

ORNAMENT AND COLLECTIVE FANTASY

by

Paul Alan Johnson

A.B. in Architecture, University of California, Berkeley
1975

Submitted in Partial Fulfillment
of the Requirements for the
Degree of

Master of Architecture

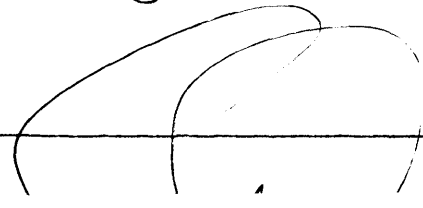
at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 1979

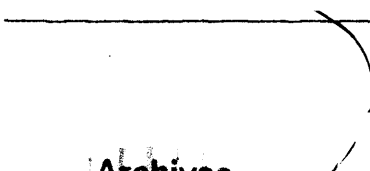
© Paul Alan Johnson 1979

Signature of the Author



Department of Architecture, May 11, 1979

Certified by



Wayne V. Andersen, Professor of the History of Art
Thesis Supervisor

Accepted by

Archives
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY
AUG 14 1979
LIBRARIES

Imre Halasz, Professor of Architecture
Chairman, Departmental Committee for Graduate Students

ABSTRACT

ORNAMENT AND COLLECTIVE FANTASY
BY PAUL ALAN JOHNSON

SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE ON MAY 11, 1979 IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARCHITECTURE.

Ornament is a part of any architecture. In the mid-nineteenth century, ornament came to be abstracted from an architectural design method and the building process itself. This thesis is an approach to understanding ornament as a part of a design and building process. A re-insertion of an active 'making' process, both in design and construction, is crucial to the development of a viable ornamental form. Ornament resides in craft traditions and the non-causal imagination and is a cumulative and active shaping process rather than a reflective one.

An historical examination of ornament within a building process is undertaken as well as a formal examination of the structure of ornament. The general poverty in current architectural ornament is rooted in the architectural conceptions of essence and causality. This thesis focuses on those ornamental forms which are referential to life processes outside the didactic demonstration of structure or construction.

Ornament is a necessary element of generative and additive form shaped within a social

context. This search for a referential system is not of an essential nature, but of an experiential, social nature; no less physical.

This work is undertaken with particular biases and attitudes:

1. Ornament is an artifact of social history and a fact of one's own sensibility; the recording of a landscape's life, spirit, struggles...
2. Ornament is an explicit collective action being shaped in the urban public realm, with attendant political, institutional, and religious implications (e.g. displays of power, status, belief systems).
3. Ornament is one element of a collective symbol, fantasy, identity.
4. Ornament is a use of metaphor, allusion, and illusion in building a biography of a structure.
5. Architecture is a use narrative connected to a larger context. (i.e. ornament that is not solely referential to itself, but speaking of myth, sexuality, harvest, etc)
6. Ornament is a built metaphorical image by which value is declared.

Finally, this work is not a 'recipe book', for ornament will not submit to 'recipes'.

Thesis Supervisor: Wayne V. Andersen

Title: Professor of the History of Art

ACKNOWLEDGEMENTS

It is my pleasant duty to offer my thanks to my advisor Wayne V. Andersen for his advice, criticism, and encouragement along the way. This thesis benefited from the suggestions of Imre Halasz and the comments of Robert Slattery, although often these remarks had little to do with the present subject matter. Channa Eberhart was kind enough to edit and type the text (two times) and she has my sincere appreciation. Though I received advice and help along the way, mistakes are inevitable and I make full claim for those and my own personal viewpoints and idiosyncrasies. I would also like to acknowledge the coffee pot, the VLW's copy camera, and the space under the skylight in Room 5-417. Special thanks go to Darleen Powers for her daily encouragement during the course of this work, and to our thesis roommate Gale Goldberg.

PREFACE

architecture

I am for an ~~art~~ that is political-erotic-mystical, that does something other than sit on its ass in a museum.

I am for an ~~art~~ that grows up not knowing it is art at all, an art given the chance of having a starting point of zero.

I am for an ~~art~~ that embroils itself with the everyday crap & still comes out on top.

I am for an ~~art~~ that imitates the human, that is comic, if necessary, or violent, or whatever is necessary.

I am for an ~~art~~ that takes its form from the lines of life itself, that twists and extends and accumulates and spits and drips, and is heavy and coarse and blunt and sweet and stupid as life itself.

I am for an ~~artist~~ who vanishes, turning up in a white cap painting signs or hallways.

I am for ~~art~~ that comes out of a chimney like black hair and scatters in the sky.

I am for ~~art~~ that spills out of an old man's purse when he is bounced off a passing fender.

I am for the ~~art~~ out of a doggy's mouth, falling five stories from the roof.

I am for the ~~art~~ that a kid licks, after peeling away the wrapper.

I am for an ~~art~~ that joggles like everyones knees, when the bus traverses an excavation.

I am for ~~art~~ that is smoked, like a cigarette, smells, like a pair of shoes.

I am for ~~art~~ that flaps like a flag, or helps blow noses, like a handkerchief.

I am for ~~art~~ that is put on and taken off, like pants, which develops holes, like socks, which is eaten, like a piece of pie, or abandoned with great contempt, like a piece of shit.

I am for ~~art~~ covered with bandages. I am for art that limps and rolls and runs and jumps. I am for art that comes in a can or washes up on the shore.

I am for ~~art~~ that coils and grunts like a wrestler. I am for art that sheds hair.

I am for ~~art~~ you can sit on. I am for art you can pick your nose with or stub your toes on.

I am for ~~art~~ from a pocket, from deep channels of the ear, from the edge of a knife, from the corners of the mouth, stuck in the eye or worn on the wrist.

I am for ~~art~~ under the skirts, and the art of pinching cockroaches.

I am for the ~~art~~ of conversation between the sidewalk and a blind mans metal stick.

I am for the ~~art~~ that grows in a pot, that comes down out of the skies at night, like lightning, that hides in the clouds and growls. I am for art that is flipped on and off with a switch.

I am for ~~art~~ that unfolds like a map, that you can squeeze, like your sweetys arm, or kiss, like a pet dog. Which expands and squeaks, like an accordion, which you can spill your dinner on, like an old tablecloth.

I am for an ~~art~~ that you can hammer with, stitch with, sew with, paste with, file with.

