100 Years— Toward Establishing a Virtual Identity

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> "The great ethics of the Machine are as yet, in the main, beyond the ken of the artist or student of sociology; but the artist's mind may now approach the nature of this thing from experience, which has become the commonplace of his field, to suggest in time I hope, to prove, that the machine is capable of carrying to fruition high ideals in art–higher than the world has yet seen!" - Frank Lloyd Wright, *The Art and Craft of the Machine,* presented to the Chicago Arts and Craft Society, March 1, 1901.

VICTIMIZATION OF HUMAN SPIRIT

The nature of the machine has evolved into a thing we call "virtual technology," however, little else has changed. Nearly a century after Frank Lloyd Wright witnessed the collision of technology with human and social values, as manifested in the name of "progress," the human spirit is still seen as the victim in this conflict. Proof of victimization is evident in the bankruptcy of artistic expression ,"...when we toss up a pantheon to the god of money..." (FLW-1901).[1] Finance, the unbridled juggernaut of change and modernization, has trampled the human spirit. Virtual machines of speed and information shape our daily lives, while industrial and mechanistic technologies implement these changes. Have we acquired the wisdom and means to harness these forces?

Then and now, we are a society anguishing over whether to embrace, resist or idealize technology. Is it possible that we still have a choice in this matter? Can we afford to eschew technology to find tranquility at Walden Pond or establish a defensive perimeter in the wilds of Montana? It should come as no surprise that we are again "...face to face with the machine—the modern sphinx—whose riddle the artist must solve if he would that art live..."(FLW-1901).[2] As the architecture profession, its practices and values, are being challenged by the Information Revolution, we are reminded that timeless architectural principles are part of a larger discourse that lend stability to political and cultural values. These values resonate throughout time.

ARCHITECTS FRET AS COMPUTERS SUPPLANT PENCILS[3]

Today, interlopers bearing gifts of electronic machines are treated with trepidation and admonishment. Robert Stern raises the concern, "The real issue is, does [computer aided design] take students away from the basics?"[4] Stern's skepticism mirrors the primary hinderance to the profession's potential exploration of a virtual identity. Why don't computers deal with the basics? When technological issues of virtual reality overwhelm and distract the architectural student from the basics, the student ultimately drifts into the profession of CAD operators.

Last century, John Ruskin framed similar concerns, "It is not truly speaking the labor that is divided; but the men...so that all the little pieces of intelligence that is left in a man is not enough to make a pin or a nail, but exhausts itself in making the point of a pin or the head of a nail."[5] As the machine inexorably encroaches onto the last bastions of human self reliance, is the fate of the profession doomed to be divided into point makers or head makers, disjointed, mindless architects of mass production?

We will become victims if we become rigid in our thinking and inflexible in our response. If we must create a better pencil, we will fail. If we must create an electronic drafting board, we will fail. The solution will not be found in mimicry of the past or in speeding up the assembly line. Virtual and material realities will inevitably transform the art and act of making the built environment. Therefore, the invitation is one of liberation by allowing digital technology to leverage the ability to understanding ourselves and our architecture—the establishment of a virtual identity.

TOOLS OF ANALYSIS

LCDD, Lowest Common Design Denominator, is a dynamic process of reductive visual identification and recomposition based on geometric principles in a virtual cartesian world. In the spring of 1996 graduate students at the University of Colorado were presented with the LCDD concept and asked

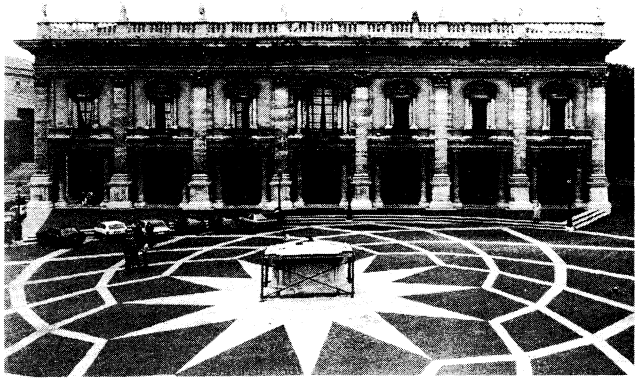

Fig. 1. Michaelangelo's Palazzo Dei Conservatori.

