radical. I guarantee that an endeavor violating function and structure, by means of unproven methods and materials, will likely fail in all respects. Precision in ideas and precision in their materialization go hand in hand.

METRICS

In poetry, precision starts with meter –the rhythm, rhyme, and beat of words, verses, and stanzas. This is self-evident by dint of the observation that should a poet even wish to break the rules of metrics that belong to his or her language and poetic genre, he or she must already know them very well. A poet with a deep learning of poetic meter has already gained the upper hand should he or she wish to turn the tables in experimentation.

An architect, likewise, has his own “metrics” that allows him to know when an architectural mechanism works with certain measures and proportions, but not with others. This has been the focus of the scholarly works of many great writers throughout history from Vitruvius in his ten books *De Architectura* to Alberti with his *De Re Aedificatoria*, from Vignola with his *Regola delle cinque ordini d’Architettura*, to Palladio in his *Quattro Libri dell’Architettura*.

When we ask ourselves what is so fascinating about Mies van der Rohe’s Farnsworth House, and what is lacking in Philip Johnson’s Glass House, we must return to this kind of consideration relating to the precision of measurement. Mies van der Rohe, with great skill, raises the main plane of the ground floor of the house to eye level (1.60 meters)

so that it floats, so that the plane becomes a line, almost disappearing. And he measures the precise distance between the ground and roof to achieve this exact horizontality. Philip Johnson, on the other hand, leaves that plane farther down almost at ground level, and fewer things happen. I would argue that the floor of Glass House ought to have been even with the terrain in order to achieve complete spatial continuity.

Again, at the crux of the matter is the issue of measure, or better yet, the knowledge of the effect of measure; with one set of measurements one thing happens, and with another set, yet other things. In short, it is a question of metrics in the poetic sense –measure not reduced to mere measurement in and of itself.

Thus, when Saint John of the Cross in his *Spiritual Cantic*⁵ writes: “*y dejame muriendo un no sé qué que quedan balbuciendo*”, not only does he bring the poem to its climax of feeling when he repeats in a sublime alliteration, “*qué que quedan*”, a stutter that precedes the verb in the gerund, but he does so with a maximum precision that profits from his deep dexterity with the Spanish language. It is the same wisdom and precision that Mies van der Rohe uses in Farnsworth House; the same precision that I want for my architecture.

5



TRUTH

Plato defined Beauty as the splendor of Truth. And Saint Augustine echoes these sentiments centuries later. And yet again that indissoluble relationship between Truth and Beauty is reflected on the coat of arms of the AA,⁶ the Architectural Association in London, the most prestigious architectural school in the UK, with the motto: “*Design with Beauty, Build in Truth*”.

6



If essential architecture uses but few elements, it is because all are necessary and all are true. Not a single one is in excess or deficiency, and each acts with the highest intensity and efficacy. In this way, essential architecture's beauty comes from that truth.

The desired beauty of the greatest works of architecture must be a reflection of the coveted truth with which architects should work, focusing their efforts on ensuring that the truth of the conceived idea and the truth with which it materializes are capable of blossoming in the beauty of their works.

I want the beauty I envision in my works to be a reflection of the truth from which it derives as an idea and which, in turn, guides it in its materialization.

These two, beauty and truth, are inseparable, and furthermore, in architecture they will always come to fruition under the guiding hand of reason. Hence that Thomistic definition of truth that indeed suits Architecture so very well: “*Veritas est adecuatio rei et intellectus*” –truth is the correspondence between the thing and the intellect.



Josef Pieper⁷ recalls that the concept of “*the truth of things*” was obliterated by Kant when he identified truth with reality. But what in philosophy is disputable, in Architecture is very clear: all built architecture is real, not abstract and not metaphysical. On the other hand, evident and real presence in architecture does not necessarily mean that it is also true.

Only when Architecture is true, in its conception, in its idea, and in its material expression can it gain access to beauty. It does this when it is the result of a specific and developed idea that is laid down in a coherent structure and remains consonant with logically arranged materials. In short, this architecture fulfills the Vitruvian principles of *Utilitas*, *Firmitas* and *Venustas*. Only when the idea, the development, the structure, and the construction are true can it arrive at the level of aesthetic beauty. We must remember that, for Vitruvius, the achievement of *Venustas* demanded prior and exact fulfillment of *Utilitas* and *Firmitas*.

For obvious reasons then, a great deal of the architecture we see put up today is of little interest. The vices of self-indulgence and superficiality have taken the place of the Vitruvian virtues, and the former are giving rise to a kind of contemporary architecture that crumbles and falls apart in our hands. To forge new paths for the future of architecture, we will have to return to the start.



How well Berthold Lubetkin⁸ put it in the closing of his speech to the RIBA when he was awarded the Royal Gold Medal in 1982:

“Goethe rejected the easy option of neurotic rhetoric, refused to share the fashionable enthusiasm for the inexplicable. Surrounded on all sides by anguish, turbulence, and shadowy dread, he challenges the folly of events by producing a reasoned grid of his poems, the very embodiment of classical calm, ordered logic and lucid clarity. He

advised painters to dip their brushes in reason, and architects to follow Winckelmann's instructions to aim at calm grandeur and noble simplicity. I have no doubt that it was for this humanist attitude full of confidence, his calm restraint and rational cohesion that Goethe wished to be remembered. And, mutatis mutandis, so I do."

WEIGHT

Words have no weight; they are not subject to the laws of gravity to which the materials of architecture are inexorably bound.

Though good writing uses words sparingly, it doesn't cost anything to use more words, as so-called "baroque" writers tend to do. It is preferable, however, to "*omit needless words*" as W.Strunk and E.B.White prescribe in *The Elements of Style*.

In architecture, however, simply from an economic point of view, the use of more elements than is necessary always turns out to be excessively costly. Moreover, it also entails an increase in weight which, because of gravity, would put greater stresses on the structure. With age and reason on his side, Fuller wisely asked the young Foster – "*How much do your buildings weigh, Mr. Foster?*"⁹ A very pedagogical way of speaking of precision.



TO TRANSCEND

Stefan Zweig once remarked during his 1940 Buenos Aires lecture, *The Secret of Artistic Creation*,¹⁰ "*I am not aware of a greater delight and satisfaction than in noting that it is also given to man to create lasting values and that we remain eternally united to the Eternal by means of our supreme effort on earth: by means of art*".



His words can serve as a suitable colophon to this text. If we were to replace the phrase "artistic creation" with architecture, both titles would make perfect sense.

Similarly Heidegger in his *The Concept of Time* calls for an understanding of historicity. And that is what we architects should strive to achieve: an essential, poetic work that will be capable of transcending

ourselves, capable of writing our names in the history books, capable of remaining indelible in time.

ADDENDA

In my lectures I explain how in order to bring the Museum of Memory in line with the existing Central Headquarters of the Caja Granada Savings Bank, “the Cube”, I merely had to align the podiums of the two buildings.¹¹ This alignment of the two facades onto the main avenue, coupled with the fact that their height is the same, means that they both echo one another in unison. And I explain to my students how, just like in poetry, I simply employ the same mechanisms as those of a poem when the words are in unison, when they agree with precision.

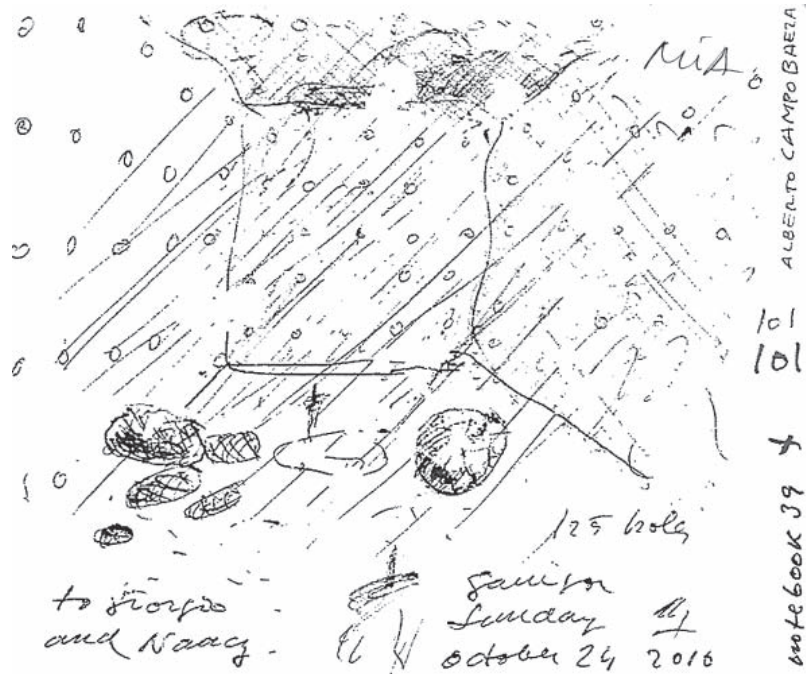
And I tell them that the main building of the Granada Museum of Memory is like a “slice of the cube”, because it has the same width and height, immediately bringing the two buildings into line.¹² Like the words in a poem.

I go on to relate how I endeavored, with the creation of a second building along with the existing one, to create the new city. Similar to a great epic poem composed of separate verses, this new city would be made up of many buildings arranged in harmony with one another. The Manhattan grid plan is a fine example of how to accommodate the verses of that great epic poem in a structure that combines freedom and order.

When I embark on the Lanzarote project in black concrete, made with dry volcanic lava as gravel, my aim is for the building to disappear as it melts into the volcanic lava terrain in which the great platform is embedded.¹³ With this arrangement I am simply producing harmony. Like free verse in poetry the great piece appears as if it was always there, and just like any poem, as if its words had always been so fine-tuned.

Using the same kind of poetic device or architectural mechanism, I have devised a great platform for the House in Zahara, a large crate made of Roman travertine.¹⁴ On the one hand, the golden Flaminio travertine matches perfectly with the golden sand of the beach, with the same effect as the black color of the volcanic charcoal on the building in Lanzarote. In this case the travertine gives expression to the Roman presence in the area so many centuries ago, as borne out by the remains at nearby Bolonia.

The ensemble of volumes in Granada, the charcoal concrete in Lanzarote and the Roman travertine in Zahara, what are they all but an attempt to establish a poetic harmony capable of evoking Beauty?



PIERCING TRANSLUCENCY

On Light. When solid light pierces translucent light.

I would like once again to pause and reflect on light in architecture. It is my belief that we will continue to make progress in how to use light, opening up new possibilities in how to control light in a very precise way. If light is matter and a primary material of architecture, it ought to be used with exact, *quasi* mathematical precision, controlled like structures by means of its exact calculation. A true labor of research.

I have always argued that Architecture itself is and must be a true labor of research. An architect must attempt to advance in every project step by step, and through baby steps advance one more step in the long history of architecture.

Architecture is not just the construction of capriciously conceived forms, built with enormous effort and expense, only to amaze the ignorant crowd and, at times, the wise who are ignorant of almost everything related to architecture.

It is about building spaces guided by the hand of reason, which belong to the era in which they are constructed, faithful to their time. Architecture has always gone hand in hand with new technologies. That is why we say that worthwhile architecture always bears the hallmark of true research.

In his acceptance speech given upon receiving the National Research Award¹ in 1982, the Spanish philosopher and disciple of Ortega, Xavier Zubiri, expressed his gratitude to the Spanish people for recognizing that Philosophy is also a true labor of research. And if in that speech, wherever he says “philosophy”, I write “architecture”, the result is unimpeachable and surprising in the similarity of the views expressed regarding the best architects and what they should be striving for: a true labor of research.



I am convinced that what Palladio, Bernini, Mies van der Rohe, and Le Corbusier did, to name just a few, was true research. All of them deeply understood their time and they used technology as a key to unlock new

ways of conceiving of and constructing space. They researched new technologies and studied space as true scientists, not merely as artists. Mies van der Rohe could never have conceived of continuous space if he hadn't had steel or been able to make use of plate glass in large dimensions. Understanding technology, he was able to create new possibilities for architecture.

And so, if research refers to new technologies as they are applied to the materials and construction of architecture, we must ask ourselves whether we can conceive of that same research in relation to light, the oldest material of architecture? That is our intent and the topic I will be addressing here.

2



SOLID LIGHT²

I have written extensively on light in architecture and built many works in which light is a central design consideration; so much so, in fact, that some people associate my name with the use of light. I will never get tired of repeating it: light is the most luxurious and precious material used by architects. However, because it is free, many of them don't place a high value on this divine ingredient. Ask any scientist, light is as material as stone and there can be no architecture without it. Architecture without light is like music without air: *Architectura sine luce nulla Architectura est.*

In well measured and controlled quantities, depending on the desired effect, the solid light of the sun enters a building through holes drilled into the ceiling or the walls: skylights in the uppermost horizontal plane, the plate roof, or windows opened in the vertical plane, the walls, and is not only of capable of illuminating the space created by the architect, but also of tensing and tuning it. Solid light allows spatial friction, thus giving a space its own unique tune, much like the passage of air between the holes, strings, and within the resounding chamber of a musical instrument that gives birth to its own sound.

TRANSLUCENT LIGHT

If the situation of a space in shadow, pierced by contrasting solid light is understandable, that of a translucent space pierced by solid light

should be equally clear. But in order to understand it better, we will first need to go deeper in our understanding of simple translucified space.

When the Goths first raised their stone cathedrals, the whole point was to get more light from heaven, quite literally the sky. They rose upwards not just because of the spirituality of the form of the construction, but also in pursuit of the greatest quantity of light that could stream through their stained-glass windows. In order to achieve this, and maximize it, they invented the clerestory,³ the upper level of the nave of a church, which was very effective in redoubling exposure to light. The light was the central consideration of the entire operation.

3



Given that the quality of glass at that time was not perfectly transparent, we can imagine those spaces first filled with a very special, translucent, and beautiful light. With the ornaments of the glass, they at once filled with the pedagogical spirit of colors and doctrines. As a result, those gothic spaces lost clarity. Medieval architects probably did not think, or realize, that the rational and primary impulse for what they had done was, in fact, motivated by the search for a greater quantity of light. They forgot this and filled the space with more doctrine, extinguishing the luminous potential of the churches; more spiritual light and less material light.⁴

4



In only a very few cases did those naves fill with celestial, translucent light, the sort we might call more “whitish”, and which, in a certain way, enveloped the space as if it had passed within a cloud in the sky. Yes, a majestic cloud whose verticality, emphasized by a stone structure raised as high as possible, made it a glorious sight. However, besides a few exceptions, the *horror vacui* latent in every human being had its way, resulting in the loss of that brilliant translucency. More doctrine and less light.

Víctor Nieto, in his essay *Light, Symbol and Visual System*, argues that it was not light but the construction itself that led Gothic architects to raise the naves of their churches. Nevertheless I believe light to have been the central element of Gothic architecture. More light meant making more “divine” those spaces that were in reality not only more vertical, but also more “spiritual”, achieving a concept so ardently sought after: the suspension of time.

5



Several writings about the Cathedral of Avila,⁵ with its echoes of French Gothic, lament the fact that the stained glass windows are “*so lacking in color*”, when it is precisely that lack of color and purity of light that makes the cathedral so very beautiful, bathed in that same translucent light that we are concerned with here.

6



Centuries later, the Baroque period saw the rebirth of light as the central focus of design. The best architects of the time, such as Bernini and Borromini devised new ways of treating light. The diabolically brilliant invention of Bernini, *luce alla Bernini*,⁶ was magnificent: he hid the entry point of the brightness of the light behind constructed forms such that the space appeared mysteriously flooded by divine light. In order to accomplish this feat, he scrupulously controlled his design with such mathematical precision that every millimeter of its dimensions and orientation were accounted for and reconciled.

7



Many years later, the invention of the “glass block” brought along the ability to erect an enclosure, an entire wall, soaked in light. The glass block was the *in situ* precursor of translucent concrete which some in our century desire to patent. In my estimation, it adds hardly anything substantially novel to the marvelous and old-fashioned “glass block.”

8



In any case, the wife of Doctor D'Alsace, the owner of Pierre Chareau's Maison de Verre⁷ in Paris would recall that while it was under construction, a peculiar character outfitted with thick, black-framed glasses and a hat would pass by every morning to inquire about those pieces of “glass block”, a complete novelty at the time. That person was none other than Le Corbusier. The Maison de Verre (1930) was not only a bold statement in favor of “translucent light”, but also, because of its dimensions and proportions, one of the most beautiful spaces in the history of modern architecture. Afterwards, Le Corbusier would use the glass block in many of his works, but never with the skill and polish of Chareau.

In the same vein as Chareau, Giuseppe Terragni put up a breathtaking house for the V Triennale of Milan⁸ with more “vertical space”, whose large façade of glass blocks (*pavés verre*) boldly retains, by the use of transparent glass from side to side, its intended eye-level evocation of a French window. This studio is a marvelous piece, a key to Terragni's own architecture and also to the history of Modern Architecture.

Perhaps it is that horizontal plane strip in the roof that confers on the space that greater sense of tension than is to be found in Chareau's house. The long silk curtains, also translucent, combine to make this space difficult to equal in terms of illumination.

Jesús Aparicio has written a text *The Density of the Architecture of Giuseppe Terragni*,⁹ in which he makes an accurate analysis: "*The interior of the studio is a paradigmatic example of the premises of phenomenological transparency. The box opens up to the light by building one of its sides with translucent glass; furthermore on this plane of light a horizontal strip built with transparent glass stands out from all the rest, which is done in glass blocks*".



SOLID LIGHT ON THE TRANSLUCENT SPACE

Could it be possible that similar to the rays of sunlight, solid light would "break" the darkness of the space in shadow, and also bring "tension" to the translucent space?

Let us take a step further with this idea by taking a step back into the history of Architecture. Let us imagine a new type of space which, learning from all its forebears, proposes new possibilities.

We dream of a luminous, translucent space, like a cloud pierced by the sun's rays of solid light –by such means and to such a degree that the operation at work there becomes palpable and visible. Just as it is easy to distinguish the light from shadows in the Pantheon of Rome, this new space would be recognizably translucent and obviously pierced by solid light. This in essence is the meaning behind "piercing translucency".

ADDENDA

In the most serious attempt to advance architectural history in its relation to light, I would like to propose here a new type of space based on previous works, which opens new paths for the future.

We already have experience of working with this kind of light in previous projects. The vestibule of the San Fermín College,¹⁰ in Madrid, is a triple-height space with a great cylinder of glass blocks which only uses translucent light.



11



And the same is true for many other works too numerous to mention: from the Cultural Center in Villaviciosa de Odón,¹¹ 1992, to the Benetton Nursery,¹² Venice, 2008 –the emphasis is always on light, whether translucent or solid, as a primary material of Architecture.

12



In 2009, in an attempt to win the competition for the design of a new entrance to Milan's Malpensa Airport, the Porta Milano, Paulo Durao, a young Portuguese architect and I conceived of a magic box design: a radical and bare space filled with translucent light which we rippled with a rain of solid light.¹³

13



The key to the operation was to make possible a harmony, yet with unique contrast, of two kinds of light, like the combined sound of instruments in a musical composition.