I am for an ~~art~~ that tells you the time of day, or where such and such a street is.

I am for an ~~art~~ that helps old ladies across the street.

I am for the ~~art~~ of the washing machine. I am for the art of a government check. I am for the art of last wars raincoat.

I am for the ~~art~~ that comes up in fogs from sewer-holes in winter. I am for the art that splits when you step on a frozen puddle. I am for the worms art inside the apple. I am for the art of sweat that develops between crossed legs.

I am for the ~~art~~ of neck-hair and caked tea-cups, for the art between the tines of restaurant forks, for the odor of boiling dishwater.

I am for the ~~art~~ of sailing on Sunday, and the art of red and white gasoline pumps.

I am for the ~~art~~ of bright blue factory columns and blinking biscuit signs.

I am for the ~~art~~ of cheap plaster and enamel. I am for the art of worn marble and smashed slate. I am for the art of rolling cobblestones and sliding sand. I am for the art of slag and black coal. I am for the art of dead birds.

I am for the ~~art~~ of scratchings in the asphalt, daubing at the walls. I am for the art of bending and kicking metal and breaking glass, and pulling at things to make them fall down.

I am for the ~~art~~ of punching and skinned knees and sat-on bananas. I am for the art of kids' smells. I am for the art of mama-babble.

I am for the ~~art~~ of bar-babble, tooth-picking, beerdrinking, egg-salting, in-sulting. I am for the art of falling off a barstool.

I am for the ~~art~~ of underwear and the art of taxicabs. I am for the ~~art~~ of ice-cream cones dropped on concrete. I am for the majestic art of dog-turds, rising like cathedrals.

I am for the blinking ~~arts~~, lighting up the night. I am for art falling, splashing, wiggling, jumping, going on and off.

I am for the ~~art~~ of fat truck-tires and black eyes.

I am for Kool-~~art~~, 7-UP ~~art~~, Pepsi-~~art~~, Sunshine ~~art~~, 39 cents ~~art~~, 15 cents ~~art~~, Vatronol ~~art~~, Dro-bomb ~~art~~, Vam ~~art~~, Menthol ~~art~~, L & M ~~art~~, Ex-lax ~~art~~, Venida ~~art~~, Heaven Hill ~~art~~, Pamryl ~~art~~, San-o-med ~~art~~, Rx ~~art~~, 9.99 ~~art~~, Now ~~art~~, New ~~art~~, How ~~art~~, Fire sale ~~art~~, Last Chance ~~art~~, Only ~~art~~, Diamond ~~art~~, Tomorrow ~~art~~, Franks ~~art~~, Ducks ~~art~~, Meat-o-rama ~~art~~.

I am for the ~~art~~ of bread wet by rain. I am for the rats' dance between floors. I am for the ~~art~~ of flies walking on a slick pear in the electric light. I am for the ~~art~~ of soggy onions and firm green shoots. I am for the ~~art~~ of clicking among the nuts when the roaches come and go. I am for the brown sad ~~art~~ of rotting apples.

I am for the ~~art~~ of meowls and clatter of cats and for the art of their dumb electric eyes.

I am for the white ~~art~~ of refrigerators and their muscular openings and closings.

I am for the ~~art~~ of rust and mold. I am for the ~~art~~ of hearts, funeral hearts or sweetheart hearts, full of nougat. I am for the art of worn meathooks and singing barrels of red, white, blue and yellow meat.

I am for the ~~art~~ of things lost or thrown away, coming home from school. I am for the art of cock-and-ball trees and flying cows and the noise of rectangles and squares. I am for the art of crayons and weak grey pencil-lead, and grainy wash and sticky oil paint, and the art of windshield wipers and the art of the finger on a cold window, on dusty steel or in the bubbles on the sides of a bathtub.

I am for the ~~art~~ of teddy-bears and guns and decapitated rabbits, exploded umbrellas, raped beds, chairs with their brown bones broken, burning trees, firecracker ends, chicken bones, pigeon bones and boxes with men sleeping in them.

I am for the ~~art~~ of slightly rotten funeral flowers, hung bloody rabbits and wrinkly yellow chickens, bass drums & tambourines, and plastic phonographs.

I am for the ~~art~~ of abandoned boxes, tied like pharaohs. I am for an art of watertanks and speeding clouds and flapping shades.

I am for U.S. Government Inspected ~~Art~~, Grade A ~~art~~, Regular Price ~~art~~, Yellow Ripe ~~art~~, Extra Fancy ~~art~~, Ready-to-eat ~~art~~, Best-for-less ~~art~~, Ready-to-cook ~~art~~, Fully cleaned ~~art~~, Spend Less ~~art~~, Eat

Better ~~art~~, Ham ~~art~~, pork ~~art~~, chicken ~~art~~, tomato ~~art~~, banana ~~art~~, apple ~~art~~, turkey ~~art~~, cake ~~art~~, cookie ~~art~~.

add:

I am for an ~~art~~ that is combed down, that is hung from each ear, that is laid on the lips and under the eyes, that is shaved from the legs, that is brushed on the teeth, that is fixed on the thighs, that is slipped on the foot.

square which becomes blobby

May, 1961

Claes Oldenburg .

statement was written for the catalogue of the exhibition "Environments, Situations, Spaces" at the Martha Jackson Gallery, May 23-June 23, 1961; it appears here in the definitive form in which it was published in Store Days (New York: Something Else Press, 1967).