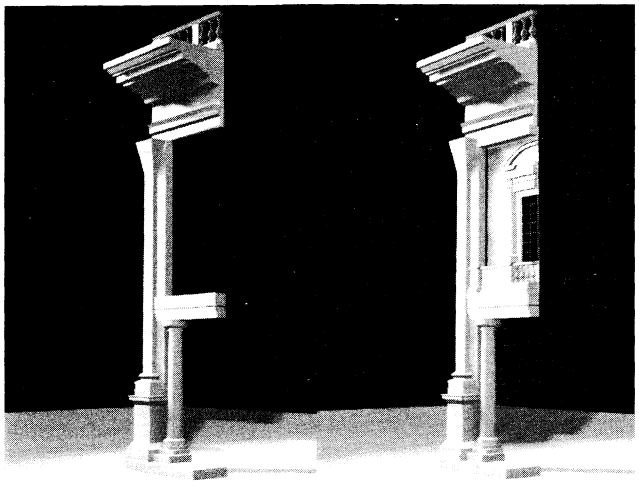

Fig. 2. Analysis, basic design elements.

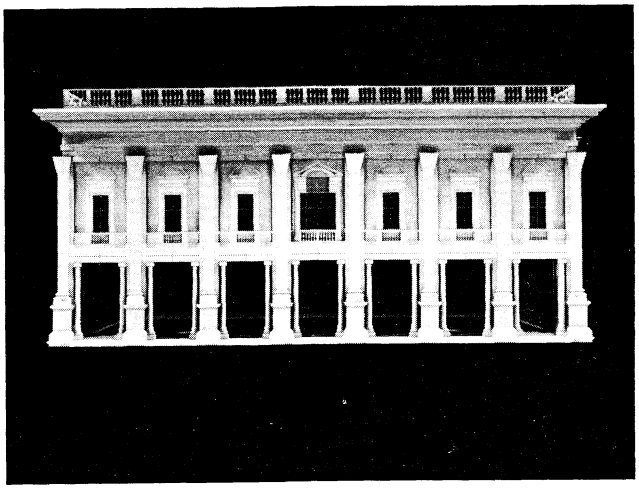

Fig. 3. LCDD recomposition. Student project by Danny Darr.

to participate in the development of this methodology. The objective was to use projective analysis to identify unique design components. A proof is formed by reconstructing the design with the essential dynamic components.

LCDD recognizes that cartesian principles are inherent in most architecture. The digital capabilities of translation, rotation and reflection allow the architect to view a geometric and material virtual world in terms of repetition, scale and location. LCDD is a means to identify fundamental aesthetic principles of architecture with regard to geometry, materials and details. The advantage of a computer is that it readily allows unlimited design investigation through its vast visual processing capability. Architecture, as a historical artifact, contains the visual vocabulary that is the subject of this investigation. Even non-Euclidian forms, contain components that are self similar, repetitive and discernable in terms of LCDD. It is a matter of identifying the visual patterns and symbols of architecture, a language of purpose and expression.

Identifying the Lowest Common Design Denominator is not is a panacea. It is a simple tool in the educator's arsenal that contributes toward the advancement and understanding of significant architectural principles. As an analytical device, LCDD provides the design student with an awareness of the nature of the visual composition. It indicates where and how design energies are expended in the creation of the architecture, that there are understandable choices and focal points in the design effort.