As I said already, I will never tire of insisting on the importance of measurement and exact quantities of the various ingredients which go into the recipe of architectural design, as the dish of the architectural construction requires the same precision that the words of a poem exact of the poet: too much salt or too much pepper, or rather, just a pinch in excess or a smidgeon too little ruin the intended flavor.

14



My intent was to make a space filled with translucent light and pierced by the solid light of the sun in a precise *quantity for quality* artistic effect.

MIA, MUSEUM OF ITALIAN ART, GARRISON, NEW YORK¹⁴

There's a project on my desk at my studio in New York in which I've put all my hopes. Good fortune is shining upon it: a pavilion to accommodate the collection of Italian *Arte Povera* and Murano Glasses for the Olnick Spanu family in Garrison outside of New York City. It is the same place where I built a house for them thanks to a combination of my efforts, their generosity and the effective assistance of architect Miguel Quismondo.

15



The project envisages a very restrained concrete box. The entrance is a special space, a 10x10x10 meter cube whose upper half is translucent.¹⁵

In the structure, we substitute bones for little bones, if you will permit a slightly inaccurate metaphor. In short, we make the structure

delicate and white, as opposed to bold and heavy, and covered inside and out with translucent glass, so that it has the ability to sufficiently resist gravity while also disappearing through the force of the light that streams seamlessly through the structure. This structure is made with thin pillars of white painted steel, perfectly suited to define a cubic figure, and it will have a depth of 1 meter allowing movement within for behind-the-scenes maintenance of installations, artificial lights, and for cleaning.

Like I said, it will be covered with translucent glass. On the outside, it will be with delicate yet strong white metalwork, capable of withstanding water and cold. Inside, since all the problems have been solved on the exterior layer, the glass can be placed with more radical freedom.

The ground plane receiving the solid light from both the ceiling and the walls will be entirely white in concrete. Besides offering high performance, white concrete most excellently reflects the light and is a key material for the operation of the space.

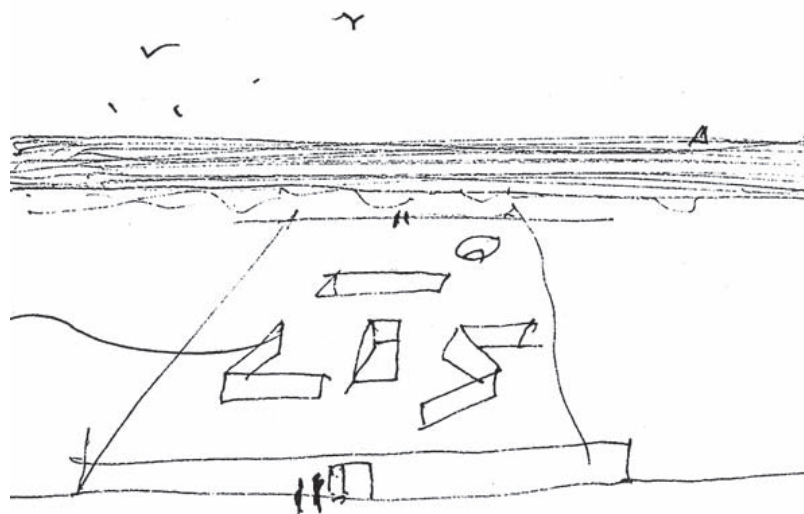
The resulting interior space will be one of translucent light, as if we were inside of a cloud. From the outside, when the lights are on at night, the space will resemble a beckoning lantern. By day, the natural reflected light will mysteriously emanate from the inside, offering an unprecedented sight.

But now to the crux of the matter: simply put, what we want to do is only possible thanks to new materials and new technologies. By making precise perforations between the panes of glass prior to installation, the solid light of the sun will be able to traverse both the inner and outer skin of the glass and pierce what previously could only have been a simple translucent space. The correct order, precision and dimension of these perforations will measure the point of tension of that space. As a result of the natural movement of the sun, the harmony, or lack thereof, the tension between the translucent and solid light will reverberate in the space and make visible the light movement in the splashes of light that appear and disappear according to whether or not they coincide with the openings. So very simple.

What already appeared in some of the images of the models that were made for Porta Milano, the design for Milan's Malpensa airport, here

acquires maximum value and efficiency because of the smaller, more controllable, and more radical dimensions of this space. I am certain that once built, it will be capable, via our minds, of squeezing our hearts.

I would like the amazing space of the MIA Museum, as something new, to touch the light movement, to be a millennial stone in the advancement of architectural history. A space where translucent light is pierced by solid light. And I think the master, Bernini himself, would give it his seal of approval.



FLAT HORIZONTAL PLANE

On the horizontal plane as boundary between stereotomic and tectonic

The Flat Horizontal Plane, the platform, is more than just one of the most basic mechanisms of Architecture. In this essay, I would like to move towards understanding this Flat Horizontal Plane not only as the primary mechanism of Architecture, but also, when it is erected, as the spatial limit between the stereotomic and the tectonic.

Standing before Rembrandt's precious 1655 dry point engraving, *Christ Presented to the People*¹ in the British Museum, I once pondered how the strokes set down by that genius's hand bring to the fore the central horizontal line which functions as the base of the composition's construction. The upper plane of the stone platform upon which the action of the scene transpires, a flat horizontal plane, is placed at the height of the viewer's visual perspective, so that it becomes a mere line. This horizontal line is so perfect that one could say that Rembrandt used a ruler to make it. Or better yet, his hand was perfectly steady.



Rembrandt clearly takes inspiration from an earlier engraving by Lucas van Leyden.² However, Leyden's perspective is set higher, more at a bird's eye view, so that the main plane is seen as a trapezium. Once again Rembrandt, the master, shows his clear wisdom and skill in the precise handling of spatial mechanisms.



On the other hand, the double terminology that Holy Scripture employs for this place, "*lithostrōtos* or *gabbatha*", is very expressive. *Lithostro-tos*, as its Greek root makes clear, means "stone floor"; in Spanish it is called "*enlosado*", tiled with stone. Moreover, in Hebrew *gabbatha* means "a raised place", so that between the Greek and Hebrew terms, the rostrum or platform had this double condition of meaning: raised on high and made of stone. Here one can observe the same operation, with other dimensions, that one sees in the Athenian Acropolis.

Indeed if Rembrandt borrowed from Leyden's form, correcting it with the perfect horizontal line at eye-level, Picasso in his *Ecce Homo: Le Théâtre de Picasso*³ also borrows from Rembrandt's form and in his very free version conserves the horizontal line from the edge of the



top of the pavement, of the *Gabbatha*, exactly at eye-level. And as with Rembrandt, the line is so horizontal that it seems, or is, traced with a ruler.

It is curious how both geniuses coincide, with astonishing premonition, in their perspicacity of understanding the transformation of flat horizontal plane to line at eye-level. Something Mies van der Rohe was to later use in such a defining manner when he put the ground floor at eye level in his Farnsworth House,⁴ an element he repeated in other later works like the podium of his Seagram building on 5th Avenue: the plane became a line in front of the viewer, making the house appear even lighter. Where *less is more* becomes reality.

So it is that flat horizontal plane, that of Rembrandt, Picasso and Mies that we are discussing here, but understood, in a new way, as the limit between the stereotomic world and the tectonic world.

It is very significant that Jorn Utzon in his well known text *Platforms and Plateaus*⁵ begins by saying that “*the platform as an architectural element has a fascinating attractiveness. I fell in love with it for the first time in Mexico on a study trip in 1949, where I found many variations of the platform, both in regard to size and condition, and where many stand alone save the natural world which surrounds them*”. Certainly, it is no surprise that the platform, the raised flat horizontal plane, was the central theme of many of his buildings. The idea of the flat horizontal plane is so definitive in architecture: it is an idea of yesterday, today, and for tomorrow. The horizontal plane puts man, standing on the ground, in juxtaposition to the physical sky thanks to the very gravity on which the human body depends for all of its functions; man has the maximum sensation of balance on the absolutely flat horizontal plane. Furthermore, as this plane is the dividing line between these worlds, the plane is also where they, the tectonic and the stereotomic, come together.

In his book *Studies in Tectonic Culture*,⁶ Kenneth Frampton aptly analyzes, on the basis of profound and extensive commentaries on Utzon and his work, the validity of the platform as a universal architectural mechanism. Frampton reconsiders and gives life to some of the forgotten theories of Gottfried Semper; his distinction between the Stereotomic and the Tectonic in architecture is especially brilliant: the Stereotomic, on the one hand, refers to what is heavy-gravity bound,

immobile, unitary, and continuous, while the Tectonic refers to what is light-mobile, fragmented, and discontinuous –on the other. Frampton didn't imagine the extent to which new architecture could be generated from that idea he recovered. On my part, I owe the discovery of these ideas to Jesus Aparicio, who after his stay as a Fulbright scholar at Columbia University, brought them to Madrid, and later collected them in his penetrating book *El Muro*, "The Wall".

Curiously, Spain's Royal Academy of Language and Letters defines a flat surface as "*that which is situated in a position parallel to the horizon, in the lower part of a painting*". Moreover, it speaks of the horizontal plane as something "*defined by the surface of a liquid in a state of rest*". I say "curiously" because it uses an unstable physical situation, that of "*liquid in a state of rest*", to define what is really a stable physical situation, in fact the most stable of all: the constructed plane.

Likewise, in my text, *The Establishment of Architecture: On the Construction of the Horizontal Plane: the Podium and the Platform*, I presented a heated defense of the horizontal plane, giving all kinds of arguments that in one way or another stemmed from the analyses of Utzon and Frampton.

In this text, which is, in some way, a continuation of that earlier essay, I wish to insist still more upon those arguments as well as explain how I have radically materialized them in some of my latest projects.

I intend, once again, to emphasize how theory must accompany practice in architecture. It's not a matter of drawing some designs, building them and then, as if a ventriloquist, lending them a voice. On the contrary, I would like to demonstrate something that is fundamental to the artistic creation, and even more to the architectural creation: that constructed works are the synthesis of an extended and anterior process of deliberate thought which, in connecting with past history, needs to construct future history. This rational-artistic process could be considered "true research".

THE HORIZONTAL PLANE: BORDER BETWEEN STEREOTOMIC AND TECTONIC

My intention here is to take this one step further by considering the flat horizontal plane as the materialization of the limit between the tectonic and the stereotomic.

When man establishes the horizontal plane, he is doing something more important than just satisfying a physical need for stability demanded by the universal laws of gravity. When primitive man settles and takes possession of a place, the first thing he does is construct the flat horizontal plane or alternatively, he looks for flat, even ground. Accordingly, from that first moment, in order to control and possess it, it is fenced in and delimited to define its boundaries. The plane is the earth itself and is clearly a stereotomic plane.

Furthermore when early settlers colonised caves, the first thing they did was to establish horizontal planes inside for dwelling and sleeping. The cave is the stereotomic organism that affords man his desired protection and stability. The cave is therefore the first house.

And when much later he builds huts, building the horizontal plane with light elements, what he is doing represents something infinitely more important: not only is he dominating the land by elevating himself above it. In constructing the mobile and raised horizontal plane, it is already tectonic: man proclaims his recognition of the tectonic world by which he gains a dimension of mobility, and most importantly, freedom. The hut becomes a sign of freedom compared with the cave. The hut thus becomes the new house.

When Mies van der Rohe builds his Farnsworth House, he is performing an act that goes far beyond merely making his truly beautiful, light, and transparent house. He is, for the first time in the history of architecture, consciously setting the flat horizontal plane floating in the air. This feat is absolutely key to the operation.

Given the self-evident perspicacity of the exercise, it is not easy to explain why later generations of architects have not repeated, in a general way, Mies van der Rohe's creation of the floating, flat horizontal plane in Farnsworth House. Not even Mies himself did it again, nor Adalberto Libera, whose Casa Malaparte⁷ was a radical proposal to set



the horizontal plane as the main floor of the life of the house, like the beginning or end of a stereotomic podium, as if it were a small acropolis. Like a *temenos*. He didn't just design the rooftop as a flat roof; it was more, so much more than that: the same plane is the principal plane of the heartbeat of the house. Nothing that radical was ever repeated, either by Libera or any other architect. A true *temenos*, a meeting-place where mankind and gods come together.

ADDENDA

Some of my earlier projects, the Blas House⁸ in Madrid, Olnick Spanu House⁹ in New York and Rufo House¹⁰ in Toledo are all examples of where I start from the stereotomic podium in order to build the horizontal plane and, above that, the tectonic piece.



In my later projects: Between Cathedrals, already constructed in Cadiz, the Center for Nature Interpretation in the Janubio Salt Flats, Lanzarote, Canary Islands, and in the house in Zahara, Cadiz, the same operation is employed but even more radically. The central theme is the creation of a raised flat horizontal plane, radical and bare. Nothing more and nothing less.



In none of these cases does it become flat rooftop that is exploited for other purposes, otherwise occupied, or used for landscaping, as many architects are doing these days in the name of sustainability. Wherever such aims may be, nothing could be further from our idea, and Utzon astutely observes in the last paragraph of his text: *"To materialize the platform, make it visible, and avoid its disappearance, is a very important topic when one begins to build on top of it. A flat roof alone does not express the flat nature of the platform..."* of the flat horizontal plane.



Speaking for myself, from the very start I have no doubt that the plane must take the lead role in these projects, as the flat horizontal plane is origin of their most central guiding idea. If any emerging element has been eliminated from their design, it was not done so for reasons of either purity or alleged minimalism. On the contrary, the spatial force of this flat horizontal plane, of this platform facing nature, is of such a nature that any emerging element could distort it. It is a flat horizontal plane between the stereotomic and the tectonic, between heaven and earth.

It is clear that this is only possible in places that, on the one hand, have a landscape with a distant horizon that renders this operation meaningful, and moreover, have a climate that permits the intended function in this space wide open to the sky. In all of these cases, in the three projects, the distant horizon is the line of the Atlantic Ocean and all three possess a privileged climate.

THE THREE PROJECTS

11



The first of these three projects, built in Cadiz, the so-called oldest city in the western world, is called Between Cathedrals.¹¹ We were asked to “cover an archeological excavation”, and give the city a public space. To do so, we made something more than just a flat roof. We made a raised flat horizontal plane, paved in Macael white marble, and to which we built a ramp for easy access, also placing a white canopy in the background to give it some shade. Hugged by the two cathedrals, the platform on high blocks the view of the cars passing in front of it and we are left to take in the sea alone, in an effective operation of abstraction. The immense Atlantic Ocean lies before us, nothing more and nothing less. This type of plane clearly belongs to the tectonic world.

12



The building in Lanzarote¹² is situated in the center of the hills surrounding the Janubio salt flats that open onto the sea. Sitting in the center, at the highest point stands a large, square, and flat horizontal plane, measuring 90x90 meters. This plane is black, just like the lava found throughout the island, and capable of underlining the fascinating landscape we face, endowing it with spatial value. An entrance is dug out in the plane as a “trench”, and some courtyards that will serve the functions housed below are spread out in front of the sea. The shade produced by these excavated spaces gives the operation still greater force. This plane clearly belongs to the stereotomic world.

13



The House in Zahara,¹³ Cadiz, also on high, in fact on a coastal dune in front of the ocean, rises up as a square flat horizontal plane, measuring 20x40 meters, and is made of Roman travertine stone. Life takes place on the plane which stresses the seascape before us. An entrance, pool, and an amphitheater, which will also serve as protection from the winds that blow in from the straits, are carved into it. The rest of the house is

situated below, facing the sea. This plane also clearly belongs to the stereotomic world.

In each of these three cases, the geometry adopted, open to all four directions, further clarifies the proposed spatial emphasis. This is true, most of all, since in all of the cases they open to the west, the sunset, and also to the Atlantic Ocean: our line and nature's line thus parallel.

The climate in these places is also perfect for these spatial operations. We may recall here how the *azoteas*, or roof terraces, have traditionally been common living spaces in such island and coastal areas. A few well-known Le Corbusier photos could come to mind here as well. I still remember my experience when, as a child in Cadiz, we ran around the flat roof terraces at home while the women chatted calmly in that privileged, open-sky living room from which we saw the sea and the sunsets. There time stood still.

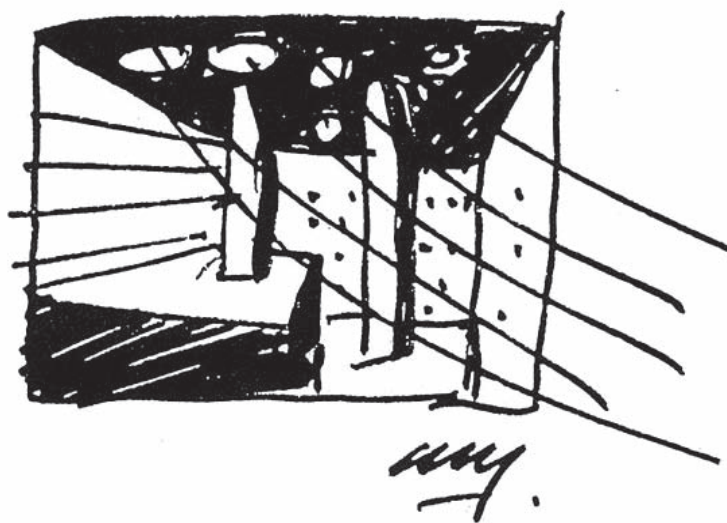
A radical flat horizontal plane of this sort will, without any intermediate element, exaggerate the spatial qualities of these places I've described with their distant horizons. The distant landscape in front of us, in this case the sea, will seem to be coming towards us since it is accentuated by the line of our flat horizontal plane; or it will seem that we, as if riding on Aladdin's magic carpet, are moving towards it. The living functions, for example, of the solarium, of the area around the swimming-pool, of going down a trench, or seeking shelter from the wind in the excavated quarters, can be perfectly performed there.

To convince people that it is perfectly possible to realize the intended functions on a radical horizontal plane, bare and flat, it helps to imagine it like the decks of a ship. Standing on a flat horizontal plane is like standing on the deck of a ship under the open sky.

And while this theme of the platform frequently appeared in my earlier projects, with some element built on top of it to house practical functions, I believe that the search for refinement in making sure that the upper plane is truly the main plane remains a contribution that can still be made to architecture: the construction of the radical flat horizontal plane. In each case, the material used in their construction, i.e. the super-white marble in Cadiz, the black concrete in Lanzarote, and the sand or travertine in Tarifa, contributed effectively to the spatial dominance of the horizontal plane.

CONCLUSION

In short, we must defend the flat horizontal plane as the limit between the stereotomic and the tectonic worlds. Well-defined in proportions, dimensions, and materials, it remains one of the most basic mechanisms of Architecture since time immemorial. According to Utzon, the operation that the Indians sought by raising their platforms to overlook the jungle in the stone age continues to be that which man seeks in the third millennium: "*Inhabiting the abode of the gods*". Happiness, in our case, through architecture.