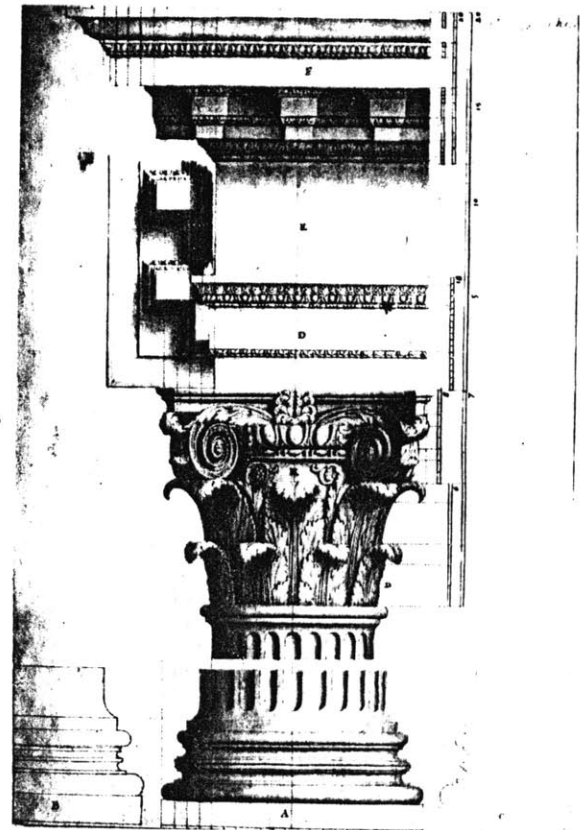
TABLE OF CONTENTS

TITLE PAGE.....	i
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	vii
PREFACE.....	ix
TABLE OF CONTENTS.....	xiii
INTRODUCTION.....	1
ORNAMENT AS A HISTORICAL PROBLEM.....	13
ORNAMENT AND NECESSITY.....	41
CONCEPTUAL FRAMEWORKS: MULTI-DIMENSIONAL OBJECTS.....	63
NON-CAUSAL IMAGINATION AND THE CRAFT OF ORNAMENT.....	107
THE STRUCTURE OF ORNAMENT.....	135
NOTES.....	217
PICTORIAL SOURCES.....	221
BIBLIOGRAPHY.....	233

INTRODUCTION

The present study is an attempt to understand ornament as a part of an architectural design method and as a part of a building process. Prior to the nineteenth century, ornament was an integral part of architecture. In the Victorian era, ornament came to be abstracted from a design process and became an independent element of composition, in effect, a commodity. The present study is an attempt to develop an approach to inserting ornament back into a 'making' process, both in design and construction. 'Making' is an active process and appears to be crucial to the development of a viable ornamental form.

Ornament in relation to a working method, both practical and conceptual, is examined historically in an effort to establish threads of this relationship.



36. Perrault. Composite Capital. Drawing by Sébastien Leclerc for *Ordonnance*, Paris, Bibl. de l' Arsenal



As Wittgenstein wrote:

to consider aesthetic judgments to be possible only by referring the subject to a "use" system, with the use system in turn depending on a larger system, the "way of living," given the fact that at every period a different organization of the social structure exists, "an entirely different game is played" by society.¹

Ornament has taken varying roles within architectures. Through a historical examination of ornament, one might come to develop a contemporary approach to ornament within a building process.

Generically, one might think of three types of ornamental form: 1) constructed, 2) residual or metaphorical, and 3) emblematic or heraldic. The construction forms come about through the act of construction; it can be thought of as the facts of construction used in an ornamental manner. In many respects, this form of ornament is the most pervasive in current architectural vocabularies, as well as one of the oldest forms of architectural ornament. It is an ornament arising from the articulation of structural parts, and it leads to a concern in architectural theory, through Alberti

'That which exists through itself is
what is called the meaning'

Charles Olson.

to the present, with an emphasis on the internal congruence of the building's physical parts.

The residual or metaphorical forms are a derivative use of a constructed form. The classical Greek temple's derivation from a constructed timber form is one example of residual ornament. In historically derivative styles, the residual elements of ornament take on great importance, and the relationship to the original constructed forms is submerged or lost. Residual ornament has been used in many cases in an attempt to legitimize then-current architectural forms in an appeal to the past.

The third generic form of ornament, the emblematic or heraldic, is the recording of a society's concerns in architecture. This form of ornament, unlike the constructed and the residual, which are referential to internal architectural concerns, is referential to non-architectural realms of experience. Those realms may take various references in myth, religion, politics, nature, or any number of life processes. As such, this



ornamental form will not submit purely to reason. It resides in a non-causal realm of the imagination and is of an active, not reflective, nature. Being related to action, it is necessarily a social act.

These three generic forms of ornament can be seen to be assembled in three ways: 1) Integral--the construction and the ornament come to be assembled simultaneously; 2) Applied--additive and subtractive methods of ornament shaping the masses of the structure after it has been constructed (before, after, and during the completion of the buildings); and 3) Time encrusted--those ornamental forms of a seasonal or temporal nature.

Within this framework of ornamental forms and methods, the following pages concentrate on an understanding of the general poverty of current architecture of the use of ornament that is not referential to architecture. This poverty in architectural thinking appears to have its roots in the French rigorist tradition of the late seventeenth century. My contention is that those forms of ornament that are derived



from non-architectural references are rooted in craft traditions and in the non-causal realm of thought and imagination. They are in fact concrete human acts within a social life. They are also within a social life that recognizes the body as person and not the vessel of the mind and spirit. The classical dichotomy of form and content vanishes and is replaced by an active shaping of life processes. The result is the re-emergence of a craft culture and as a consequence the craft of building. This does not deny the use of industrialized craft but, rather, recognizes its appropriate usefulness within a particular context. The substance of ornament has always resided in craft, whether that be hand-crafted, machine-crafted, or the crafting of an assemblage of component parts.

With this general commitment of ornament as a craft and part of an a-rational process logic, the following pages examine the conceptual and historical basis of ornamental form. The text is of an analytical nature in searching for some basis of ornament, and the

in-sane (in-sān'), *adj.* [L. *insanus*], 1. not sane; mentally ill or deranged; demented; mad; crazy. 2. for insane people: as, an *insane* asylum. 3. very foolish, impractical, extravagant, etc.; senseless.

the insane, insane people.

in-san-i-tar-y (in-san'ə-ter'i), *adj.* not sanitary; unhealthful; likely to cause disease.

in-san-i-ta-tion (in-san'ə-tā'shən), *n.* absence of sanitation; unhealthfulness.

in-san-i-ty (in-san'ə-ti), *n.* [*pl.* INSANITIES (-tiz)], [L. *insanitas* < *insanus*], 1. the state of being insane; mental illness or derangement, usually excluding amnesia; madness: not a scientific term; specifically, in *law*, any form or degree of mental derangement or unsoundness, permanent or temporary, that makes a person incapable of what is regarded legally as normal, rational conduct or judgment: it usually implies a need for hospitalization. 2. great folly; extreme senselessness. *SYN.*—*insanity*, current in popular and legal language but not used technically in medicine (see definition above), implies mental derangement in one who formerly had mental health; *lunacy* specifically suggests periodic spells of insanity, but is now most commonly used in its extended sense of extreme folly; *dementia* is the general term for an acquired mental disorder, now generally one of organic origin, as distinguished from *amentia* (congenital mental deficiency); *psychosis* is the psychiatric term for any of various specialized mental disorders, functional or organic, in which the personality is seriously disorganized.—*ANT.* sanity.