PEDAGOGICAL OBJECTIVES

As the beginning design student attempts to make these choices and solve the 'riddle of the artist', he/she needs to access an educational model that permits creativity through the development of a dynamic working relationship between virtual concepts and the reality of architecture. This working relationship depends on the development of a comprehensive framework for integrating history, structures, philosophy, design precedent and social responsibility. LCDD assists in this effort by providing the beginning design student with a methodology to compare his/her understanding of design with the visual patterns and symbols one finds in research. By examining the model of these dynamic interrelationships, there is a basis for an opinion and a justification for a response. This is not a recipe, but the basis of an articulated forum for a constantly evolving pedagogical inquiry.

LCDD is a prototype of the developing genre of process oriented analysis and design strategies based on the pedagogic mandate of discovery and learning. The term process is emphasized because the complexity and multiplicity of issues confronting the architect at the end of the 20th century tend to constrain design. Without digital technology assistance, simple structures can still be sculpted around a program and messaged into a compelling visual statement, but increasingly complex efforts resist a creative response.

INTRODUCTION TO METHODOLOGY

The attached supporting student projects outline LCDD (Lowest Common Design Denominator) analysis with examples. This is a process of 2 and 3 dimensional architectural analysis. Its distinction from other analytical methods is the

introduction of dynamic links made possible through computer technology.

METHODOLOGY

Lowest Common Design Denominator analysis is a process of reductive identification and recomposition using the following guidelines and principles:

1. Identify, notate and remove symmetry at the building and component level.
2. Identify, notate and remove repetition at the building and component level.
3. Unwrap or unroll curvilinear and non planer components and apply rule one and two.
   Note that this system interprets design by way of projection.
4. Identify, notate and remove any item that repeats at any scale.
   For clarification all doric columns of similar proportional construction are represented by one doric column.
5. Remove reference of feet, meters and cubits from consideration. Establish a base of one.
   Column spacing is an example.
6. Identify geometric order first, followed by material subset identification.
   Different materials are not the basis of a separate components.
7. Reconstruct the architecture with dynamic LCDD components.

The dynamic link is the capability of the computer to effect changes from one component to all related components simultaneously. Mastery of the dynamic link allows the student to reestablish the original design control of the architect; to understand the intention and conception from the detail to whole.

DYNAMIC LINKS

Complexity in architecture is a progressive issue that was addressed earlier in this century by Le Corbusier and Wright, in their respective modular and organic systems. In the case of Wright, recent advances in our understanding of DNA, as a code of life, compliment his organic concept of the whole and the part as one entity. Today, when organic principles are applied through LCDD in the cartesian world of architecture and virtual space, dynamic links mimic a simplified DNA recombination. The result is systemic and applied throughout the sequence of design.

Most great architecture has a rich, but limited, design vocabulary. Greatness is derived from the elegant implementation of design principles. "Principle never changes, the expressions of principles do."[6] The computer, the virtual machine, can represent relationships and provide a key to unlock the dynamic links of our past history and our future visions. We must reexamine our methods and re—engineer our architectural processes in order to replace, rather than mimic, traditional design methodology—and bring architecture to life.

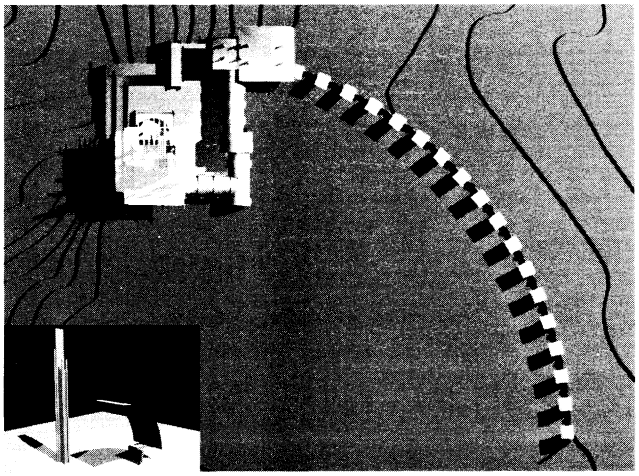

Fig. 4. Site plan. LCDD insert.