MNEMOSYNE VS MIMESIS

On Memory in Architecture

Memory is an indispensable tool for all architects. An architect without memory is worthless or less than worthless.

When speaking of memory in Architecture, people generally associate it with mimesis, the direct imitation of past models. Architects have done this time and time again, believing that by means of mimesis, the pastiche, they will be able to resolve the problems posed by new architecture when it must be inserted into an historic city-scape. Many politicians have understood it as such and so encouraged it. Today, architects of this ilk are uniformly applauded by an ignorant society that, having forgotten the ebb and flow of history, protests any new action.

When I propose memory as an indispensable instrument for architecture, I actually refer to Mnemosyne,¹ the Titan daughter of Gaia and Uranus who after spending nine nights with Zeus, spawned the nine muses that contemplate us today. Our rebellious Mnemosyne is far from the docile Mimesis who can't depart from her scripted lines. That Mimesis, which Aristotle calls "*imitation of nature in classical art*", has resulted all too often in mere imitation or the literal copying of forms that belong to various and sundry historical styles.



That said, it is important to realize that the architecture of the historical city is a still living history. In fact, it's more than that: as a faithful reflection of its time of construction, I argue that architecture is the motor which also drives the history of cities. If Rome is the Pantheon, Bernini, and Piacentini, it is simultaneously also Richard Meier and Zaha Hadid, much in the way that if Madrid is Sabatini, the Marques of Salamanca, and Sáenz de Oiza, Lisbon must be equally Pombal and Siza.

We could compare the indispensable tool of memory to a treasure chest from which architects continually extract material to be used appropriately. To distill its best essences while always striving to place new treasures in the chest.

Becoming a true architect, then, requires an enormous amount of knowledge and wisdom whose largest part consists in history and whose natural locus is memory. One retrieves the knowledge which is necessary to distill, along with other vital ingredients, the materials for making the artistic creation of architecture.

Far from anchoring him in the past, memory inspires the architect to soar up and fly into the future by supporting himself in it. Reinhold Martin fittingly diagnoses the architect's relationship with memory in his book *Utopia's Ghost* where, besides providing a very accurate image of the current situation in which *"there may indeed be no escape from this hall of mirrors"*, he concedes an encouraging role to history in the creation of future Architecture: *"With such a turning of the tables, history itself, far from having come to an end, would also turn and return in the feedback loops of a slightly offset periodicity. Caught in these loops, we may eventually realize that if the post in postmodernism means anything, it means learning to live with ghosts, including the ghosts of futures past and present, the ghosts of others alive and dead, and with them, the ghosts of our former selves. It means, in other words, learning to think the thought called Utopia once again"*.

ARTISTIC CREATION

Many people confuse artistic creativity with wild gestures, ingenious inventions, or capricious forms. On the contrary, as noted above, truly artistic creativity like architecture requires an immense amount of background knowledge and wisdom for which the young architect will need to sacrifice his time and immediate ambition to be praised for his new ideas. Wisdom and knowledge reside in the memory.

Goya conserves all of Rembrandt's work in his memory, and vividly so. However, though Goya knew Rembrandt well, no one would dare claim that he simply copied him. According to Goya's son, Goya claimed himself that one of his genuine teachers was Rembrandt, who preceded him by a century. Likewise, according to his friends, Picasso reported that when he worked in the studio, he felt all the great masters of the past there with him, Rembrandt among them. For both Goya and Picasso, Rembrandt was a kind of living ancestor in their memory.

It is not accidental, then, that the two great masters of modern architecture, Le Corbusier² and Mies van der Rohe³ had their photos proudly taken in front of the Parthenon. They never copied it, but it was always alive in their memory.



The best works by architects, those remembered by posterity, are their most mature works. Mature works, and by “mature” I mean the late works of an artist made with time and memory, are extremely rare in our present day.



CPU

In this computer age there is an obvious comparison between Memory and the CPU,⁴ that Central Processing Unit without which a computer is nothing. Like a person with Alzheimer's, who through loss of memory can hardly do anything. And if a computer without CPU is nothing and proves to be innocuous, then an architect without Memory should send a shiver down our spines. It is that dangerous. Almost all the rubbish and whimsical nonsense that we see constructed today is the fruit of a lack of memory on the part of some architects, their lack of culture. Because Memory is, in effect, Culture. And Architecture deeply rooted in Memory is artistic creation, is Culture.



As Cicero said: *“Not to know what happened before you were born is to be a child forever”*.

BACHELARD

Far from limiting our imagination, Memory awakens and complements it.

“All really inhabited space bears the essence of the notion of home, because there Memory and Imagination are joined to intensify each other mutually. In the order of values, they both constitute a community of Memory and Image. Thus the house is not experienced from day to day only, on the thread of a narrative, or in the telling of our own story. Through dreams, the various dwelling-places of our lives co-penetrate and retain the treasures of former days. Thus the house is one of the greatest powers of integration for the thoughts, memories, and dreams of mankind. Without it, man would be a dispersed being.”

These sound words from Gaston Bachelard's seminal text for architects, *The Poetics of Space*, speak clearly to the need for memory. In discussing the centrality of the home as metaphor for all inhabited, hence social, space, Bachelard underscores the mutually intensifying relationship between memory and imagination. Bachelard repeats what we had said before, but with words of greater authority and beauty. We can qualify as "deracinated" those architects who, with excess imagination and inadequate memory, erect those monsters to the fanfare and acclaim of the uncultivated masses of our society. Imaginative architecture centered in memory is the wheat of artistic creation; outside of it the chaff.

EXAMPLES

5



The wonderful and gigantic Pitti Palace⁵ in Florence, although attributed to Brunelleschi, was actually erected in its original design by Luca Fancelli in 1458. Almost a century later, in 1549, Vasari enlarged it, repeating its already existing elements. Similarly, after a competition in 1616, Giulio Parigi remodeled it, only to be enlarged once again in the 18th century by Giuseppe Ruggieri. In all its permutations, the mechanism used, in one way or another, was that of mimesis which clearly guarantees the linguistic continuity of the whole.

6



However, here we must insist upon the value of Mnemosyne over Mimesis, so let us consider contemporary examples of good use of memory in architecture, drawing from Spanish and Portuguese works.

7



When Juan Navarro Baldeweg designs the Convention Center of Salamanca, the masterfully distilled memory of the suspended dome of Sir John Soane's Museum in London effectively collaborates in making it a wonderful space.⁶

8



When Portuguese master, Alvaro Siza, makes the Boa Nova restaurant in Oporto,⁷ one of his first works, the presence of Alvar Aalto in its spatial conception and details does not detract one bit from its originality or extraordinary quality.

When Eduardo Souto erects the Burgo Tower⁸ in Oporto, its strong Miesian flavor does not in any way detract from the originality and quality of his architecture.

FUTURE

Not only are the roots of Architecture to be found in Memory, in the past, but the future of Architecture also calls for Memory.

Architecture's desire to endure depends upon its ability to last in the memory of men. *Le Dur désir de durer*, the difficult desire for duration, the will to last that Paul Eluard considered the first impulse of poetic creation, belongs to every artistic creation, and particularly to architecture. As the Brazilian poet Carlos Drummond de Andrade so eloquently put it: "*I have tired of being modern; now I want to be eternal*".

To walk one must always have one foot in the air and to leap, both feet. To make architecture of our time is to leap forward with both feet. As this operation shows, without memory of past, present, and future, imagination becomes either too free or too regulated. Memory, the awareness of time, functions like this in architecture. Far from being a hindrance, it intensifies and complements imagination, as we have just read in Bachelard.

An architect who wishes to make the most cutting-edge architecture today must deeply work with memory like that generous Mnemosyne of yesterday. With the help of Zeus he will conceive wonderful buildings to house the muses, and so make us mortals happy.

ADDENDA

Naturally, in my works, sometimes obviously and sometimes more subtly, memory of history effectively intervenes.

In the headquarters of the Caja Granada Savings Bank,⁹ the four large columns match in height, diameter, and distance between them with the columns of Diego de Siloe's Cathedral of Granada a marvelous Renaissance piece built nearly five centuries ago. The latter of stone, its counterpart with reinforced concrete: nonetheless both constructions are equally capable of moving us profoundly when we stand before them, and when we are in them; even more so when the sun shines across them both. Bathed in sunlight, as if they were musical instruments and the sun were the musician, they create heavenly music in glorious harmony.

9





The relationship with the Cathedral of Granada was something I discovered *a posteriori*. Following a visit to the Cathedral, I was so overwhelmed by the wealth of coincidences that I asked the architect in charge of the restoration work for a copy of the plans. When I transferred both sets of plans to the same scale the coincidences were so extraordinary that they could only be explained by the mechanisms of Memory.¹⁰



And in Andalusia's Museum of Memory, also in Granada, to dominate the elliptical courtyard with a circular ramp, I decided from the start to take the dimensions and proportions of the circular courtyard of the Palace of Charles V by Pedro Machuca in the Alhambra.¹¹ Having visited it numerous times, I discovered how, in addition to its stylistic values, there was also a tremendously effective physical component to the space. In this courtyard, its dimensions and the proportions are such that from any point, even the most removed, the entire space always fits in our angle of vision.¹²



I often make my students do a test where, putting their open hands at eye level, they must retract them to the side, always at the same level, until they disappear from sight. There is a precise point of greatest visual angle, a magical moment, just before they disappear. That is what Machuca uses in his courtyard for Charles V and what I use in my own: the visual control of the space is materialized by the viewer himself. It is a very simple mechanism that history teaches us and that we can continue using, guided by Memory.



Also present through Memory in that spiral ramp is Lubetkin's penguin pool ramp at the London Zoo.¹³ Although on quite a different scale I use the device of a circular ramp within an elliptical courtyard open to the sky. The combination of upward movement with the compression-dilation of the walls achieves a remarkable spatial effect.¹⁴



And in my most recent work in Zamora, the recourse to memory was immediate. We made a stone box with high walls out of the same stone as that used in the Cathedral of Zamora which stands directly across from our site.¹⁵ And, as testimony to our time, we opted to erect the largest stone possible that could be cut from the quarries. In the corner, like a true cornerstone, we placed a piece measuring nearly three by two meters that made the intention of our operation unmistakable.¹⁶



Like the glass sheets inside, measuring six by three meters –the largest that technology allows us to manufacture at this moment.¹⁷ In any event, along with the most advanced technology, the mechanism is that of memory, Mnemosyne, to produce a work in accordance with our time.



The memory of works from the near past also influences architects. I'm not referring here to the usual formal influence of the most fashionable architecture which is soon forgotten. I refer, rather, to the healthy influence of the most recent masters.



And so, with the help of Mnemosyne, I turned to Farnsworth House¹⁸ in Plano, Illinois for my most recent American house, the Olnick Spanu House in Garrison, New York.¹⁹ However, though they share many features, (namely total transparency, light, white structure, horizontality, and the operation of underlining the landscape), there are many other aspects that differentiate them.



While Farnsworth House stands like a raft, unattached to the terrain, floating in the air, Olnick Spanu House, in contrast, is anchored to the earth by means of the strong podium, so that it is moored to the terrain.

Where Farnsworth House has an indefinite space, open to the woods equally in four directions, Olnick Spanu House has a dominant focus of juxtaposition as it stands on high over the Hudson River, to which it opens on the west, producing an overpowering view of extraordinary beauty.

While the structure, the white pillars, of Farnsworth House restrict the entire house along its exterior edge, caging it in, the pillars of Olnick Spanu House appear inside and outside, so that the roof expands out in all directions.

While the glass plates of Farnsworth House extend from pillar to pillar, in Olnick Spanu House they are unconnected to the structure. Furthermore, in our house the band of pillars in the front is outside of the glass box, and the band in the back is inside, accentuating the sense of transparency even more. We did this before at the Centro BIT in Inca, on the island of Mallorca.

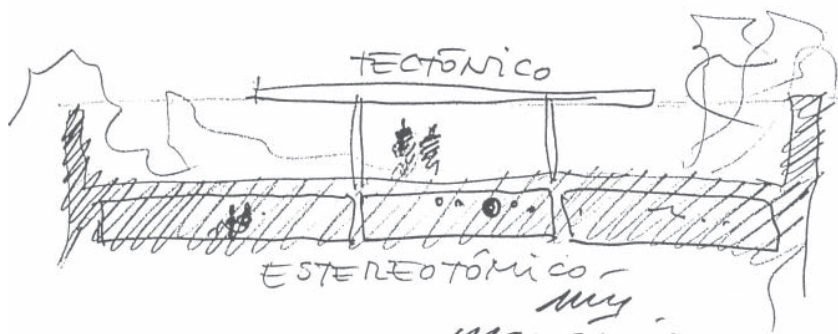
While the pillars of Farnsworth House are laminated extrusions painted in white, marking a clear direction, the pillars of Olnick Spanu House are circular, also white, but marking all and no directions at once.

Farnsworth House is a hut, a modern materialization of Abbé Laugier's dream, a single space in which all functions are developed. It is, according to Semper's doctrine, a purely "tectonic" piece.

Olnick Spanu House, in contrast, is a "hut" placed on top of a "cave". A "tectonic" piece placed over a strong "stereotomic" podium, following Semper's doctrine even more precisely.

In short, while they share family resemblance, and for that reason invite comparison, they are two very beautiful, yet rather different houses. I am certain the master would like these nuances.

This instrument, memory –Mnemosyne– is indispensable to architects who wish to create the new architecture of our time, the new millennium.



ESTEREOTÓMICO -
my
May 29 95.

THE CORNERSTONE

On the corner. Where architecture and ground converge

In the New Testament we find the following reference: “*the stone the builders rejected has become the cornerstone*”¹. And indeed it is the cornerstone, or rather the cornerstones, that define the structure of an edifice and establish its spatial order.



My interest in the cornerstone, and hence in writing this paper, goes back a long time. While all buildings obviously have some form of hard base, I observed long ago that stone buildings define themselves from their encounter with the ground.

In the past stone buildings used to have large base stones which related well to the nature of the architecture. These stones were not only larger or treated differently, but not infrequently the stones used were more resistant. Their encounter with the ground was, and is, that important both in a conceptual and a constructive sense.

It would appear that things have changed somewhat. In some instances I have noticed very small pieces of stone that stand in stark contrast with the immense size of these buildings. At times, little strips and small triangles appear in the most visible and surprising spots and so astonish us even more. These sites cry out loud for larger stone pieces.

Of course, in the majority of buildings, this meeting place of vertical plane and the ground is perfect or at least adequate. Once the stones are proportionally large enough, such points can be adequately resolved.

What I propose to discuss here is that unique spatial situation which is the corner, corners in buildings, the angles of architecture: the encounter of the two planes of the façade with the ground, or that of the two planes of the façade with the roof. These are moments, points, of particular spatial tension.

And I find yet again when considering the theme of the cornerstone, that rather than it being as black and white as finding a specific solution

to a specific problem, if we approach the matter from a more abstract perspective, we inevitably find ourselves dealing with much more general questions that are at the center of architecture, touching its core, its origins. As always I discover that architecture is a question of ideas, but also the material execution of them.

THE WALL BORN AND RAISED FROM THE GROUND: THE BASE

It is possible that the first construction ever completed in stone was a wall, and that it was built in order to offer protection from the sun and the prevailing winds. Or shade and shelter, like the Roman wall at Pescile in Villa Adriana. On the other hand, perhaps it was first built on account of that human impulse to close off and demarcate one's own territory.

Beyond speaking of the meeting of wall and ground, of the vertical plane with the horizontal, we should speak of how the wall itself actually starts from the ground up, which is what it really does. For reasons of stability and constructive logic, the first stones of a wall should be larger than the rest of the stones that make it up or at least of equal size, but never smaller. Of all of them, the first stone should demarcate a crucial point and be special, if not the largest.

The base, which is the moment of encounter between the wall and the ground, should always be made of stones larger than those used in the rest of the building, and the former should be generally sturdier than those resting upon it.

I know that those little stone triangles and strips occasionally arise in large buildings because of natural growth, environmental factors, or the shifting of sidewalk and ground levels, when the stones are actually larger inside. This fact, however, does not make it seem less odd.

Moreover, I am well aware that many of the buildings in question are not properly stone, but clad in stone. Nonetheless, one should demand that the base stones be larger (and never smaller!) than those in the rest of the building for reasons of solid construction and sound logic. To be clear, they should be conspicuously larger in all three dimensions, even in girth and never little strips, triangles, or flimsy pebbles.

The present discussion, then, should begin with the constructive resolution of the sidewalk understood as the border of the plane upon which the building rests. This juncture should be resolved, both from a conceptual and constructive point of view. Architecture is exhaustive down to the last detail.

Likewise, any discussion of the base, and its borders and resolution, ought to remind us to consider the building's meeting point with the sky: for reasons similar to those operative at the base, we should speak of the building's upper extremities, and how the cornice, or uppermost section of moldings along the top of a wall or just below a roof and its crown, must also be well resolved in stone buildings.

The stone wall is not, as some people suppose, an abstract plane whose parts can be cut, pasted, and carelessly interchanged at its base, peak, or anywhere in between.

THE ANGLE. THE CORNER.

If the intersection of the vertical plane of the wall with the horizontal plane of the ground is important, the meeting of the two vertical planes at the angle –the corner– is no less important.

Smaller stones or other materials should never be allowed at this point either. Many non-stone buildings have stone corners. And in stone buildings, the stones at the angles tend to be larger, or at least never smaller. Because the corner is the logical point of departure from which to begin constructing, one should always begin with whole pieces.

When it is a matter of large, load-bearing stone walls, the corners tend to be unproblematic, among others, for basic reasons of stability. However, when it is a matter of buildings that are just clad in stone, we again find serious problems of disparity in their façades. Sometimes one sees pieces in their corners that are too small for such an intense spatial point.

The corners of buildings are of the utmost importance. One truly sees architecture starting from corners: they constitute and define cities.

THE KEY TRIHEDRAL ANGLE. THE CORNERSTONE

If the foundation, the cornice, and the corner are important, the point where the corner meets the ground is perhaps of even greater importance. It is so important since it is point of greatest gravitational tension, the key point of reference for an entire building.

Buildings are designed and redesigned with the points of their structure in mind. When the walls must bear gravitational weight, they are designed with reference to their lines and, most importantly, with reference to the meetings of these lines with the corners. These angles are vital points of reference and resistance. It should seem obvious then that the first stone of this foundation at the intersection of the horizontal and vertical at ground level must be the strongest and most durable. Accordingly, when a building begins to be constructed, this stone has always been the largest and most visible; when inaugurated, the most celebrated: the cornerstone.

Until a few years ago, there used to be a lovely custom of making the cornerstone visible. It tended to be placed conspicuously at eyelevel so that it could be seen clearly, usually on the most visible corner of the building. Moreover, the date of its completion was engraved on it, sometimes in Latin, but always with Roman numerals. Inside the cornerstone itself, a metal box was often placed containing documents pertaining to the history of the new building.