in-sa-ti-a-bil-i-ty (in-sā'shə-bil'ə-ti, in-sā'shi-ə-bil'ə-ti), *n.* the quality or state of being insatiable.

in-sa-ti-a-ble (in-sā'shə-b'l, in-sā'shi-ə-b'l), *adj.* [see IN-(not) & SATIATE], constantly wanting more; that cannot be satisfied or appeased; very greedy.

in-sa-ti-a-bly (in-sā'shə-bli, in-sā'shi-ə-bli), *adv.* 1. in an insatiable manner. 2. to an insatiable degree.

in-sa-ti-ate (in-sā'shi-it), *adj.* [L. *insatiatus*], insatiable.

in-scrib-a-ble (in-skrīb'ə-b'l), *adj.* that can be inscribed.

in-scribe (in-skrīb'), *v.t.* [INSCRIBED (-skribd'), INSCRIBING], [L. *inscribere*; see IN- (in) & SCRIBE], 1. to mark or engrave (words, symbols, etc.) on some surface. 2. to mark or engrave (a surface) with words, symbols, etc. 3. to add the name of (someone) to a list; enroll. 4. to dedicate (a book, song, etc.) briefly and informally. 5. to fix or impress deeply or lastingly in the mind, memory, etc. 6. in *geometry*, to draw (a figure) ~~inside another figure so that their boundaries touch at as many points as possible.~~

in-scrip-tion (in-skrīp'shən), *n.* [ME. *inscriptioun*; L. *inscriptio* < *inscriptus*, pp. of *inscribere*], 1. an inscribing. 2. something inscribed or engraved, as ancient markings on stones or the information on a coin. 3. a brief or informal dedication in a book, etc.

in-scrip-tion-al (in-skrīp'shan-'l), *adj.* inscriptive.

in-scrip-tive (in-skrīp'tiv), *adj.* of or like an inscription.

in-scrōll (in-skrōl'), *v.t.* to record on a scroll.

in-scru-ta-bil-i-ty (in-skrōō'tə-bil'ə-ti), *n.* 1. the quality or state of being inscrutable. 2. [*pl.* INSCRUTABILITIES (-tiz)], something inscrutable.

in-scru-ta-ble (in-skrōō'tə-b'l), *adj.* [LL. *inscrutabilis* < L. *in-*, not + *scrutari*, to search carefully, examine], that cannot be learned or understood; completely obscure or mysterious; incomprehensible; unfathomable; enigmatic.—*SYN.* see *mysterious*.

in-scru-ta-bly (in-skrōō'tə-bli), *adv.* in an inscrutable manner; so as to be inscrutable.

lat. spē, bāre, cār; tēn, ēven, hēre, ovēr; is, bīte; lot, gō, hōrn, t'hēn; zh, leisurē; ŋ, ring; ə for a in ago, e in agent, i in saniti-
cour; ō, Fr. feu; Fr. mon; ō, Fr. coq; ū, Fr. duc; H, G. ich; kh. (

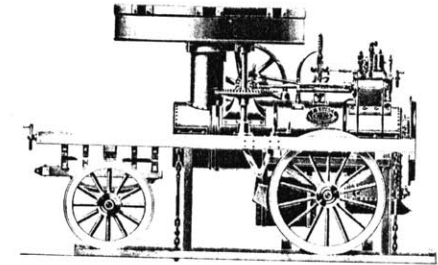
photographs search for a basis in a more active, craft way. Ornament is ultimately arbitrary, as circumscribed by the limits of a socially constructed reality. In this way, ornament becomes inclusive of particular craft traditions, and the architect relinquishes his control as complete and final form-giver. This looks towards an architecture of action on the part of architects, craftsmen, and artists. For an architecture to have an immediacy of emotional and associational content it must have an immediacy of action in its study and making.

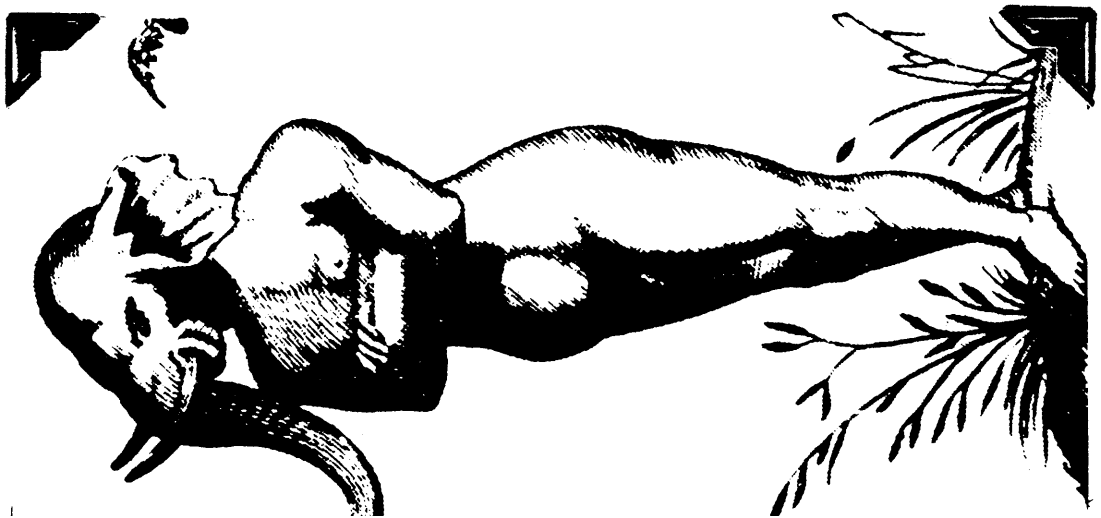


ORNAMENT AS A HISTORICAL PROBLEM

Ornament was not a problem until the nineteenth century, when the Victorians made it one. With the coming of the Industrial Revolution, people and architects began to call for a new style, a "modern style" to express the Zeitgeist. At that point in time, ornament became a moral issue, a matter of conscience. This period (1860-1900) saw the writing of Ruskin, Morris, and Viollet LeDuc. Style and, as a consequence, ornament came to be studied in the abstract and defined in order to debate the morality of ornament. In America, the arguments against ornament were put forth in the most coherent fashion by sculptor Horatio Greenough in the 1850's.