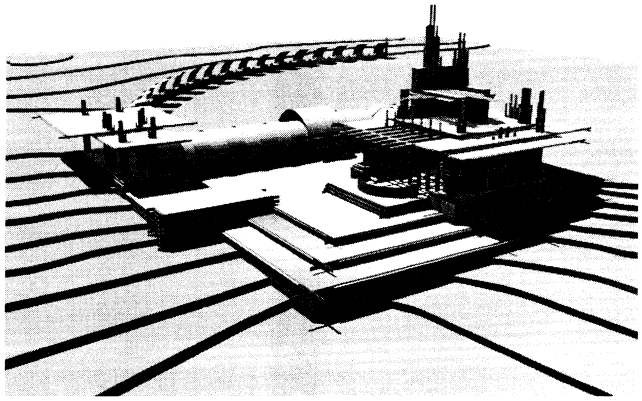

Fig. 5. Design, using two LCDD components.

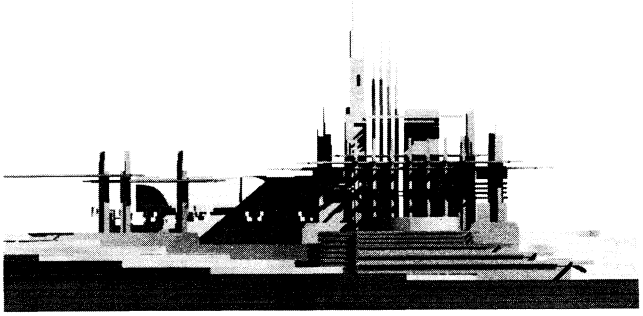

Fig. 6. Elevation. Student project by Clay Aaron Colvig.

DESIGN

While the investigation and identification of analytical components is a worthy pedagogic inquiry, the real potential of this approach is as a design tool. The establishment and

understanding of dynamic links through rigorous study of the canonical structures of the past will lead our young architects to design a vision for the future. Dynamic links allow design modification of the fundamental vocabulary of the design . The potential of a computer as a design engine is established through this concept.

In summary, architecture is a type of visual language based on dynamic links, both geometric and material based. A simple visual vocabulary is developed and the language is expressed as the base components are edited and redefined. Complex ideas are explored and visually communicated in increasing levels of sophistication in terms of their materials and geometric expression. The examples presented should be viewed for potential, experiments on an investigative time-line, in an effort to advance the core architecture curriculum into a fully integrated digital culture.

> Now, for the third time, a new century is upon us, and another time to choose. We began the 19th century with a choice, to spread our nation from coast to coast. We began the 20th century with a choice, to harness the Industrial Revolution to our values of free enterprise, conservation, and human decency. Those choices made all the difference. At the dawn of the 21st century a free people must now choose to shape the forces of the Information Age and the global society, to unleash the limitless potential of all our people, and, yes, to form a more perfect union. - President Bill Clinton, Second Inaugural Address, 20 January, 1997.

If we are ever going to establish a virtual identity, no time is more symbolic than the beginning of the millennium. While efforts like this address issues of technology and process, architectural education requires more. Stern's fears are emblematic of a generation of architects in a position of power, and they do have foundation. The answer however, is not in avoiding the future, but in leading with bold initiatives and imaginative guidance.

NOTES

[1] Frank Lloyd Wright, quoted in Patrick J. Meehan, *Truth Against the World: Frank Lloyd Wright Speaks for an Organic Architecture* (Washington: The Preservation Press, 1992), p. 94.

[2] Ibid., p. 89.

[3] The Wall Street Journal, 'Architects Fret as Computers Supplant Pencils,' April 29, 1996, p. B1.

[4] Ibid., p. B1.

[5] John Ruskin, quoted in Kenneth Frampton, *Modern Architecture: A Critical History* (London: Thames and Hudson, Ltd.), p.43.

[6] Frank Lloyd Wright, quoted in Patrick J. Meehan, *Truth Against the World: Frank Lloyd Wright Speaks for an Organic Architecture*, p. 24.