2

COLUMBIA UNIVERSITY

At Columbia University, these beautiful cornerstones are there for all to see in almost all of its campus buildings.²

If one walks from Avery Library to Teachers College, one passes by the Pupin Building at 538 W 120th Street. This building by William Kendall, an architect who worked with McKim, Mead & White, proudly shows its cornerstone which reads: *"CORNERSTONE LAID AUGUST SEVENTH MCMXXV"*.

Doubling back down the same sidewalk towards campus, there are multiple buildings built for Columbia in that period by the same firm. They all have cornerstones of this sort: the Chandler Building at 3010



Broadway declares at eyelevel *“CORNER STONE LAID JUNE THIRD MCMXXV”*; at 2960 Broadway, near the gates of the main campus, the Dodge Miller Theater states *“CORNER STONE LAID DECEMBER EIGHTEENTH MCMXXIII”*; of course, Avery Library, where the Columbia School of Architecture is located, also has a proper cornerstone at the right corner of its main façade: *“CORNER STONE LAID JUNE SEVENTH MCMXL”*.

However, none of the new buildings of the prestigious University of New York, one of the most renowned in the world, seem to have inherited this deep-rooted, traditional custom of architects.

THE CORNER OF AIR

What happens to the cornerstone when, as seems to be the case in the majority of contemporary architecture, the corner is a glassy or airy construction? What happens when the defining, external structure of a building is downplayed precisely in order to achieve maximum transparency?

It is fascinating how architects, when they actually consider the substantial issues of architecture in depth, are able to conceive of spatial challenges that are not easy to resolve. The dissolution of the corner, the moment of greatest structural stress –making it with air– is a perfect example.

In 1950, Mies van der Rohe boldly and passionately attempts this in his beautiful design for the 50x50' House,³ supported by only 4 pillars in the center of its four façades. In such a simple way, instead of putting the pillars on its four corners, Mies liberated the corners and made them out of air. Indeed it must be said that decades previously, in 1921, he had already attempted to achieve the very same result with his competition entry of the glass Friedrichstrasse Skyscraper⁴ and its “angles of air” and again in 1922, with his magnificent Glass Skyscraper⁵ where the curved outline of the glass facade entirely does away with corners.

ADDENDA⁶

We have completed a very radical yet wonderful building in Zamora made out of the same stone as the Cathedral facing it. Naturally, we have also endowed it with a large and extremely special cornerstone.

3



4



5



6



The edifice we built is the headquarters for the Advisory Board of the Regional Government of Castilla-León. The site used to be the garden of an ancient convent, so complying with the competition title, *Hortus Conclusus*, we erected large and thick walls in golden sandstone that trace the irregular shape of the plot, as if it were a huge stone box open to the sky.

Inside, to house the series of offices requested of us, we made a very delicate transparent glass box of orthogonal shapes with a double skin wall called *mure trombe*, in which the exterior skin is constructed with the largest glass sheets currently manufactured and fitted with structural silicone, so that the transparency is complete and free of any metal element. The walls are so transparent they seem like they were made from pure air.

7



Its “air corner”, or better, “air trihedron” is constructed –levitating– in such a way that it seems impossible to be real.⁷

The box of stone walls, built with 1.00x0.75x0.08 meter pieces, has a base with larger pieces, or at least, never smaller than the general size. Little strips and little triangles were strictly prohibited.

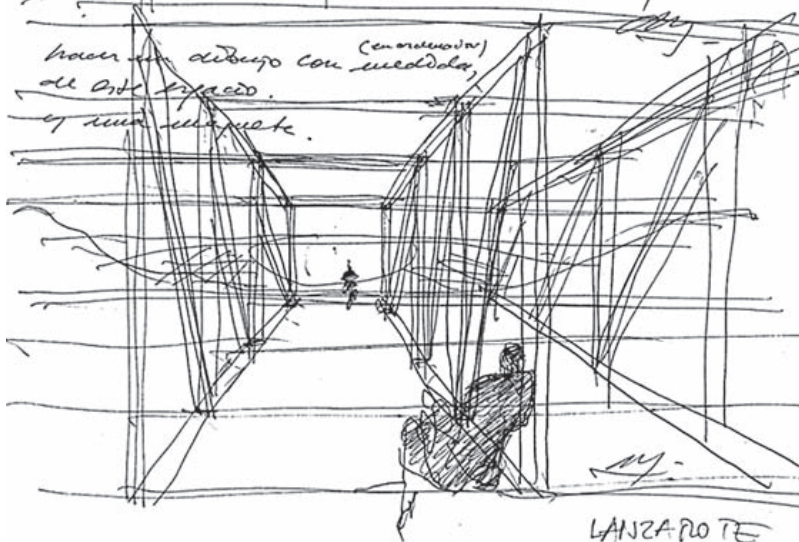
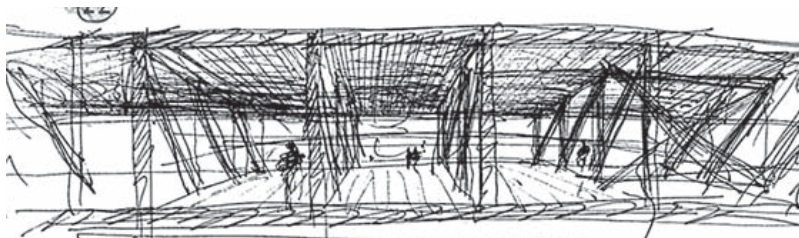
8



Furthermore, as mentioned above, in the corner in front of the cathedral, we’ve placed a large stone, measuring 2.50x1.50x0.50 meters. It is the biggest the quarry and the industry could supply and could be placed. Since it stands over the ground line by 1.50 meters and is placed horizontally, its impressive size stands in clear relief. It is our building’s cornerstone, and not only grounds theoretical considerations but settles questions of durability. On it we have engraved the following words in Latin: *HIC LAPIS ANGULARIS MAIO MMXII POSITO*.⁸ And for similar reasons we have engraved on the most visible angle of the glass cube: *HOC VITRUM ANGULARIS MAIO MMXII POSITO*.⁹

9





hacer un dibujo con (en orden)
 de este espacio.
 y una muestra.

LANZAROTE
 (dibujo de G)
 Estructura.

OF ELEPHANTS AND BIRDS

On structure. On architecture becoming lighter

I have noticed how the structures of buildings are being made and will continue to be made ever lighter. At the same time, they have tended to look less like the cave and more like the hut. Clearly, the giant advances of economies, materials, and technology play a role. However, the phenomenon also results from architects' changing mentalities regarding the conception of space.

If in the past one preferred to eliminate pillars in favor of greater luminosity, transparency, or continuous space, today one could say that pillars are dispersed, or more pedagogically, that large bones are replaced with small ones; the *humerus* for the *phalanx*. Small bones substitute for large bones, both decreasing their weight and increasing their quantity, especially when it is a matter of supporting the same load. Now there tend to be more pillars, but thinner ones. The hypostyle, or roof supported by columns, has recently regained currency, though abandoning the clear order of classical geometry; the forest versus the hypostyle, as Kazuyo Sejima repeatedly proposes.

Just as birds, over the course of evolutionary history, developed ever more intricate bones and complex skeletal structures in order to take flight, so too architecture wishes to fly once more, hoping to avoid the fate of Icarus.

FOSTER, PIANO AND ROGERS

Norman Foster's Hearst Tower¹ in Manhattan proudly rises 182 meters from its privileged spot near Columbus Circle. Its façade of rhombuses, which is pure structure, stands out in comparison to the other buildings.

What interests me most about his building, is that besides departing from a clear idea, of which the structure is the first consideration, this is no mere formal change, but rather the consequence of using a radically different structure that improves upon the conditions of a more conventional one. This structure appears to be rationally dispersed and broken



down into its parts and by dint of being more rational it achieves greater lightness. It is also a patent demonstration of many of the subjects I would like to analyze in this text. Foster's building is a good example of replacing large bones with smaller ones and furthermore distributing them on the façade, thus adopting a less conventional, rhomboidal instead of orthogonal form in the interests of greater structural efficiency.

Of course, the opposite could also be valid. After breaking the structure and walls into smaller parts, one could bring the structure further in, giving more freedom to the façade. A lot of contemporary architecture has moved in this direction. But if that exterior structure is resolved by recourse to dispersion, with beams and geometric forms meeting the needs of a better structural logic, then let the same technique be welcomed in the façade as well. Foster's building is a good example: the *humerus* is replaced by the *phalanx*, while the orthogonal line becomes rhomboidal. The result is that the structure reveals itself proudly on the surface, not merely within.

On that note, when people talk about the so-called "disappearance of the façade", they are speaking about something impossible; that is unless cities were to vanish within invisible and transparent clouds. Thanks to steel, however, it is actually possible to disperse the load bearing elements –the structure– and façade into smaller parts. In this way façades of extraordinary lightness can be achieved, a clear example being Mies Van der Rohe's beautifully curved Glass Skyscraper from 1922.²

But if we are to discuss structures that have been broken down and dispersed outwardly on the façade then we cannot fail to mention the Pompidou Center³ in Paris by Piano and Rogers, built as long ago as 1977. The entire façade is structure.

What is the Pompidou Center, I ask, if not an operation of lightening structure, going for some three-dimensional trusses in bars that are carried with overwhelming logic to the façade? Could it not be considered a first manifestation of this "dispersion" of the bones of structures?

The device, which gains with the passage of time, is not just logical, but beautiful. Jean Prouvé and Philip Johnson, the committee members at the time, were not wrong in their selection of the Piano and Rogers' project.



STRUCTURE

I am more and more convinced of the importance of structure in architecture. It is obviously important since it bears gravitational loads, but above all, it is important since it establishes the order of space.

When I defend the “unity of the architectural fact”, a unity inherent to any artistic creation, I defend neither uniformity nor simplicity. Architecture can be simultaneously complex and unitary. Structures and Construction in a building are as important as the “layout” of the parts in the conception and design. In short, all of these issues must play a role in the developing idea of the Project, from its unitary conception. It could not be otherwise.

At the Madrid School of Architecture where I teach, students learn not only to conceive structures but also to calculate them. And it is my view that it is vital for aspiring architects to understand structures inside out. I will never tire of insisting that architecture cannot be conceived merely in terms of form, and expect that others will intervene later to ensure that it holds up, as if the construction process were some kind of orthopedic exercise! Structure is so much more than a question of transmitting gravitational loads to the ground; it is in essence the establishment of the order of space.

Therefore, when I speak of Elephants and Birds –of many small bones as opposed to a few large bones– I do not intend to make a merely structural reflection, but also one that is basically an issue of design.

MIES

When Mies van der Rohe constructs his cruciform and brilliant, mirror-like pillars, first in Tugendhat House,⁴ and later in the Barcelona Pavilion⁵ of 1928 he does nothing more than attempt to prove that he actually can make the pillars vanish, so that the superior plane – the ceiling– floats. Of course, Mies always makes his structures with bones—complete pillars, precise and perfectly laminated profiles, and welded seams that wish to disappear. He, who spent his life making “Architecture” with a capital A, with capital bones and athletic profiles, did not cease to pursue at other times something of what we are talking about here.

4



5



In contemporary Architecture, the idea of changing large bones for smaller ones is gathering momentum. Architecture had always transmitted the loads directly, with continuous structures that, like stone and brick, worked basically by force of compression. Only wood, despite its problems of durability and conservation, could work in a different way.

HISTORY

The end of the Gothic period produces a certain phenomenon of such dispersion. Antonio Mas Guindal, professor of Structures at the Madrid School of Architecture, recently published a book with the suggestive title *When Structures Were Not Calculated*. The cover is illustrated, as if a précis of its more than interesting contents, with the drawings of several well-known Gothic battlements, roofline stone adornments, which in so far as they resemble lace seem impossible. My interpretation, albeit biased, is that the Goths lightened structure from above not only for motives of weight, but in order to procure more light. But in any case, if it were a matter of bones, the humerals become phalanges. A few humerals being replaced with many phalanges.

When at the start of the previous century structures composed of steel began to appear, they were generally used in industrial constructions or bridges, so as to balance considerations of structural aesthetics with greater usage load. Later on, structures composed of latticework came around for reasons of financial, logistical, and technical viability. All of the beautiful industrial architecture and bridges of that time are a testimony to this decomposition of structure.

TECHNOLOGY

Of course technology has a lot to do with all of this. To make the first compound structures, the joints were entrusted to rivets and bolts, screws and nuts. Later on, welding could be trusted. Mies, naturally, fully trusted welding.

And what used to be done solely for economic reasons in those first steel bridges and industrial buildings is now done for other reasons. One can now speak of the search for a greater lightness, or even a better penetration of light.

CENTRAL FORMAL THEME

However, in architecture, generally speaking, this substitution of the large bones for smaller ones has never been conceived of in the same way as it is now: replacing the powerful, one-piece rolled steel beams with compound exposed profiles, making a show of it, and perhaps even turning it into the central formal theme.

In the 1960s, when Alejandro de la Sota builds the Maravillas Gymnasium⁶ in Madrid, he not only utilizes the compound structure in service of the large hall's light, following the form of the catenary, but he also makes it "occupy that structure". He dares to situate the class-rooms among the beams, which he leaves exposed on top of it all. Something of a premonition of this dispersion of the structure already permeates the whole idea of that building.

But it would be figures from the international scene, like Fuller, who would directly propose, for financial reasons, the generalized use of these structures of bars and small bones.⁷

It is a movement from elephants to birds.

OF ELEPHANTS AND BIRDS

If you have ever eaten a well-cooked bird, you have certainly noted how difficult it is to eat an animal with so many tiny bones, no matter how delicious it may be. And even if none of us have eaten an elephant, you may assume that the meat would come to the table without the bone.

As I can only assume that we will be collectively ignorant about animal bones, it might be helpful to browse through Google to look at elephant,⁸ bird,⁹ and human skeletons.¹⁰ They are marvelous sculptures by a very wise artist in which the bones drastically reduce in quantity, size, and intricacy as they reach the extremities, the hands and feet, for example. The skeletons of elephants too, made up of huge bones, stand in great contrast to the skeletons of birds, which are comprised of smaller, thin light bones.

Of course, there are evolutionary reasons for all of this: birds have to fly and elephants do not. Only when they alight on a branch do birds have

6



7



8



9



10



to bear gravitational force directly. When they fly, on the other hand, the forces at work are more complex; when they walk, they do so hopping, as if dancing.

A common feature in contemporary architecture, with the construction of large-scale spaces of light –or “elephants”– whether horizontal or vertical, is the rational dispersion of their structures for purposes of economy and stability. In the spirit of “birds”.

Bridges with large spans and heavy loads are resolved with compound structures either with huge girders or powerful steel cables capable of resisting massive tensions.

For similar reasons, tall towers which, in view of their exposure to wind, could be considered as great cantilevered beams jutting out from the globe, have no alternative: their structure must be compound.

STRUCTURE IS THE KEY

When I teach my students about the importance of structure, of the skeleton, I give them an example they will never forget. I tell them that if Halle Berry, the American actress, is gorgeous, which she is, it is above all because she has a perfect skeleton, which she has: a perfect structure. From the first moment of her life, her structure –her skeleton– has established a perfect arrangement of space and order which allowed her stunning completeness. They all smile, but not one of them will forget the importance of structure in architecture.

An elephant cannot have small, delicate bones. It cannot have the skeleton of a bird. Nor can a bird have the powerful bones of an elephant. One must consider, throughout the construction of a building, about how many elements, like a door or a window, a material or a color, a texture or a detail, can be exchanged. But what one cannot do, and must not do, is change the structure inappropriately. One cannot put the little bones of a bird on something that was born an elephant and vice-versa.

If we had to mention some contemporary architects who use more small bones than large bones in many of their works, we might bring up Foster or Piano. Foster continues to follow Fuller’s already quoted advice to the tee when he asked him, *“How much does your building weigh, Mr.*

Foster?"¹¹ We might imagine Renzo Piano, moreover, without a Fuller to scold him, following the recommendation by W.Strunk and E.B.White in their book *The Elements of Style*: "*omit needless words*". All writers in English are familiar with that injunction, and architects should know and practice it as well.



But it is perhaps Kazuyo Sejima, SANAA, who in a most provocative, almost demagogical manner poses this question in some of his latest buildings like Park Café, the Yokohama and Naoshima terminals, and the Rolex Center of the EPFL of Lausanne.¹² J.Jaraiz, in his illuminating doctoral thesis, compares and contrasts this Forest Space by Sejima with the hypostyle space so often employed in the history of architecture.



ADDENDA

In some of my latest projects, when there were clear reasons for it, I have tried to apply this system of lightening the structure, replacing the big bones with little ones, a few humerals with many phalanges.

In my first design solution for the Center for Nature Interpretation in the Salt Flats of Janubio in Lanzarote,¹³ since the building "flew" over the powerful existing slope, I resolved the protruding part of the structure with a few large triangular trusses. These trusses had sufficient height, 6 meters, to house the requested functions inside, diagonals included. The resulting space, in which the diagonal bars gave a special quality to the space as one moved among them, was large and well tensed by the structure and the light. Naturally, the structure was the protagonist of the space.¹⁴



In the end, zoning regulations obliged us to change the site to another, completely flat lot, and the design had to change. In the new project, all resting upon a now completely flat plane, it made no sense to repeat the structural solution that the large protrusion had called for in the other situation.¹⁵



In the Porta Milano space I designed with the Portuguese architect Paulo Duro for Malpensa Airport, we conceived of a stereo structure: a straight parallelepiped rectangle, that is a six-faced polyhedron, all of it comprised of white-painted small bones. An internal and external



16



double skin, in laminated translucent glass, provided both thermal insulation and protection against the elements. A few deliberate perforations in the translucent butryal that binds the glass would allow a play of lights that could be defined as a solid light perforating the space of translucent light: rays of sunlight crossing the large interior space as if it were a cloud. All of this was clearly dependent on a three-dimensional structure of white-painted small bars situated between the two translucent skins, such that the light could be adequately diffused within.¹⁶

17



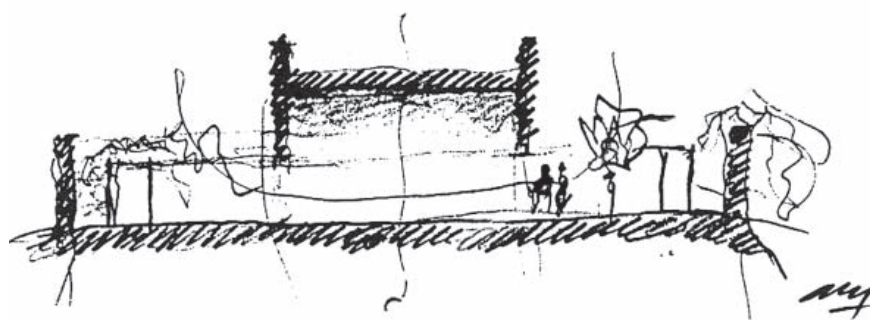
A similar solution of double translucent skin encasing a light structure of small white pillars is what we planned for the entrance piece to the MIA, the Museum of Italian Art, for the Olnick Spanu family in New York. In order to give this space a special lighting and quality, I make use of a 10x10x10 meter, semi-underground cubic room of which the emerging upper half is a translucent half-cube. The structural support for this upper translucent half cube is a dispersed, light structure of small bones, comprised of delicate white pillars. Like a delicate gown, a double skin of laminated glass covers it. The exterior skin, with carpentry, solved the matters of water and thermal control. The inner skin was more delicate in its construction. Both skins had many small transparent perforations in butryal, so that as the sun passes through them in its daily habitual movement, solid rays of light, thanks to the scale of the construction and perforations, become visible. We thus achieved a space of diffuse light pierced by solid light –a cloud pierced by the sun.¹⁷

CONCLUSION

Make structures lighter? In pursuit of a lost ethereality?