Those origins of unadorned objects and architecture actually go back to the Puritans in this country. The





Puritans and Shakers made an argument for practical necessity. They also were skeptical of the aesthetic experience, and their happiness was to be found in a supernatural order. The Puritans talked of "armouring" the self against the world. They, of course, meant spiritual armour, but here was another sort, outside of body and soul: the room and the architecture. As such, it did not make visible, through ornament, the individual or the collective self, but, rather, an armour of the self and the armour of the community. Ornament as a form of indulgence making life manifest was non-existent. The self was for the first time felt to be not just at the risk of others but actually to be disfigured by them. Ornament as a communicative and ritualistic form gave way to practical necessity within an all-encompassing religiosity.

Greenough's arguments were those of democratic values. He put forth the trotting wagon and the yacht America as examples of "functional" objects having unornamented, elegant forms. He compared these American

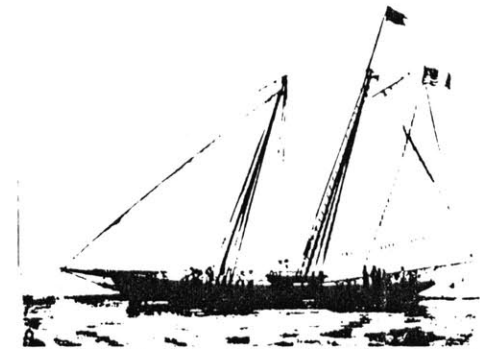
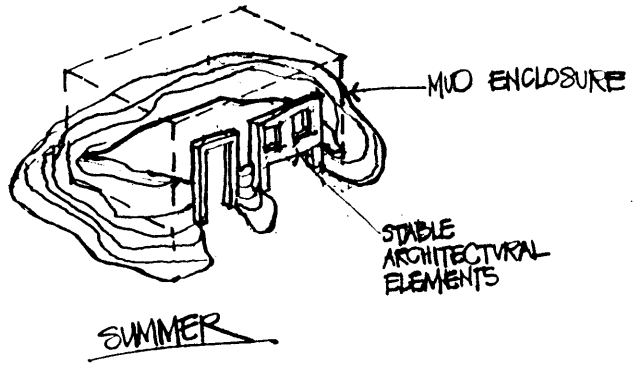
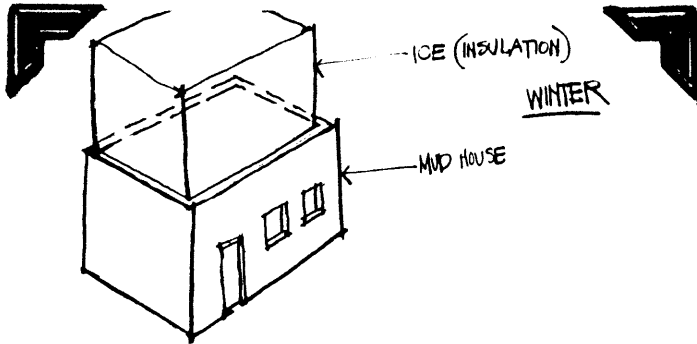


Fig. 109. The yacht "America," which won the Queen's Cup at Cowes, England, on 22 August 1851, exemplified the kind of anonymous design by skilled craftsmen that Greenough praised.



Fig. 110. The fast trotting wagon or sulky was another American artifact which was famous for its functional elegance and lightness.

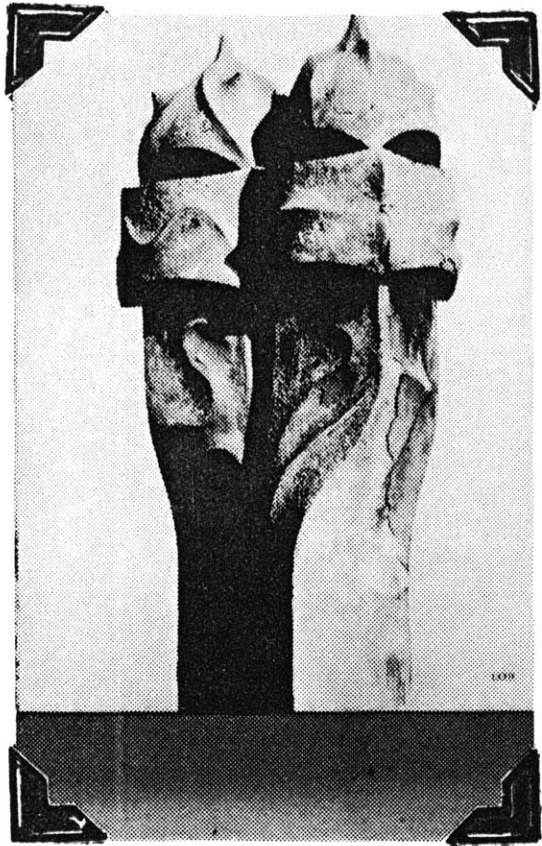


REF. KALLOS, NOMADIC TENTS

"functional" inventions to the English "man-o-war" and the English coach, both highly ornamented forms. The ornament on these forms was of a ceremonial nature. The English coach was used for ceremonies and thus had seals, crests, and various other social markers. The American trotting wagon, in contrast, was a vehicle of transportation. The English forms emerged from an ongoing society with ornament being part of a social value, a symbol of power, whether that be military, economic, or societal. Greenough's arguments echo a continuing note in the myth of America, the New World. As such, he argued that unornamented forms become democratic in departing from the socially constructed forms of the Old World.