Architecture is about making things with meaningful intent. If this search for structural lightness has a deeper meaning, it is most welcome! In our museum in New York, there were clear reasons for making the translucent glass box that covers the entrance with a very light structure, the lightest we could construct. We were not only seeking greater lightness, but simultaneously greater light. Moreover, as the structure arose out of the graceful hands of geometry and translucent glass, we wanted it to dissolve into the mist.

The structures of the future will be lighter: clear in their conception; simple in their construction; perfect, durable, and easy to maintain in their final execution. Once again, structure will be, as it has always been throughout history, the architecture's central consideration: structure that establishes the order of space.



ARCHITECTURE AS ARTIFACT

On the relationship between architecture and nature

In this essay, I would like to meditate on how we might understand architecture as an artificial product, an artifact, a work of art made – *arte/facto*– with and from reason.

In particular, I would like to show how architecture arises in nature and remains within it as something yet foreign to it, as artifice or artifact. I would like to show that architecture is at its best when dialoguing with nature and accentuating its value, while still never imitating it or blending in with it like a chameleon.

Though architecture learns from nature, converses with nature, and even takes inspiration from nature, it should never attempt to imitate nature itself.

On the other hand, architecture is undeniably constructed with materials that come from nature, and in previous epochs, materials crudely appropriated from the natural environment, like stone or wood. The later arrival of bricks or iron heralded a first elaboration of nature's raw materials. In our own time, large sheet glass or the most technologically ingenious variations of steel are made with elements derived from nature; the basic building blocks of architecture have not changed whether they come from the fusion of sands from the seashore or from the transformation of minerals from the mountains, and no matter how sophisticated the processes needed to manufacture them.

This indissoluble relationship between architecture and nature –whether in its collocation within it or in its metamorphosis of it– can never lead us to suppose that our creative work is anything but artificial.

Osip Mandelstam once observed: *“Architecture is not part of nature, not even nature at its best and most exquisite. Much less is it her reflection, moreover, which would constitute a mockery of the law of identity. With chilling freedom, architecture situates itself in a field of action interpreting nature”*.

I must admit that where Mandelstam wrote “poetry”, I’ve taken the liberty of substituting “architecture”, since Mandelstam’s words seem to be addressed to many of the architects who go throughout the world attempting just the opposite, for example those who can’t discuss nature in architecture unless it involves sustainability or planting vegetables on buildings. Such architects are like owners of the organic restaurants that have popped up all over New York: everything that’s not organic, they say, kills.

Architecture has been, is now, and always will be artificial. It is an artifact, that is –looking at the Latin root *arte* (by means of artifice) *factus* (a thing made)– a product of human ingenuity and technique. In this sense, “artificial” and “artifact” are more than fitting words for framing what architecture is about: making something that is the product of reason, a derivative of man’s thought. This is something very different from what nature offers us itself, even at a superficial level. Though we may converse with it and deeply love it, all self-respecting architecture –from Palladio’s Villa Rotonda to Le Corbusier’s Ville Savoye– stands in a perfect relation to Nature *as artifact* not imitation. But if that is not sufficient, we will include the treatise *De rerum natura* by Titus Lucretius Carus in the next bibliography for these architects, and we’ll put a photo of the Roman *Pantheon* on the same table.



Nature has its own eternal and inescapable laws, dating from the creation of man, from Adam and Eve. God put them in Paradise, and after eating of the apple, they constructed the first architecture: the clothing they made from oak leaves with which they covered their pudenda. The canvasses painted by Dürer,¹ housed at the Prado Museum, are a marvelous reflection of this post-lapsarian situation. Sometimes I tell my students a made-up, but plausible story about Adam and Eve’s leaves and branches: they were taken from the same oak tree the Abbé Laugier used to build his primitive hut centuries later. According to Laugier’s well-known engraving, the folded branches of the oak tree comprise the most primitive constructed architecture.²



But obviously the primitive hut had been constructed much earlier. One can even suppose that Adam himself, sick and tired of the cave, which from the beginning served to shelter him and with a certain nomadic notion of liberty, would have been the first to construct the primitive hut and so be the first one to choose where to live after weighing up the

alternatives. This wholly architectural operation of choosing a place is no more than a reflection of the highest human quality: freedom.

From the beginning, man has imposed a certain order on nature. When we drive past vast stretches of planted olive trees, plotted in lines with an implacable geometry that clings well to the topography, what we are contemplating is nature ordered by man. This order is the same order that the architect establishes when he rationally draws up city plans, from the layout of Roman towns,³ to Manhattan's efficient grid.⁴

In no case could one consider this to be a destruction of nature, on the contrary, it is a matter of establishing an appropriate, logical relationship—one that is led by reason.

And Man—the architect at heart—will rationally choose the appropriate materials to construct the most essential structures, and those materials, logically, will come from nature. They will be nature herself, manipulated and transformed. Of course the materials we use today also come from nature, in this case, often much more transformed than merely manipulated.

The most advanced concrete and the most sophisticated steel both come from nature. Artifice—technology—thanks to man's reason, does nothing more than transform nature. Glass, that material that offers absolute transparency and allows the sun's rays to pass through it miraculously, without touching or staining it, comes from the silica of the seashores and deserts, the same sand that caresses our bare feet on the beach. Glass, steel, and cement—the three most modern materials that have made contemporary architecture possible—come, of course, from nature.

NATURE

Nowadays there is a vain tendency among architects to equate architecture and nature, disguising both themselves and their architecture with plants. At times they place vertical gardens on the outer walls of their buildings; other times they cover the rooftops with plants, calling it a “roof garden”, as if there weren't enough earth in the world to plant gardens; yet others cover the building entirely in plants. They cover rooftops, walls, whatever it may be, even themselves, as if camouflaging in

3



4



preparation for a non-existent war. All of it is *contra natura*: difficult, expensive, and grossly problematic to maintain. It is, however, demagogically popular.

If you leaf through architecture magazines from the past few years, you'll see they are full of examples of this type of "sustainable architecture". I maintain that it is sustainable at an enormous economic expense.

In stark contrast to forcing nature with the pretension of calling it architecture is to converse with it—something that architecture has always done, and something that good architecture has always done very well.

5



Villa Rotonda,⁵ from the choice of a topographically suitable place to the last material and formal detail, is a hymn to architecture in its relationship with nature: presiding over it, giving it context, conversing with it.

The Farnsworth House by Mies van der Rohe is also, above all, a hymn to nature. The spatial transparency and continuity achieved there were conceived of precisely because the site sits within a marvelous natural forest that, in turn, becomes the protagonist of the artificial operation. The equidistant columns, in particular, establish the order of the space, providing scale and rhythm. One could say that these columns are the abstract reflection, filtered and rationalized by the architect, of the trees found in the nearby forest. The platform too, raised up to eye level as if it were a raft, lets nature pass beneath it; the absolute transparency of its large plate-glass perfects the operation. In short, it would never have occurred to Mies that making a rooftop garden would make the house "blend in better" with the nature surrounding it.⁶

6



7



Luis Barragán builds Gilardi House,⁷ a wonder of color and calm, around a jacaranda whose purple flowers provide the right counterpoint to the pink, red, and blue color of its walls. The result is sublime, bringing out nature in the most subtle and logical way; integrated to such a degree that it is hard for us to separate the image of the house from that of the tree.

8



When Le Corbusier, in a naturalistic fever, carries a tree up to the roof of Ronchamp⁸ and has a photo taken that he could never bring himself to destroy, he's doing nothing more than entertaining his naturalistic temptation. Upon seeing the result, he immediately eliminated the tree from the roof. It was far too *contra natura*.

Nature and man's interaction with it –this conversation or dialectic– always have been a wellspring of architecture. Saint Augustine did not speak in vain when he echoed the Platonic truism that “*nature is the greatest teacher of truth*”.

TENSEGRITY

Tensegrity –also known as tensional integrity or floating compression– is an incredibly interesting structural phenomenon now applied by some architects in their structures. In architecture, perhaps because it “*looks to nature and does not look at itself in nature*”, such a phenomenon does not necessarily always have to be applied, or even be touted as the salvation, from a structural and formal point of view, of a potential “new architecture”. If we buy into this mentality too easily, we might end up living in pumpkins, and like Cinderella, wait for the good fairy to come to transform them into carriages –in the form of a pumpkin.

That said, I have to admit that tensegritic structures are wonderful. I recommend a clear book on *Tensegrity*⁹ by Valentín Gómez Jáuregui. After reading it one understands these structures perfectly, and particularly how truly tensegritic structures can have interesting applications in architecture. But turning them into “the balm of Fierabras” is a long shot. Can you imagine sleeping on a tensegritic mattress? Try it and we'll talk later.



Understanding phenomena deeply, even understanding them well does not mean that one must apply them all in practice. To give a banal, but effective example: though many architects may admire the flexible, retracting, and light folding structure of an umbrella, we haven't felt the need to generally appropriate this kind of structure: everything goes well until a gust of wind turns it inside-out and breaks it. We buy another one and it is *déjà vu* all over again.

And we find ourselves once again talking about the stereotomic and the tectonic in architecture, just as considering everything in stereotomic terms would make us return to the cave, converting everything into the tectonic would make us like the tortoise, the slowest of animals, but carrying his home on his back.

MIRROR

There is a wonderful project that a young Paraguayan architect, Solano Benítez, has constructed: it is a Tomb for his father,¹⁰ built with tremendous force and intensity in the middle of the jungle.

To achieve its force, he works with a simple wall of exposed cement and a mirror. He includes nothing extraneous; nothing over here, nothing over there. The whole thing is placed with scrupulous precision in a clearing in the woods, among the trees, so that everything disappears, or seems to disappear.

One might say that he wanted to translate the beautiful line by John Keats, "*Here lies one whose name was writ in water*", into architecture since this is what remains: nothing or almost nothing, or rather, nearly everything. That's right: everything is artificial and wholly artificial. This is architecture.

The mirror is a product of man's astonishing inventiveness. Can you imagine the envy that Narcissus, who spent so much time contemplating his reflection in a lake, would feel for the inventor of the first mirror? Current technology makes it possible for mirrors to be perfect and lasting.

Likewise cement, which is also perfectly controllable. Cement is the materialization of permanence, of eternity. The mirror is the materialization of nothingness, of fugacity. *Tempus fugit*.

We find a clear example in the work of Solano Benítez who manages cement and mirrored walls so effectively, like the words in a poem that moves us, with this nearly nothing, the best Architecture. Isn't it obvious then that Architecture is artifact, *Arte facto*?

ADDENDA

Gaspar House¹¹ is perhaps my best-known work. Its most recognizable image shows the patio with the pool and the lemon tree framed by some white walls that enter and exit from the interior, achieving a very lovely space. Behind the walls, the tops of pine trees peer over, providing the finishing touch to the scene. Some people think the house

closes off pure surrounding nature because the house appears closed, and it is; so much so, in fact, that when I write about it, I call it the “*hortus conclusus*”, using an expression from *Holy Scripture* that sums up the central idea of this architecture. The truth is that the surrounding natural environment is full of little houses that are far from remarkable.

The owner’s demand for absolute privacy led to the solution provided by closed courtyards in the front and back of the building. The entrance, with a single central door, was made through the front courtyard. In both patios, lunar lemon trees were planted, two in each. The central living space opens to the two courtyards on its four sides with large and clean picture windows that unify the inside and outside space.

The house is exciting and embodies, as Suzuki’s photographs capture well, great peace and tranquility. But if the walls were torn down, the unbecoming little surrounding houses would appear below those pine trees in a landscape in which nature has been insulted.

What we did, in fact, was as artificial as architecture itself. We created an interior landscape in precise dialogue with nature that has proven itself very effective. Of course, it wouldn’t occur to us to propose this typology in an open landscape with a distant horizon, for example, facing the sea.

In the same way, we developed similar strategies in the project for the town of Zamora.¹² In front of the Cathedral, a stone building bearing testimony to its historical time, we decided to respond with a known language but with a different composition.



We conceived of a large enclosure of dry, strong, round stone, with large dimensions of masonry cuts, thus creating an artificial interior landscape: artificial and lovely. Within this new landscape of large, sun-soaked stone walls, we erected a box made of the purest glass in the biggest dimensions that today’s technology would allow. By means of some strategically placed openings the surrounding landscape is highlighted, and in particular the area around the Cathedral.¹³



Of course the architecture we made there is artificial, and it will be no less so when the large trees we’ve planted in the courtyard grow, just as the lemon trees in the Gaspar House grew.

14



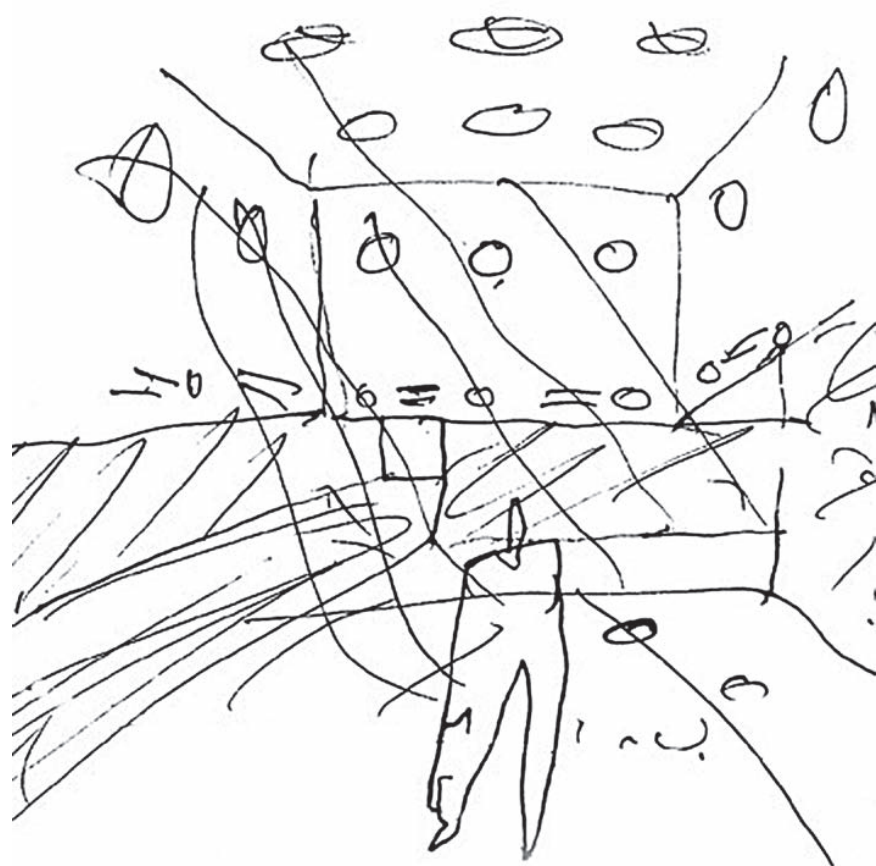
We built the BIT Center¹⁴ in Mallorca and the recent Moliner House¹⁵ in Zaragoza in the same spirit: given an inadequate environment, our task was to create a new, artificial landscape that was worthwhile.

15



A friend of mine, a good architect and a better observer recently remarked to me: *“Are you aware that in all of these works of yours that you call artifacts, you’ve planted trees in open-sky boxes, all of them?”* He’s right: at the BIT Center of Mallorca, in Guerrero House, and in the back courtyard of the Caja Granada, I planted orange trees; in the Gaspar House, lunar lemon trees; in the Moliner House grape vines, jasmine, and birches; in Zamora, large chestnuts, lime, maples, and cypresses.

Architecture and nature get along better than well, they converse, but they never merge and are never mistaken for each other. This would amount to having understood nothing about either nature or architecture.



SUSPENDING TIME

On time. On the ineffable detention of time

In this text, I would like to analyze why some architectural spaces are able to stir up such an inner commotion within us. Although it may seem an abstract concept or theme more properly pertaining to poetry or philosophy, this concept of suspension of time occurs with an especially real and palpable force only in architecture. When we stand before or inside certain architectural spaces, time seems to stop, suspend itself, and become tangible to human beings.

There is no denying the profound emotion –the suspension of time– one feels on entering the Roman Pantheon.¹ There time stands still and we are moved. I still shed tears every time I go back. I often mention to people the deal I've made with my students for many years now. When they visit the Pantheon they have to send me a postcard, a *cartolina illustrata* with a picture of the inside, telling me whether or not they cried. All of those who have written have cried. I've amassed a good collection.



This metaphysical time that poets, musicians and philosophers express so well is the same time that those of us dedicated to architectural creation seek to capture. It is a central theme of architecture.

Burnt Norton is the first of the *Four Quartets*, one of T.S. Eliot's key works. In its first five lines, the word "time" appears seven times with surprising reiteration:

*"Time present and time past
are both perhaps present in time future.
And time future contained in time past.
If all time is eternally present
all time is unredeemable".²*



The Spanish poet Jorge Manrique ineffably claimed in the following lines:

*"Beholding how each instant flies
so swift, that, as we count, 'tis gone
beyond recover,
let us resolve to be more wise,
than stake our future lot upon
what soon is over.*

*Let none be self-deluding, none,
imagining some longer stay
for his own treasure
than what today he sees undone;
for everything must pass away
in equal measure".³*

And the Cuban poet Fina García Marruz, also expressed it so well in a poem inspired by Pindar:

*"Become who you are, who is the one that you were,
on yesterday and not tomorrow time insists,
become, knowing when you are no more,
what you wished shall remain".*

And we could continue with quotations from countless poets who have understood that time, past, present and future is the central theme of artistic creation. From Poetry to Architecture.

I will never forget how, when my building for the Caja Granada headquarters had just been inaugurated, one of the people who worked there recalled having wept on entering the central space for the first time. Right there, at that very instant, time stood still. I must confess that, years later, every time I return there and enter that space, my heart still skips a beat, and even more so if the sun, up to its usual tricks, alights upon and strolls over its alabaster walls.⁴

These experiences exemplify, each in unique ways, the suspension of time that I'm speaking of here.

Architects must deepen their understanding of the architectural mechanisms that make these results possible. Suspending Time and finding Beauty. I'm still trying to hit upon that perennially elusive "Beauty itself" that every artistic creation seeks to embody, and most especially architecture since it is a form of high art.