Despite the pluralism and the heterogeneity of the American condition, both in people and landscape, Americans have often preferred "unifying," "democratic," homogenized solutions to architecture and urbanism. The self-righteousness of American Puritanism, which tends to see alternatives in terms of black and white,

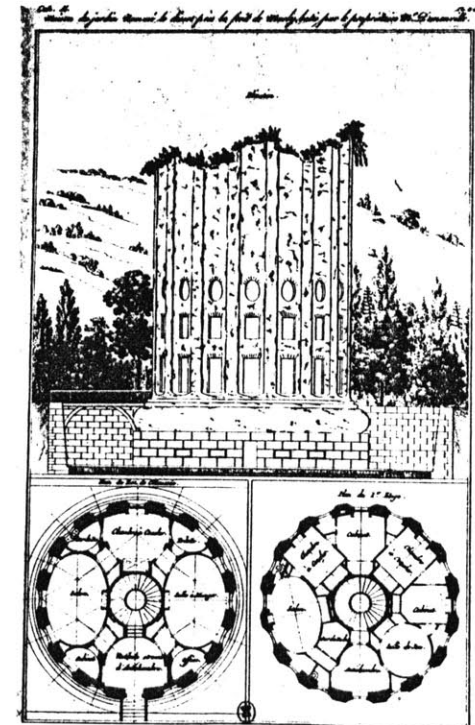


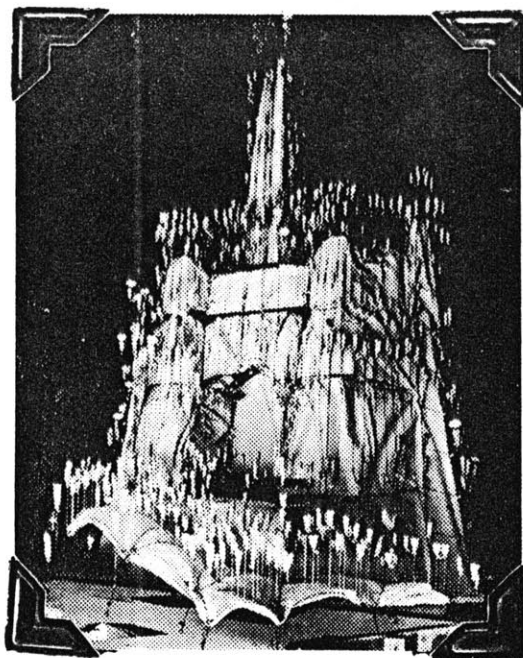


The unknown, the unexplained, and the unstructured.

continues to play a part in American life. However, democracy is just as much about making differences in pluralities and experience, and ornament is one element in architecture toward a non-homogenized environment.

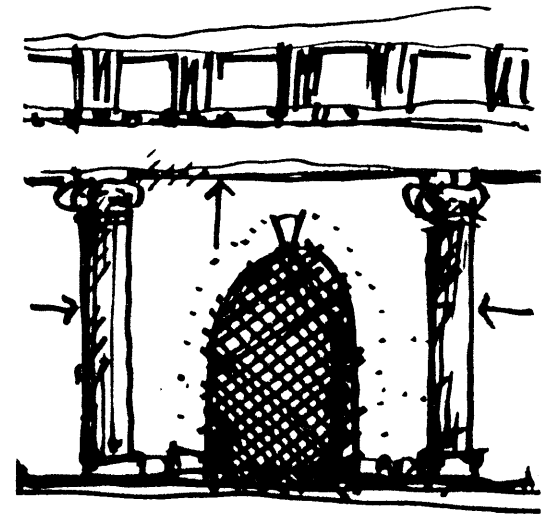
My purpose is not to write a history of ornament or theories of ornament within a theory of architecture. My concern is not with individual authors or individual periods, but, rather, with a working method involving ornament as one element in the generation and articulation of form. In many instances, I understand ornament as a collapsing or articulating element of history, power, or status, into form. The structure/building is a receiving vessel/organization of ornament having numerous referents. The Romantics liked to evoke the distant in time and place through utilizing architectural and stylistic forms of the past. The Nazis used classical forms as an attempt to legitimize their power. Alberti took Greek columns and entablatures and superimposed them on Roman arched and vaulted construction systems. The invention of the pilaster was the end



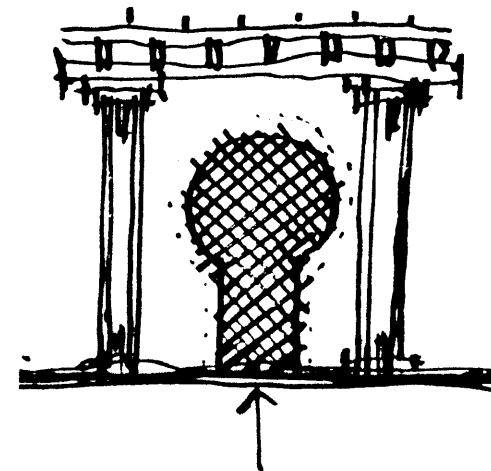


result. He said of the column: "the principal ornament in all architecture certainly lies in the column."¹ With Renaissance architecture being an architecture of walls, the column became first and foremost an element of decoration. The wall is rhythmical, dimensional, articulate.

In contrast, the majority of traditional Oriental architecture is based on the vertical upright and the horizontal support, and the arch becomes a decorative motif inserted within the system. A precise definition of ornament is elusive and largely unnecessary. It is buried within a working method and difficult to abstract out of that method in isolation. Architecture is ornamented, and ornament is, I will contend, present from the beginning of a design process. The abstraction of ornamental form from an architectural working method is to render ornament as a catalogue item to be consumed or deployed for alternative displays. This is precisely what occurred in Victorian times with mass-produced decoration and the issuance of various handbooks of