It might be helpful to consider how architecture, in comparison to other art forms, is the only one whose creations are capable of physically enveloping man, its protagonist. The experience of being able to stand inside a work of art in flesh and bone pertains solely to architecture, and is impossible to produce in the other arts.

If a space built with gravity, with materials possessing an unavoidable gravitational weight is tensed by light –light which itself builds time– so that we are moved through the physical, beyond the physical, then we can properly say that we have attained architecture. Architecture happens when we succeed in stopping time in the constructed space: entering within dreams-come-true.

I will not tire of repeating that time is a central theme of architecture: time that is structured by light; capable of stopping our hearts or tying them in a knot, much more than the forms of a passing style or the exquisite adornments of the best construction. *Utilitas* and *Firmitas* only acquire their full meaning when *Venustas* is attained.

Time in Architecture can be analyzed from many perspectives: the time of *Utilitas*, the time of *Firmitas* and the time of *Venustas*. Not forgetting the time of Memory.

THE TIME OF UTILITAS. FUNCTION

There is a time that refers to the capacity of ensuring that the function for which the building was erected will endure. A time relative to function: use, utility, *utilitas*. Time of *utilitas* insists that a building carries out the functions for which it was commissioned and, moreover, that it be adaptable to different functions over the long haul. When I was a student we learned this in terms of the "architecture of boxes" and the "architecture of cases."

The case meets the requested function exactly, but it can't be used for anything else. A knife sheath can't be used for a spoon; nor is a spoon holder appropriate for knives. If the question is changed, the answer is no longer valid. It tends to happen when, in addition to the specific nature of the function, the dimensions are also strictly bound within certain settled parameters. A low income housing building, even if it is well-resolved to the last millimeter, will most certainly not serve for anything else.

The box, in contrast, can admit many different functions over time. Obviously, the larger the size of a space, the greater the number of different functions it can allow. Boxes endure the test of time better than cases do.

Time is kinder to boxes than cases. And kinder still to larger boxes rather than smaller ones. Berthold Lubetkin, architect of the penguin ramp in London, was right when he said that he did no more than build boxes, shoe-boxes in concrete.

THE TIME OF FIRMITAS. CONSTRUCTION

There is another time that speaks of physical duration, of the effective combination of materials that culminates in the most perfect construction of architecture. The word *firmitas* means strength, and a well-constructed building will be able to last many years and will remain on solid footing for a long time. All of the great masters of the past have been, furthermore, very good builders whose attention to *firmitas* allows us to admire their words in flesh and blood today.⁵



THE TIME OF VENUSTAS. BEAUTY

The time of *Venustas* is that which can be suspended, that stops when we encounter the particular beauty of an artistic creation. It is the most difficult to control, but for that reason it is what most interests us.

All of architecture's treatise writers have sought to come up with a few universal rules that would not only serve to transmit certain forms or styles, but also emit a beauty always capable of moving men deeply.

It is a difficult enterprise. Just as happens with many excellent cook-books in which nothing is spared to provide every last detail and consideration regarding a recipe, the exquisite dish still requires a skilled and passionate chef. No recipe can guarantee the quality of the cooking. The same thing is true in architecture; one needs a good head, a good hand and one has to have a talent for it.

THE TIME OF MEMORY. PERMANENCE

Another thing is the time that the building is capable of remaining in men's memory: a built work's resistance to oblivion, or in other words the thing that secures its trajectory into architectural history, which has little to do with current fashion or passing fame. Those of us who are no longer children have seen lofty names and works that mean nothing today. The phenomenon, controlled and exaggerated by the press, still works at full strength. Many of the names that make up today's architectural "A-List" are sure to disappear tomorrow, their fame short-lived. They will never remain in men's memory.

But there are other, quieter sorts of architecture that are much more eloquent and capable of transcending our tendency to ephemerality. Above and beyond fashion and vanity, our aim should be to erect more profound architecture for history. Such architecture has a different rhythm, and belongs to truth and beauty in fullest sense.

The time of memory –of permanence– is the *"difficult desire for duration"* (*le dur desir de durer*) which Paul Eluard spoke of poetically and which is so profoundly rooted in the will of every creator: the will to transcend. Drummond de Andrade put it so eloquently: *"I am tired of being modern. Now I want to be immortal"*.

And it is Memory that enables us with the passage of time to value more highly those works of architecture that are truly worthwhile. In that wonderful volume *War of Time* by Alejo Carpentier, time passes simultaneously backwards and forwards. Carpentier manipulates time in such a way that only the novel, imagination guided by memory, can achieve; so it is that on his death, Don Marcial at the feet of Ceres, starts going back in time, living his life backwards to his birth. Sentences such as *"the furniture was growing taller"* and *"when the furniture had grown a*

little taller still" and then: "*but now time passed more quickly...*" are Carpentier's tricks of the trade to explain this backward progression of time.

Doesn't something similar occur when we return after a long period of time to some of the best artistic creations and suddenly we understand them perfectly? Not only that, they seem even better than they did before. So it is that like Marcial in *War of Time* I read the poems of Horace and Virgil with so much more pleasure than I did when obliged to read them as a child. I used to learn and now I learn too. And I enjoy. And here and now, just like that, time appears to stand still.

In a very special way this is what occurs with Architecture. I must confess that on my most recent visit to the Pantheon time stood still when that stream of light, travelled across the deep coffers of its bare dome at something other than physical speed and I felt it with much greater intensity than on the first occasion many moons ago. Thus, we architects must remind ourselves that the possibility of stopping time, of halting the sun as Joshua did, is something that we are capable of, just as we are capable of creating something that transcends us.

HISTORY

There are many buildings in History with that special capability of causing us to lose our sense of time.

The Roman Pantheon is the example *par excellence*. Well built, and a perfect embodiment of the universal function endowed to it by its creator, the Pantheon is also overwhelmingly beautiful. All of the great creators have understood that when they've been inside of it. Suffice it to quote Henry James when he recounts the memorable scene of Count Valerii kneeling inside the Pantheon as the sun struggled through the heavy clouds above with the rainwater making the light from on high material. Exquisite. Or Piranesi's engravings of the Pantheon that should in the libraries of all architects.⁶

6



7



And if I had to give just one example of contemporary architecture, I would recommend visiting the Burgo Tower⁷ by Eduardo Souto de Moura in Oporto. Not only is it impeccable in its function and its construction, but also in its radical beauty. Going in, out, and through it, and I speak from my own experience, is like escaping from time. This

building clearly reflects its historical period, the third millennium that we live in today. Essential.

THE BLUE-EYED ROTHKO⁸

Every time I enter the Olnick Spanu family home in Manhattan my heart skips a beat: there in front of me, I see a painting by Rothko, my favorite painter, in an unusual size and color. Its small dimensions and blue and green tones completely sweep me away. A good friend of mine, with whom I often discuss this painting, tells me it is “*the blue-eyed Rothko*”. He’s right. I can witness to the fact that there, in front of this wonderful painting, time stops, it disappears.



It happens that painting, like architecture, shares this special capacity to carry us away and suspend time. Such was my experience on my first unforgettable visit to London when, with Sáenz de Oíza, my beloved teacher and Spanish master, I stood in front of Velázquez’s *Venus of the Mirror*⁹ in the National Gallery. Time, space, desire –everything– disappeared. In that brief infinite lapse we stood as if in divine rapture.



MUSIC CAPABLE OF STOPPING TIME

I will never forget the moment when Peter Phillips, director of The Tallis Scholars, in an interview he gave in early spring 2011, before performing Tomás Luis de Victoria’s *Requiem*¹⁰ in New York, spoke of “suspended time”.



In that interview, the words flowed from his mouth as if in a cascade: intensity, sobriety, profundity, precision, simplicity, clarity, but above all, suspension, referring to time. When asked where his musicians had sounded best, he answered in the Sydney Opera House by the master Jörn Utzon.¹¹ It could not have been otherwise.



The concert, devoted entirely to Tomás Luis de Victoria, and commemorating the fourth centenary of the Spanish composer’s death, was long, but I would say that for all of us who filled the packed church of St. Mary the Virgin in 46th Street, everything happened in a second. Time stopped there, in the way that only beauty can make possible.

12



And if I were to mention a contemporary musician in this context, I would choose the American composer Thomas Newman, and author of *Dead already*.¹² You need only to hear this music to understand at once what I'm talking about.

SORT OF DISAPPEAR. CINEMA

And while we could survey all artistic creations and discover that the crux of the matter is always the same, namely reaching man's heart through his head, I am going to limit myself to a couple of examples of how film, the seventh art, is also capable of stopping time.

13



An unforgettable scene comes to mind: the white plastic bag floating in the air in the film *American Beauty*.¹³ Sam Mendes magically transforms something so basic from a novel into a masterful visual piece. Given the supreme beauty of something so simple, we all cry with Wes Benly and Thora Birch. There, time disappears and our heart dissolves in five infinite minutes.

14



Of course, Billy Elliot¹⁴ expresses it still more clearly in that “*sort of disappear*” that he repeats twice when the panel asks him what it is that he feels when he dances. With a stroke of genius Stephen Daldry summed up something as abstract as suspended time in artistic creation so precisely in this beautiful little phrase!

—*What does it feel like when you're dancing?*

Billy: –Don't know. Sorta feels good. Sorta stiff and that, but once I get going... then I like, forget everything. And... sorta disappear. Sorta disappear. Like I feel a change in my whole body. And I've got this fire in my body. I'm just there. Flying like a bird. Like electricity. Yeah, like electricity.

THE SECRET OF ARTISTIC CREATION

Architecture, painting, literature, music, and film are, in fact, no more than the creative works of human beings which redeem us and make this life worth living.

Edgar Allan Poe in his *Philosophy of Composition*¹⁵ captured this suspension of time so well: “*Truth, in fact, demands a precision, and Passion, a homeliness (the truly passionate will comprehend me) which are absolutely antagonistic to that Beauty which, I maintain, is the excitement, or pleasurable elevation, of the soul*”.



That “*pleasurable elevation of the soul*” is precisely the suspension of time that we are referring to here.



Our works go on to “*transcend material and limited life*”. Stefan Zweig, in that essential text I have quoted so very often, *The Secret of Artistic Creation*, manifests this with such force: “*there is no greater pleasure or satisfaction than recognizing that man is also capable of creating everlasting values*”.¹⁶



Works that are worthwhile transcend us; they transcend their creators and no longer belong to us. They already belong to the memory of men.



ADDENDA

I began this text recalling the capacity of the Caja Granada's central space to move us. While this suspending time is one of the final purposes of architecture, I also know that I am trying to explain something that is beyond expression.



If one can speak of the profound impact of seeing the palpable light on the alabaster of the Caja Granada, I would describe what we feel when we walk through the extremely white ramp of the Museum of Memory of Andalusia, also in Granada next to the Caja, as luminous wonder. It is a moving *promenade architecturale* that I believe is indeed worthwhile.¹⁷



In my houses, however, the sensations are very diverse: quiet calm in Gaspar House¹⁸ and Guerrero House,¹⁹ turned in upon their white courtyards; serene transparency at rest in nature, looking down from their podiums towards sought after peace in De Blas House²⁰ in Madrid, the Olnick Spanu House²¹ in New York, and Rufo House²² in Toledo.



Suspending time is after all more closely linked to the slow pace of light and the vertical space than to the greater mobility of vision, to horizontal space and transparency.



23



Other projects of mine produce feelings of yet another kind. Such is the case with the building for the Advisory Council of the Regional Government of Castilla-León,²³ in front of the Cathedral of Zamora. This is a box of powerful sandstone walls open to the sky, and we are stunned when we go inside and behold the extreme delicacy of the glass box constructed within it.

24



It is a similar operation to what I did years ago in Mallorca with the BIT Center.²⁴ The *marés* stone box enclosed an ordered plot of alternating orange trees and white pillars which complimented a simple slab that protects the basic glass box. Both of the “*hortus conclusus*” projects, Zamora and Mallorca, strike us through the powerful contrast between the primitive stone walls and the intelligently deployed advanced technology. Both buildings, Zamora and Mallorca, moreover, lead us to an eloquent silence of contemplation.

25



If I were asked to divulge my trick or recipe, I'd say I have none. I manage to throw myself with my head and heart into each job I do, dedicating an enormous amount of time –thousands of hours– to each project. I want each of my works to unfold in the light of truth always, knowing, as we already knew, that beauty is the splendor of truth. John Keats beautifully encapsulates this metaphysical recipe in the conclusion to his *Ode to a Grecian Urn*: “*Truth is beauty, beauty truth. That is all*”.²⁵ Knowing, as we already knew from Plato, that Beauty is the splendor of Truth.

Paul A.M. Dirac, 1933 Nobel Laureate and one of the great physicists of our time, proclaimed, “*Beauty and truth go together in theoretical physics*”. Could today's architects, instead of musing on vanities, concur with the poets, philosophers, and physicists in the primacy of the pursuit of truth, and attempt to actualize this all-too-possible miracle of the suspension of time?

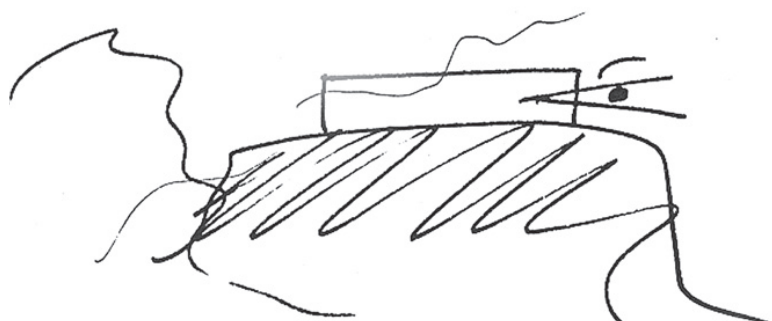
26



Le Corbusier, in simpler language, spoke of the “*unspeakable space*”, and on other occasions, of how the most “*useful*” buildings were those that “*fulfilled the desires of the heart*”. The master was so very right. And if we started with a poet, T.S. Eliot, we will conclude with another, William Blake. In his *Auguries of Innocence*²⁶ he proposes:

*"To see a world in a grain of sand,
and a heaven in a wild flower,
hold infinity in the palm of your hand,
and eternity in an hour".*

This eternity is what we would like to achieve with our architecture.



Feb. 2000

my

INTENSITY

Dialogue with Kenneth Frampton

Just as these essays, written during my sabbatical year at Columbia University, were close to completion, Kenneth Frampton made an appointment with me to have a drink before my mandatory and brief quarterly trip to Spain in April. We had a conversation that evening at the Italian restaurant on Amsterdam Avenue where Frampton tends to go. We sat at the same table as always, he with a glass of Riesling, I with a double espresso.

While the conversation began with my enthusiastic praise for the concert I had heard a few days previously at Avery Fisher Hall in Lincoln Center, with a program of Mozart's *Solemn Vespers*,¹ and *Requiems* by Lauridsen² and Fauré,³ we soon got on to the usual topic of architecture. Almost immediately, he used the word "*intensity*" as an indispensable quality for all architecture worthy of the name. And though I had already decided to conclude the series of my essays for Columbia, this conversation seemed so interesting and important that I decided to transcribe it as it took place and add it as an addendum to my *Principia Architectonica*.

I must note here that Kenneth Frampton, besides being as healthy and intellectually astute as ever, remains among the most prestigious and influential architects, professors, and critics in the world not only on account of his numerous books, such as *Modern Architecture: A Critical History*, *Studies in Tectonic Culture*, and *Labour, Work and Architecture*,⁴ but also for his tireless work directing doctoral theses and research projects as Ware Professor at Columbia University. His contributions to the field in his essays, generous introductions, and lectures are too numerous to mention here, but the great tribute that was paid to him in November 2010 on the occasion of his 80th birthday was significant. No one was missing.

After saying the magic word "*intensity*", we both agreed on the three conditions every self-respecting architect ought to pursue: constructing radical works, in-depth teaching, and substantial research and production of insightful written work capable of communicating the logic



on which the former are based. One could think about the three as if they were legs of a table: ideas, drawings, and words.

We also spoke of Beauty.

Frampton argued, following Saint Augustine of Hippo, for beauty understood as the splendor of truth. After bringing up Plato –and his *Symposium*– from whom Augustine had taken this brilliant image, I told him how I had discovered a beautiful distillation of this idea in the last lines of the *Ode on a Grecian Urn* by John Keats: “*Truth is Beauty, Beauty Truth*”.⁵ I also told him how much of a treat it is that you can buy wonderful and very cheap books on the streets of New York City, and that my most recent find had been a book of poems by Keats in which I had made this not very original, albeit marvelous discovery.

5



6



Frampton then reminded me that the shield of the Architectural Association of London, the AA,⁶ where he studied Architecture, was adorned with the following motto: “*Design with Beauty, Build in Truth*”. In a certain way, that summarized everything we were talking about.

We also discussed Philosophy.

Frampton reminded me about Hannah Arendt, the Jewish philosopher and disciple of Heidegger, who was persecuted and for whom Frampton feels a particular fondness. He recommended that I read her seminal text, *The Human Condition*.

I told him how he had introduced me to Osip Mandelstam, the Russian Jewish poet imprisoned by Stalin who recited Virgil's *Aeneid* to his fellow prisoners. Mandelstam's *Talking about Dante*, originally written in Russian, is a text of unsurpassable beauty on the topic of artistic creation and indispensable to any architect's library. I have it in Spanish, in a splendid translation by Selma Ancira, and I gave it to Frampton in English, translated by Clarence Brown and Robert Hughes. For years, I have included it in the bibliography I give my students. I also reminded him that he was the first person to speak to me about John Donne, a 17th century English poet, relative of Thomas More, whose work I am beginning to discover.

Frampton then spoke of Ortega y Gasset, whom he knew through his dialogues with Heidegger in Darmstadt, from which the clear essay *Meditation on Technique* comes.

Having recounted to him how many times I have found ideas from that essay so fundamental for my own writing, I spoke to him of Xavier Zubiri, one of Ortega's disciples who had written a perspicacious text in 1982 when he was awarded the National Research Award in Spain.⁷ I explained how in this text Zubiri had thanked Spanish society for recognizing philosophy as a true labor and field of research. I told Frampton how in that text, if you replaced the word "philosophy" with "architecture", it remains valid, and moreover, very effective in explaining many of the questions we were putting on the table. I've already done it a few times.



We also discussed Architecture.

Frampton generously asked me about my work, and I told him about my work in front of the Zamora Cathedral,⁸ in that old Castilian city. I described the sturdy box we were raising, open to the sky, constructed with large stones, the same stone as that in the Cathedral. Inside, we had placed a delicate box of the purest glass, protected by those stone walls and by the large trees we had planted there. And I described for him the huge cornerstone 2.50 x 1.50 x 0.50 meters that we placed in the corner, in front of the Cathedral, with the engraving *HIC LAPIS ANGULARIS MAIO MMXII POSITO*.⁹ Just like Columbia's cornerstones, but in Latin. And the immense seamless glass panes 6 meters tall and 3 meters wide, with which we built the glass box, engraved with acid: *HOC VITRUM ANGULARIS MAIO MMXII POSITO*.¹⁰



Frampton brought up the communist ideals of his youth, and how both he and they have been tempered over the years. He then turned to Aalto and Villa Mairea, comparing it with the Tugendhat House and Mies van der Rohe, as he has done in some of his many published books.

We both delighted in the last Pritzker award winner, Eduardo Souto De Moura. A remarkable man, producing remarkable work. We've both written texts for an exhibition organized in Porto, before the Prize. I commented to Frampton that it seemed strange that he had never been on the selection committee for the Pritzker. After smiling broadly, he changed the subject. We talked about friends like Toshio Nakamura, David Chipperfield, and Steven Holl, future Pritzkers. We once again agreed that to make quality architecture a lot of time had to be dedicated to it, resulting in fewer works. The problem of many architects

in the celebrity circuit, we agreed, was that they made so many works that they were dissolved in them. We spoke extensively about Rem Koolhaas, Herzog and De Meuron and their huge works in Asia.

I then told him about the time I accepted the invitation of a good friend, an architect my own age, to celebrate the construction of his 2,000th work. Two thousand! I recalled how, upon returning home, in a bout of vanity, I grabbed all my publications and made a count of what I had made over the course of my life, only 37 works. I recalled how a slight depression overcame me and how that night I resumed my reading of an entertaining biography of Shakespeare by Bill Bryson in which, on the page I opened, he noted that the bard had only 37 plays. I told Frampton how happy I was ever since I discovered that fact.

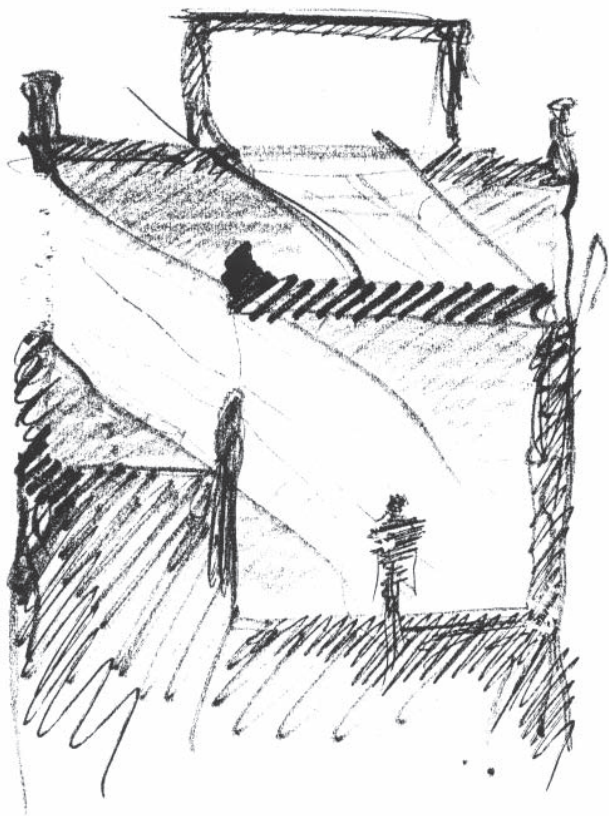
Finally, we returned to the subject of intensity: a condition that is as essential as it is difficult to find in so many of the works being constructed during this long, superficial epoch. I didn't ask Frampton if he had been present when the RIBA Gold Medal was awarded to Lubetkin in 1982, since the sound and amazing speech¹¹ the author of the London Zoo's penguin pool gave contains many paragraphs that refer to this lack of rigor in the architecture of our time and to many of the other issues we were debating here. His judgments were so on target, it could have been written today.

We agreed that this intensity in architecture speaks not only of the truth necessary to reach beauty in a work, but also of the strength it must have to produce that suspension in time in us which only the best artistic creations can produce. Accordingly, "Suspension of Time" is the title of my last essay.

The long dialogue was so interesting that it felt very short for both of us. We were so at ease there, however it was late and time to finish up. The cup of coffee and the glass of Riesling were empty, but we were happy and fulfilled.

Columbia University, Spring 2011





NY

March 72. 88

NOTES WRITTEN ONLINE

I have decided to write the notes of my most recent writings uniquely and exclusively online, using QR Codes. Why? Because traditional footnotes, giving details regarding the edition, publishers, city, date, and ISBN, have passed on to a better life and because one must acknowledge the overwhelming logic of writing notes only online.

Libraries are now full of people who, glued to their laptops, never get up to consult a book. They have all the books, all of them, within this diabolical, luminous retractable angle, or rather, in the CPU of their extralim artifacts. In the library they search for the peace they can breathe there and, perhaps feeling a bit lonely, the solace of finding themselves in the company of many other people with the same obsession: spending the entire day in front of the glowing screen.

Columbia's Avery Library, which I continue to frequent and where I have produced the majority of these research papers, the notes of which have flown online after being purified in the electronic heat, is a peaceful place where the phenomenon I noted above happens every day. There, *rara avis*, I wrote everything by hand, without any laptop.

The Apple Store on Broadway and 67th Street, next to Lincoln Center, is a most precious urn of crystal designed by Cywinski and is always full of people. And yet, –perhaps infected with the peace of libraries or because of the quality of the design– this too is a silent place, despite the multitude of people that congregate there. And so there I used to attentively observe the movements of a large group of children of all ethnicities who, at one large, low table, attacked the computers. They moved their fingers there, with such relish and skill, as if they were little pianists.

Therefore it is for this generation, and for future ones, that I am writing and transmitting my ideas. If I had to write or investigate to be read or judged by my own generation, I would decline right now. They are so set in their ways. And these same people are so scandalized that I have made my reference notes available solely electronically. The fact of posting my notes online has met with their outright disapproval, as they clutch onto antiquated orthodoxy.

Can you imagine that when writing one of my research papers on the Flat Horizontal Plane in Architecture, I cite one of Rembrandt's engravings, and at the mere click of the mouse the image appears on screen? And the different versions that Rembrandt made with the same plate, from the Louvre, the MET, and other museums, can also appear. Rembrandt had a clear and proleptic intuition.

Imagine when, speaking of the Suspension of Time in Architecture, I cite a *Requiem* of Tomas Luis de Victoria sung by the Tallis Scholars, and with the click of a button the air is filled with this divine music? Or when explaining the suspension of time that great architecture produces, I speak of Thomas Newman's *Dead Already* and having pressed the corresponding key, this very music plays –music capable of moving us?

Can you imagine when one touches the button corresponding to the note on the scene of the white plastic bag in Sam Mendes' *American Beauty*, the two protagonists appear before our eyes filling the whole screen with their tears?

And imagine the effect when I refer to *Billy Elliot* in the film directed by Stephen Daldry and Billy himself suddenly appears before us in the flesh to tell us about the “*sorta disappear*” that happens when he dances.

You may say that this is very easy on the computer and you do it all the time: images, music, film, and maybe someday even smells. Well, that is also my understanding of things today, right here, right now.

All this and much more had happened to me when the time came to put in the notes to my Research Papers. I was on a sabbatical year at Columbia University –a time that not only shows the generosity of my rector in granting it to me, but also the necessity of bringing my research projects to fruition. Under the title *Principia Architectonica*, with Newtonian overtones, I unfurled a series of reflections on architectural topics: Architecture as poetry, Mnemosyne vs. Mimesis, The Cornerstone, Architecture as Artifact, Intensity in Architecture or the Suspension of Time, are the titles of some of my Papers. Their notes are entirely and solely electronic. They are written online. May Gutenberg forgive me for this.

NOTES

FOREWORD

1. QR Code.

http://en.wikipedia.org/wiki/QR_code

PRINCIPIA ARCHITECTONICA

1. Philosophiae Naturalis Principia Mathematica. Isaac Newton. 1687.

http://en.wikipedia.org/wiki/Philosophi%C3%A6_Naturalis_Principia_Mathematica

2. The sleep of reason produces monsters. Francisco de Goya. 1799.

http://en.wikipedia.org/wiki/The_Sleep_of_Reason_Produces_Monsters

3. The Secret of Artistic Creation. Stefan Zweig. 1940.

<http://www.flickr.com/photos/campobaeza/8189506443/in/set-72157631790226591/lightbox/>

4. Kindergarten chats and other writings. Louis Sullivan. 1901-1918.

<http://www.flickr.com/photos/campobaeza/8096607548/in/set-72157631790226591/lightbox/>

5. The Banquet or the Symposium. Plato. Ca. 380 a.C.

<http://archive.org/details/ofplatobanquet00platrich>

ARCHITECTURE AS POETRY

1. The poetry of Architecture. John Ruskin. 1836.

<http://www.gutenberg.org/files/17774/17774-h/17774-h.htm>

2. The seven lamps of Architecture. John Ruskin. 1849.

<http://www.gutenberg.org/files/35898/35898-h/35898-h.htm>

3. Sonnet nº 18. Shall I compare thee to a summer's day? W. Shakespeare.

<http://www.youtube.com/watch?v=ngZY8coaWMg&feature=related>

4. Philosophy of Composition. Edgar Allan Poe. 1846.

http://www.literatura.us/idiomas/eap_metodo.html

5. The Spiritual Canticle. Saint John of the Cross.

<http://users.ipfw.edu/jehle/poesia/canticoe.htm>

6. Coat of Arms, Architectural Association, London.

http://en.wikipedia.org/wiki/Architectural_Association_School_of_Architecture

7. The truth of things, a forgotten concept. Josef Pieper.

http://www.hottopos.com/mp2/verd_olvi.htm

8. Speech. RIBA Royal Gold Medal. Berthold Lubetkin, 1982.

<http://www.flickr.com/photos/campobaeza/8189538097/in/set-72157632020177813/lightbox/>

9. How much does your building weigh, Mr. Foster?

<http://www.mrfostermovie.com/>

10. The Secret of Artistic Creation. Stefan Zweig. 1940.

<http://www.flickr.com/photos/campobaeza/8190657214/in/set-72157632020177813/lightbox/>

11. Caja Granada and Andalusia's Museum of Memory. Campo Baeza.

<http://www.flickr.com/photos/campobaeza/8185841969/in/set-72157619496997344/lightbox/>

12. Caja Granada and Andalusia's Museum of Memory. Campo Baeza.

<http://www.flickr.com/photos/campobaeza/8185879120/in/set-72157619496997344/lightbox/>

13. Center for Nature Interpretation. Salinas de Janubio. Campo Baeza.

<http://www.flickr.com/photos/campobaeza/7084238749/in/set-72157629466848956/lightbox/>

14. House in Zahara. Alberto Campo Baeza.

<http://www.flickr.com/photos/campobaeza/6938141972/in/set-72157629831893717/lightbox/>

PIERCING TRANSLUCENCY

1. National Research Award Speech. Xavier Zubiri. 1982.

<http://www.zubiri.org/works/spanishworks/investigiar.htm>

2. Solid light. Pantheon. Rome.

<http://www.flickr.com/photos/campobaeza/8102227571/in/set-72157631804250980/lightbox/>

3. Clerestory.

<http://www.flickr.com/photos/campobaeza/8102228975/in/set-72157631804250980/lightbox/>

4. Stained-glass. Cathedral of León.

<http://www.flickr.com/photos/campobaeza/8102230103/in/set-72157631804250980/lightbox/>

5. Cathedral of Ávila.

<http://www.flickr.com/photos/campobaeza/8102269332/in/set-72157631804250980/lightbox/>

6. Ecstasy of Saint Teresa. Gian Lorenzo Bernini. 1651.

<http://www.flickr.com/photos/campobaeza/8102272210/in/set-72157631804250980/lightbox/>

7. Maison de verre. Pierre Chareau. Paris, 1932.
<http://www.flickr.com/photos/campobaeza/8102273176/in/set-72157631804250980/lightbox/>
8. House for an Artist. V Triennial of Milan. Terragni. 1933.
<http://www.flickr.com/photos/campobaeza/8188739350/in/set-72157631804250980/lightbox/>
9. The Density of the Architecture of Giuseppe Terragni. Jesús Aparicio.
<http://www.jesusapario.net/libros.html>
10. San Fermín College. Alberto Campo Baeza. Madrid, 1985.
<http://www.flickr.com/photos/campobaeza/8102261865/in/set-72157631804250980/lightbox/>
11. Cultural Center. Villaviciosa de Odón. Alberto Campo Baeza. 1992.
<http://www.flickr.com/photos/campobaeza/8102275436/in/set-72157631804250980/lightbox/>
12. Benetton Nursery. Alberto Campo Baeza. Treviso, 2006.
<http://www.flickr.com/photos/campobaeza/4796527905/in/set-72157600285724773/lightbox/>
13. Porta Milano. Alberto Campo Baeza. 2009.
<http://www.flickr.com/photos/campobaeza/6938128894/in/set-72157629466702096/lightbox/>
14. Museum of Italian Art. Alberto Campo Baeza. Garrison-New York.
<http://www.flickr.com/photos/campobaeza/8102202905/in/set-72157631804250980/lightbox/>
15. Entrance. Museum of Italian Art.
<http://www.flickr.com/photos/campobaeza/8102276774/in/set-72157631804250980/lightbox/>

FLAT HORIZONTAL PLANE

1. Christ presented to the People. Rembrandt. 1655.
<http://www.flickr.com/photos/campobaeza/8103051767/in/set-72157631806347826/lightbox/>
2. Christ presented to the People. Lucas van Leyden. 1510.
<http://www.flickr.com/photos/campobaeza/8103061371/in/set-72157631806347826/lightbox/>
3. Ecce homo. Pablo Picasso.
<http://www.flickr.com/photos/campobaeza/8103080559/in/set-72157631806347826/lightbox/>

4. Farnsworth House. Mies van der Rohe. Plano-Illinois, 1951.
<http://www.flickr.com/photos/campobaeza/8189643471/in/set-72157631806347826/lightbox/>
5. Platforms and Plateaus. Jorn Utzon. 1962.
<http://www.arranz.net/web.arch-mag.com/2e/recy/recy1t.html>
6. Studies in Tectonic Culture. Kenneth Frampton.
<http://www.flickr.com/photos/campobaeza/8103091111/in/set-72157631806347826/lightbox/>
7. Malaparte House. Adalberto Libera. Capri, 1942.
<http://www.youtube.com/watch?v=H-SYpoLrVwI>
8. De Blas House. Alberto Campo Baeza. Sevilla la Nueva, 2000.
<http://www.flickr.com/photos/campobaeza/441027992/in/set-72157600038837061/lightbox/>
9. Olnick Spanu House. Alberto Campo Baeza. Garrison-New York, 2008.
<http://www.flickr.com/photos/campobaeza/4796502211/in/set-72157600285722823/lightbox/>
10. Rufo House. Alberto Campo Baeza. Toledo, 2009.
<http://www.flickr.com/photos/campobaeza/5077386195/in/set-72157625029939461/lightbox/>
11. Between Cathedrals. Alberto Campo Baeza. Cádiz, 2009.
<http://www.flickr.com/photos/campobaeza/4796296173/in/set-72157607337415346/lightbox/>
12. Center for Nature Interpretation. Salinas de Janubio. Campo Baeza.
<http://www.flickr.com/photos/campobaeza/7084256665/in/set-72157629466848956/lightbox/>
13. House in Zahara. Alberto Campo Baeza.
<http://www.flickr.com/photos/campobaeza/6938141972/in/set-72157629831893717/lightbox/>

MNEMOSYNE VS MIMESIS

1. Jupiter and Mnemosyne. Marco Liberi.
<http://www.flickr.com/photos/campobaeza/8116549597/in/set-72157631837063800/lightbox/>
2. Le Corbusier at the Parthenon. 1911.
<http://www.flickr.com/photos/campobaeza/8116567464/in/set-72157631837063800/lightbox/>

- 3.** Mies van der Rohe at the Acropolis. 1959.
<http://www.flickr.com/photos/campobaeza/8116569956/in/set-72157631837063800/lightbox/>
- 4.** CPU. Central Processing Unit.
http://en.wikipedia.org/wiki/Central_processing_unit
- 5.** Pitti Palace. Florence.
<http://www.flickr.com/photos/campobaeza/8116563261/in/set-72157631837063800/lightbox/>
- 6.** Salamanca Convention Center and John Soane Museum.
<http://www.flickr.com/photos/campobaeza/8116575218/in/set-72157631837063800/lightbox/>
- 7.** Boa Nova Restaurant. Álvaro Siza. Oporto, 1958.
<http://www.flickr.com/photos/campobaeza/8116581468/in/set-72157631837063800/lightbox/>
- 8.** Burgo Tower. Eduardo Souto de Moura. Oporto, 2007.
<http://www.flickr.com/photos/campobaeza/8189661963/in/set-72157631837063800/lightbox/>
- 9.** Granada Cathedral and Caja Granada Savings Bank.
<http://www.flickr.com/photos/campobaeza/8116586366/in/set-72157631837063800/lightbox/>
- 10.** Granada Cathedral and Caja Granada Savings Bank.
<http://www.flickr.com/photos/campobaeza/8116582025/in/set-72157631837063800/lightbox/>
- 11.** Palace of Charles V and Andalusia's Museum of Memory.
<http://www.flickr.com/photos/campobaeza/8116594970/in/set-72157631837063800/lightbox/>
- 12.** Palace of Charles V and Andalusia's Museum of Memory.
<http://www.flickr.com/photos/campobaeza/8116592381/in/set-72157631837063800/lightbox/>
- 13.** Penguin Pool Ramp, London, and Andalusia's Museum of Memory Ramp.
<http://www.flickr.com/photos/campobaeza/8116594869/in/set-72157631837063800/lightbox/>
- 14.** Ramp, Andalusia's Museum of Memory.
<http://www.flickr.com/photos/campobaeza/8116600337/in/set-72157631837063800/lightbox/>
- 15.** Zamora Cathedral and Offices of the Castilla León Advisory Council.
<http://www.flickr.com/photos/campobaeza/8229729304/in/photostream/lightbox/>

16. Cornerstone. Offices in Zamora. Alberto Campo Baeza. 2012.
<http://www.flickr.com/photos/campobaeza/8190766748/in/set-72157629831925117/lightbox/>
17. Offices in Zamora. Alberto Campo Baeza. 2012.
<http://www.flickr.com/photos/campobaeza/8121629254/in/photostream/lightbox/>
18. Farnsworth House. Mies van der Rohe. Plano-Illinois, 1951.
<http://www.flickr.com/photos/campobaeza/8189643471/in/set-72157631806347826/lightbox/>
19. Olnick Spanu House. Alberto Campo Baeza. Garrison-New York, 2008.
<http://www.flickr.com/photos/campobaeza/4796502211/in/set-72157600285722823/lightbox/>