Additions

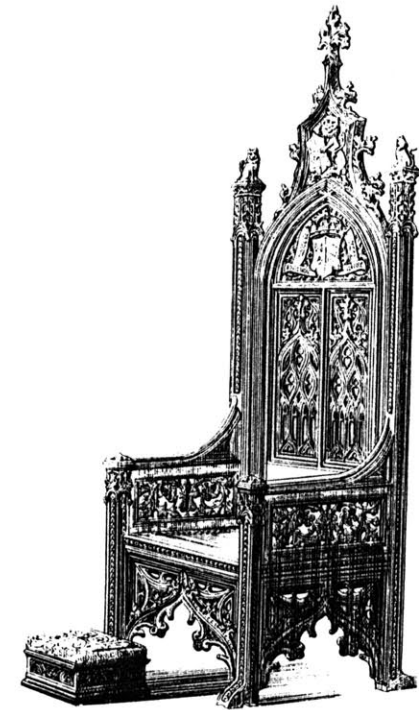


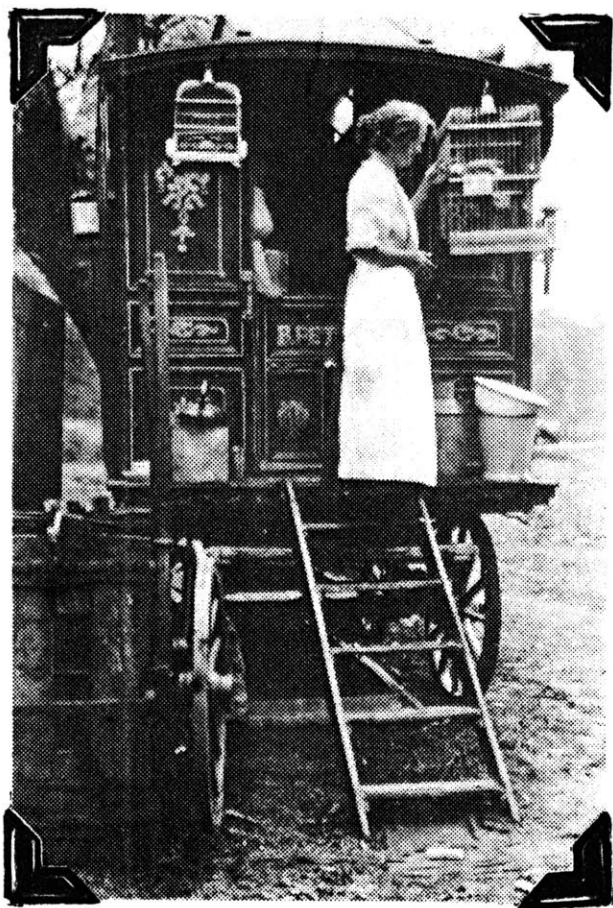
Inserts

Architecture is the record of concrete
human acts within a social life.

ornament. Most of these handbooks were catalogued in terms of style (Greek, Egyptian, Gothic), and they presented each style in an abstract form, devoid of building or design processes. With the abstraction of ornament into discrete choices of style, matters of taste, morality, and conscience begin to enter into the use of ornament in building. Ornament also becomes a greater vehicle for the legitimization of power and/or belief system. Ornament is a hoarding of power--social, political, economic, or magical. Ornamented objects possess power of the form recognized in a particular society. The display of power through ornament is most explicit in ornament's emblematic or heraldic form.

The hoarding of power in the abuse of ornament in bourgeois Vienna at the turn of the twentieth century was the background for Adolf Loos's hysterical attack in ornament in 1908. Analogies are drawn between tatoos and architectural ornament, and the conclusion is made that architectural ornament, like tatoos, is primitive

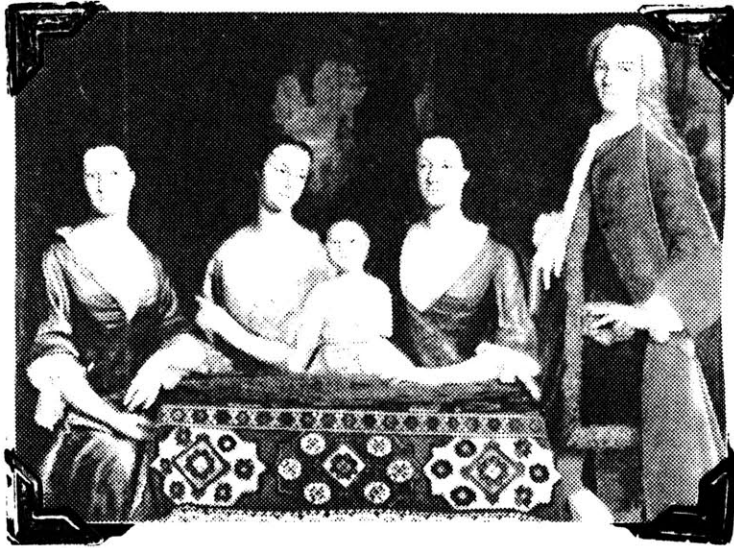




and uncivilized. The analogy of body and architecture is useful in understanding architecture's existential, body-centered references. Ornament is the one element in architecture that addresses most explicitly man's existential, body-centered fears and elations about myth, sexuality, harvest, birth, and the unknown, the unexplained, and the unstructured. The understanding of Puritan and Shaker conceptions and forbidding of ornament from their communities is cleared in the idea of personal revelation and salvation. The ascetic compulsion to save and accumulate capital may be other common origins. The denial of the body in its physical, tactile, and sensual involvements with a built world includes an impoverishment of ornament.

Loos never actually ended ornament. He succeeded over the years in putting an end to "structure ornamented" in orthodox, modern architectural circles. In January 1869, Robert Kerr, in a lecture given to the Royal Institute of British Architects, re-defined architecture as a cloak applied to a dull structure, making "archi-





"Visions hold multiple meanings in a single fact and we will never see life steadily nor will we see it whole, for life seen whole cannot be seen steadily, while life seen steadily is life seen dully or partially."

Herman Melville
somewhere in Moby Dick.

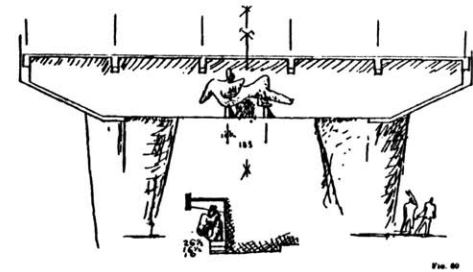
tructuresque." Kerr put forth four possible ornamental approaches: 1) "Structure Ornamented"; 2) "Structure Ornamentalized," or rendered in itself ornamental; 3) "Ornament Structuralized," or rendered in itself structural; and 4) "Ornament Constructed."²

Prior to Kerr's lecture, the eclectic methods employed by architects were primarily "structure ornamented," applied, historically derived, surface ornamentation. In historically derivative styles, ornament takes on a great deal of importance. The "borrowed" ornamental forms become the logic by which the derivative style is made manifest. Ornament comes to the fore to generate residual forms from the earlier constructed forms. The problem that then arises is the context from which the ornament is derived and then used in another building method or process. This derivation of residual or metaphorical forms from constructed forms and its relationship to ornament goes far back in the history of architecture, with the derivation of the stone Greek temple from its previous timber con-

I think Henry Moore invented the 1%
GSA Clause.

struction. In this case it was merely a change in the material of construction. Nineteenth-century eclecticism had catalogued and separated ornament from any specific context and brought it into a role as an independent element of construction. Beaux-Arts architects applied ornamental programs to building types and building functions. Ornament was no longer a part of a building or constructing process, but rather part of an academic design rhetoric culled from the past.