THE CORNERSTONE

1. Cornerstone.
<http://en.wikipedia.org/wiki/Cornerstone>
2. Cornerstone, University of Columbia.
<http://www.flickr.com/photos/28516908@N08/3184582537/lightbox/>
3. House 50'x50'. Mies van der Rohe. 1950-1951.
<http://cavicaplace.blogspot.com.es/2010/07/mies-van-der-rohe-casa-50x50-1951.html>
4. Glass Skyscraper in Friedrichstrasse. Mies van der Rohe. Berlin, 1921.
<http://www.flickr.com/photos/campobaeza/8116859779/in/set-72157631837771804/lightbox/>
5. Glass Skyscraper. Mies van der Rohe. 1922.
<http://www.flickr.com/photos/campobaeza/8116863517/in/set-72157631837771804/lightbox/>
6. Offices in Zamora. Alberto Campo Baeza. 2012.
<http://www.flickr.com/photos/campobaeza/sets/72157629831925117/>
7. Air Trihedron. Offices in Zamora.
<http://www.flickr.com/photos/campobaeza/8121629254/in/set-72157629831925117/lightbox/>
8. Cornerstone. Offices in Zamora.
<http://www.flickr.com/photos/campobaeza/8190766748/in/set-72157629831925117/lightbox/>
9. Glass corner. Offices in Zamora.
<http://www.flickr.com/photos/campobaeza/8142259275/in/set-72157629831925117/>

OF ELEPHANTS AND BIRDS

1. Hearst Tower. Norman Foster. New York, 2006.
<http://www.flickr.com/photos/campobaeza/8125289213/in/set-72157631858205495/lightbox/>
2. Glass Skyscraper. Mies van der Rohe. 1922.
<http://www.flickr.com/photos/campobaeza/8125297119/in/set-72157631858205495/lightbox/>
3. Pompidou Center. Renzo Piano and Richard Rogers. Paris, 1977.
<http://www.flickr.com/photos/campobaeza/8125299099/in/set-72157631858205495/lightbox/>
4. Tugendhat House. Mies van der Rohe. Brno, 1930.
<http://www.flickr.com/photos/campobaeza/8125319832/in/set-72157631858205495/lightbox/>
5. Barcelona Pavilion. Mies van der Rohe. 1929.
<http://www.flickr.com/photos/campobaeza/8125306039/in/set-72157631858205495/lightbox/>
6. Maravillas Gymnasium. Alejandro de la Sota. Madrid, 1962.
<http://www.flickr.com/photos/campobaeza/8125326724/in/set-72157631858205495/lightbox/>
7. Geodesic Dome. Buckminster Fuller. Montreal, 1967.
<http://www.flickr.com/photos/campobaeza/8125311335/in/set-72157631858205495/lightbox/>
8. Elephant Skeleton.
http://en.wikipedia.org/wiki/File:Elephant_skeleton.jpg
9. Bird Skeleton.
<http://people.eku.edu/ritchisong/skeleton.html>
10. Human Skeleton.
<http://figure-drawings.blogspot.com.es/2008/10/human-skeleton.html>
11. How much does your building weigh, Mr. Foster?
<http://www.mrfostermovie.com/>
12. Rolex Learning Center. Sanaa. EPFL Lausanne, 2010.
<http://www.flickr.com/photos/campobaeza/8125332294/in/set-72157631858205495/lightbox/>
13. Center for Nature Interpretation. Salinas de Janubio (I). Campo Baeza.
<http://www.flickr.com/photos/campobaeza/8125316897/in/set-72157631858205495/lightbox/>

14. Center for Nature Interpretation. Salinas de Janubio (I). Campo Baeza.
<http://www.flickr.com/photos/campobaeza/8125322659/in/set-72157629831987671/lightbox/>
15. Center for Nature Interpretation. Salinas de Janubio (II). Campo Baeza.
<http://www.flickr.com/photos/campobaeza/7084256665/in/set-72157629466848956/lightbox/>
16. Porta Milano. Alberto Campo Baeza. 2009.
<http://www.flickr.com/photos/campobaeza/6938128894/in/set-72157629466702096/lightbox/>
17. Museum of Italian Art. Alberto Campo Baeza. Garrison-New York.
<http://www.flickr.com/photos/campobaeza/8102276774/in/set-72157631804250980/lightbox/>

ARCHITECTURE AS ARTIFACT

1. Adam and Eve. Alberto Dürer. 1507.
<http://www.flickr.com/photos/campobaeza/8134645984/in/set-72157631879277561/lightbox/>
2. Primitive Hut. Marc-Antoine Laugier.
<http://www.flickr.com/photos/campobaeza/8134650044/in/set-72157631879277561/lightbox/>
3. Roman Grid.
<http://www.flickr.com/photos/campobaeza/8134627931/in/set-72157631879277561/lightbox/>
4. Manhattan Map. 1807.
<http://www.flickr.com/photos/campobaeza/8134657754/in/set-72157631879277561/lightbox/>
5. Villa Rotonda. Andrea Palladio. Vicenza, 1570.
<http://www.flickr.com/photos/campobaeza/8134659012/in/set-72157631879277561/lightbox/>
6. Farnsworth House. Mies van der Rohe. Plano-Illinois, 1951.
<http://www.flickr.com/photos/campobaeza/8189643471/in/set-72157631806347826/lightbox/>
7. Gilardi House. Luis Barragán. Mexico City, 1976.
<http://www.flickr.com/photos/campobaeza/8134660930/in/set-72157631879277561/lightbox/>
8. A Tree on the Roof at Ronchamp. Le Corbusier.
<http://www.flickr.com/photos/campobaeza/8186822569/in/set-72157631879277561/lightbox/>

9. Tensegrity. Valentín Gómez Jáuregui. 2007.
<http://www.flickr.com/photos/campobaeza/8134662164/in/set-72157631879277561/lightbox/>
10. Tomb in Piribebuy. Solano Benítez. Paraguay, 1998.
<http://www.flickr.com/photos/campobaeza/8134638165/in/set-72157631879277561/lightbox/>
11. Gaspar House. Alberto Campo Baeza. Vejer, 1992.
<http://www.flickr.com/photos/campobaeza/442021359/in/set-72157600040086168/lightbox/>
12. Offices in Zamora. Alberto Campo Baeza. 2012.
<http://www.flickr.com/photos/campobaeza/8121629254/in/set-72157629831925117/lightbox/>
13. Offices in Zamora. Alberto Campo Baeza. 2012.
<http://www.flickr.com/photos/campobaeza/8228663965/in/set-72157629831925117/lightbox/>
14. BIT Center. Alberto Campo Baeza. Inca, 1998.
<http://www.flickr.com/photos/campobaeza/462871059/in/set-72157600086044649/lightbox/>
15. Moliner House. Alberto Campo Baeza. Zaragoza, 2008.
<http://www.flickr.com/photos/campobaeza/4797062660/in/set-72157624377276245/lightbox/>

SUSPENDING TIME

1. Pantheon, Rome.
<http://www.flickr.com/photos/campobaeza/8102227571/in/set-72157631804250980/lightbox/>
2. Burn Norton. Four Quartets. T. S. Eliot.
<http://www.youtube.com/watch?v=9xDpueV1U8k>
3. Stanzas on his Father's Death. Jorge Manrique. Voice of Manuel Dicenta.
http://www.palabravirtual.com/index.php?ir=ver_voz1.php&wid=1351&p=Jorge%20Manrique&t=Coplas%20de%20Don%20Jorge%20Manrique%20por%20la%20muerte%20de%20su%20padre
4. Caja Granada Savings Bank. Alberto Campo Baeza. 2001.
<http://vimeo.com/52537823>
5. Andalusia's Museum of Memory. Alberto Campo Baeza. Granada, 2009.
<http://vimeo.com/26023252>

- 6. View of the Pantheon.** Giovanni Battista Piranesi.
<http://www.flickr.com/photos/campobaeza/8141406187/in/set-72157631895154416/lightbox/>
- 7. Burgo Tower.** Eduardo Souto de Moura. Oporto, 2007.
<http://www.flickr.com/photos/campobaeza/8189661963/in/set-72157631837063800/lightbox/>
- 8. Green-Blue-Green on Blue.** Mark Rothko. 1968.
<http://www.flickr.com/photos/campobaeza/8141439746/in/set-72157631895154416/lightbox/>
- 9. Venus of the Mirror.** Velázquez. 1651.
<http://www.flickr.com/photos/campobaeza/8141411189/in/set-72157631895154416/lightbox/>
- 10. Tallis Scholars. Requiem by Tomás Luis de Victoria.**
<http://www.youtube.com/watch?v=y1cV0hqJ95Y&feature=related>
- 11. Sidney Opera House.** Jorn Utzon. 1973.
<http://www.flickr.com/photos/campobaeza/8141412595/in/set-72157631895154416/lightbox/>
- 12. Dead already.** Thomas Newman.
<http://www.youtube.com/watch?v=al21Vtlsg4A>
- 13. The white plastic bag.** American Beauty. Sam Mendes.
<http://www.youtube.com/watch?v=8yfpPpu7bik>
- 14. Sort of disappear.** Billy Elliot. Stephen Daldry.
http://www.youtube.com/watch?v=U0tTT_87Hh8
- 15. Philosophy of Composition.** Edgar Allan Poe. 1846.
<http://www.eapoe.org/works/essays/philcomp.htm>
- 16. The Secret of Artistic Creation.** Stefan Zweig. 1940
<http://www.flickr.com/photos/campobaeza/8190657214/in/set-72157632020177813/lightbox/>
- 17. Andalusia's Museum of Memory.** Alberto Campo Baeza. Granada, 2009.
<http://vimeo.com/26014472>
- 18. Gaspar House.** Alberto Campo Baeza. Vejer, 1992.
<http://www.flickr.com/photos/campobaeza/442021359/in/set-72157600040086168/lightbox/>
- 19. Guerrero House.** Alberto Campo Baeza. Vejer, 2005.
<http://www.flickr.com/photos/campobaeza/4796540623/in/set-72157600037996750/lightbox/>

- 20.** De Blas House. Alberto Campo Baeza. Sevilla la Nueva, 2000.
<http://www.flickr.com/photos/campobaeza/441027992/in/set-72157600038837061/lightbox/>
- 21.** Olnick Spanu House. Alberto Campo Baeza. Garrison-New York, 2008.
<http://www.flickr.com/photos/campobaeza/4796502211/in/set-72157600285722823/lightbox/>
- 22.** Rufo House. Alberto Campo Baeza. Toledo, 2009.
<http://www.flickr.com/photos/campobaeza/5077386195/in/set-72157625029939461/lightbox/>
- 23.** Offices in Zamora. Alberto Campo Baeza. 2012.
<http://www.flickr.com/photos/campobaeza/8121629254/in/set-72157629831925117/lightbox/>
- 24.** BIT Center. Alberto Campo Baeza. Inca, 1998.
<http://www.flickr.com/photos/campobaeza/462871059/in/set-72157600086044649/lightbox/>
- 25.** Ode on a Grecian Urn. John Keats. 1819.
http://www.youtube.com/watch?v=2r45c03_L5E&feature=related
- 26.** Auguries of innocence. William Blake. 1803.
<http://www.youtube.com/watch?v=Wi848QqLbdo&feature=related>

INTENSITY

- 1.** Laudate Dominum. Solemn Vespers. Wolfgang Amadeus Mozart.
http://www.youtube.com/watch?v=EsEnM8mGj_Y
<http://www.youtube.com/watch?v=cwyyraTxSuTY>
- 2.** Lux aeterna. Morten Lauridsen.
<http://www.youtube.com/watch?v=4VggXas5rJk&feature=related>
- 3.** Pie Jesu. Requiem Op. 48. Gabriel Fauré.
<http://www.youtube.com/watch?v=Zo-cUEbZlIr8>
- 4.** Kenneth Frampton.
<http://www.flickr.com/photos/campobaeza/8142287468/in/set-72157631897144162/lightbox/>
- 5.** Ode on a Grecian Urn. John Keats. 1819.
http://www.youtube.com/watch?v=2r45c03_L5E&feature=related

- 6.** Coat of Arms, Architectural Association, London.
http://en.wikipedia.org/wiki/Architectural_Association_School_of_Architecture
- 7.** National Research Award Speech. Xavier Zubiri. 1982.
<http://www.zubiri.org/works/spanishworks/investigiar.htm>
- 8.** Offices in Zamora. Alberto Campo Baeza. 2012.
<http://www.flickr.com/photos/campobaeza/8121629254/in/set-72157629831925117/lightbox/>
- 9.** Cornerstone. Offices in Zamora.
<http://www.flickr.com/photos/campobaeza/8190766748/in/set-72157629831925117/lightbox/>
- 10.** Glass Corner. Offices in Zamora.
<http://www.flickr.com/photos/campobaeza/8142259275/in/set-72157629831925117>
- 11.** Speech. RIBA Royal Gold Medal. Berthold Lubetkin, 1982.
<http://www.flickr.com/photos/campobaeza/8189538097/in/set-72157632020177813/lightbox/>

BIBLIOGRAPHY

Alberti, Leon Battista

De re aedificatoria (1485)

MIT Press, Cambridge, Massachusetts, 1988

Aparicio Guisado, Jesús M^a

El muro. Ed. CP 67. Buenos Aires, 2000

Aparicio Guisado, Jesús M^a

Construir con la razón y los sentidos

Ed. Nobuko. Buenos Aires, 2008

Aparicio Guisado, Jesús M^a

La densidad de la arquitectura de Giuseppe Terragni

Arquitectos de Cádiz, 2004

Arendt, Hanna

The human condition (1958)

University of Chicago, 1969

Bachelard, Gaston

The poetics of space (1957)

Beacon Press. Boston, 1994

Bockemühl, Michael

Rembrandt

Ed. Taschen. Köln, 2005

Blake, William

Auguries of innocence (1803)

To see a world in a grain of sand

Birmingham School of Printing, 1930

Blaser, Werner

Mies van der Rohe

Ed. Gustavo Gili. Barcelona, 1973

Bryson, Bill

Shakespeare: the world as stage

Harper Collins. New York, 2007

Campo Baeza, Alberto

The built idea

Ed. Toto. Tokyo, 2009

Campo Baeza, Alberto

Pensar con las manos

Ed. Nobuko. Buenos Aires, 2010

Carpentier, Alejo

War of time (1956)

Gollancz. London, 1970

Cervantes, Miguel de

Don Quixote (1605)

HarperCollins Publishers. London, 2003

Dante Alighieri

The divine comedy (1321)

Penguin Books. London. 2012

Eliot, T.S.

Four quartets (1943)

Faber & Faber. London, 1959

Eluard, Paul

Le dur désir de durer

Ed. Arnold-Bordas. París, 1946

Frampton, Kenneth

Modern architecture: a critical history

Thames & Hudson. London, 2007

Frampton, Kenneth

Studies in tectonic culture

MIT Press. London, 1995

Frampton, Kenneth

Labour, work and architecture

Phaidon Press. New York, 2002

García Marruz, Fina

Poesía en la Residencia de Estudiantes

Madrid, 2011

Gómez Jáuregui, Valentin

Tensegriudad

Ed. UC. Santander, 2007

Heidegger, Martin

The concept of time (1924)

Blackwell Publishers. Oxford, 1992

Homer

Odyssey

Penguin Books. London, 2004

James, Henry

The last of the Valerii

Boydell Press. Ipswich, 1971

Jaráiz, José

SANAA. El parque. El espacio horizontal

Tesis Doctoral. UPM Madrid, 2012

Keats, John

Ode on a grecian urn (1819)
The odes of John Keats
Harvard University Press, 2004

Laugier, Marc Antoine

Essay on architecture (1753)
Hennessey & Ingalls, 1985

Linazasoro, Jose Ignacio

Escrito en el tiempo
Ed. Nobuko. Buenos Aires 2005

Lubetkin, Berthold

Address RIBA Gold Medal (1982)
Berthold Lubetkin. John Allan
RIBA Publishers. London, 1992

Mandelstam, Ósip

Conversation on Dante (1933)
New York Review Books, 2004

Manrique, Jorge

Coplas a la muerte de su padre
Poesías completas
Ed. Espasa Calpe. Madrid, 2007

Martin, Reinhold

Utopia's ghost
University of Minnesota Press, 2011

Mas Guindal Lafarga, Antonio

Cuando las estructuras no se calculaban
Ed. Munilla Lería. Madrid, 2011

Meier, Richard

Complete Works 1963-2008
Philip Jodidio. Ed. Taschen. Köln, 2008

Meier, Richard

Works and Projects
Gustavo Gili. Barcelona, 1989

Morell Sixto, Alberto

Despacio
Ed. Nobuko. Buenos Aires, 2011

Newton, Isaac

Mathematical principles of natural philosophy (1687)
University of California Press, 1999

Ortega y Gasset

Meditación de la técnica y otros ensayos (1939)

Ed. Alianza. Madrid, 2004

Palladio, Andrea

The four books on architecture (1570)

MIT Press, 2002

Plato

The symposium (380 a.C.)

Penguin Classics. New Jersey, 1999

Paz, Octavio

The poems of Octavio Paz

New Directions Publishing Corporation, 2012

Pieper, Josef

Living the truth

Ignatius Press. Nueva York, 1989

Poe, Edgar Allan

The philosophy of composition (1846)

Northeastern University Press, 1986

Ruskin, John

Poetry of architecture (1836)

Echo Library, 2006

Ruskin, John

The seven lamps of architecture (1849)

Grove/Atlantic Inc., 2008

St. Augustine

The Confessions (400 d.C.)

Dover Publications. New York, 2002

St. Augustine

City of God (426 d.C.)

Random House Publishing Group, 2000

St. John of the Cross

The complete works

Burn Oates and Washbourne, 1953

Sancho Osinaga, Juan Carlos

El sentido cubista de Le Corbusier

Ed. Munillalería. Madrid, 2000

Shakespeare, William

Sonnets (1609)

Yale University Press, 2000

Strunk, W y White, E.B.

The Elements of Style

Pearson Education Company. New Jersey, 2000

Sullivan, Louis

Kindergarten chats and other writings (1947)

Dover Publications. Nueva York, 1980

Utzon, Jorn

Platforms and Plateaus (1962)

Jorn Utzon obras y proyectos. Jaime J. Ferrer

Ed. Gustavo Gili. Barcelona, 2006

VV. AA.

Rembrandt en la memoria de Goya y Picasso

Ed. Fundación Carlos de Amberes. Madrid, 1999

Vicens y Hualde, Ignacio

Dicho y hecho

Ed. Nobuko. Buenos Aires, 2012

Vignola, Jacopo

Canon of the Five Orders of Architecture (1562)

Dover Publications. New York, 2012

Virgil

The Aeneid (s. I a.C.)

Random House, London, 1992

Vitruvius

The ten books on architecture (s. I a.C.)

Dover Publications. New York, 1960

Weston, Richard

Utzon: inspiration, vision, architecture

Ed. Bløndal. Hellerup (Denmark), 2008

Zambrano, María

Claros del Bosque

Ed. Seix Barral. Barcelona, 1993

Zubiri, Xavier

¿Qué es investigar?

Discurso Premio Nacional de Investigación (1982)

Escritos Menores 1953-1983

Ed. Alianza. Madrid, 2007

Zweig, Stefan

El Misterio de la Creación Artística (1940)

Ed. Sequitur. Barcelona, 2008