Of Kerr's ornamental categories or methods, Loos merely eliminated the first, "structure ornamented." The route taken then by architects like Mies, Wright, and LeCorbusier was to utilize ornamental concepts in a more physiognomic manner. The reference for such a method of working is continuous ornamental geometries, normally from Greek architecture. These linear, nested, and translated geometries were then applied to shape the physiognomy of the architecture in plan, indeed LeCorbusier's city plans. The architecture became largely self-referential, narcissistic in some cases.



This is a small demonstration of the use of the 'Modulor' on the side.

Applied Ornament

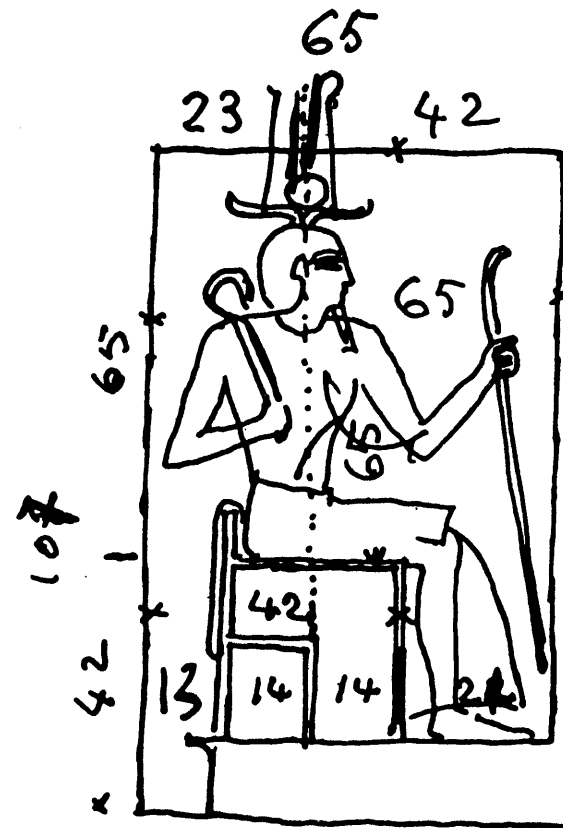
- or-mo-lu** (ôr'mə-lōō'), *n.* [Fr. *or moulu*; *or*, gold + *moulu*, pp. of *moudre* < L. *molere*, to grind], 1. an imitation gold consisting of an alloy of copper and tin, used in making ornaments, moldings, inexpensive jewelry, etc. 2. imitation gold leaf.
- Or-muz, Strait of** (ôr'muz), the Strait of Hormuz, connecting the Persian Gulf and the Gulf of Oman.
- or-na-ment** (ôr'nə-mənt; *for v.*, ôr'nə-mənt'), *n.* [ME. *ornement*; OFr. *ornement*; L. *ornamentum* < *ornare*, to adorn], 1. anything serving to adorn; decoration; embellishment; hence, 2. a person whose character or talent adds luster to his surroundings, society, etc. 3. an adorning or being adorned; ornamentation. 4. mere external display. 5. in *ecclesiastical usage*, an adjunct, accessory, or article of equipment. 6. in *music*, a tone or tones used to embellish a principal melodic tone. *v.t.* to decorate; beautify; furnish with ornaments or be an ornament to. —SYN. see *adorn*.
- or-na-men-tal** (ôr'nə-men't'l), *adj.* serving as an ornament; decorative. *n.* something ornamental; specifically, a plant or shrub grown for its decorative effect.
- or-na-men-ta-tion** (ôr'nə-men-tā'shən), *n.* 1. an ornamented condition or appearance. 2. an ornamenting or being ornamented. 3. ornaments collectively; decoration.
- or-nate** (ôr-nāt'), *adj.* [ME.; L. *ornatus*, pp. of *ornare*, to adorn], 1. heavily ornamented; overadorned. 2. flowery; showy; unnatural: said of literary style.
- or-ner-y** (ôr'nēr-i), *adj.* [altered < *ordinary*], [Chiefly Dial.], 1. having an ugly or mean disposition. 2. obstinate. 3. base; low. 4. ordinary.
- or-nis** (ôr'nis), *n.* [Gr. *ornis*, bird], all the birds of a certain region; avifauna.
- ornith.**, 1. ornithological. 2. ornithology.
- or-nith-ic** (ôr-nith'ik), *adj.* [Gr. *ornithikos* < *ornis*, *ornithos*, bird], of or characteristic of birds.
- or-ni-thin** (ôr'nə-thin), *n.* ornithine.
- or-ni-thine** (ôr'nə-thēn', ôr'nə-thin), *n.* [< Gr. *ornis*, *ornithos*, bird; + *-ine*], an amino acid, C₁₁H₁₁O₂N₂, found in the urine and excrement of birds.
- or-ni-tho-** (ôr'ni-thō, ôr'ni-thə), [< Gr. *ornis*, *ornithos*, bird], a combining form meaning *a bird* or *birds*, as in *ornithology*; also, before a vowel, *ornith-*.
- or-ni-thoid** (ôr'nə-thoid'), *adj.* [*ornith-* + *-oid*], like a bird in appearance or structure.
- or-ni-tho-log-i-cal** (ôr'ni-thə-loj'i-k'l), *adj.* having to do with ornithology: abbreviated *ornith.*, *ornithol.*
- or-ni-thol-o-gy** (ôr'ni-thol'ə-ji), *n.* [Mod. L. *ornithologia* < Gr. *ornithologos*; see ORNITHO- & -LOGY], the branch of zoology dealing with birds: abbreviated *ornith.*, *ornithol.*
- or-ni-tho-pod** (ôr'ni-thə-pod', ôr-ni'thə-pod'), *adj.* [*ornitho-* + *-pod*], of a group of dinosaurs that walked upright on digitigrade hind feet. *n.* such a dinosaur.
- or-ni-thop-ter** (ôr'ni-thop'tēr), *n.* an orthopter.
- or-ni-tho-rhyn-chus** (ôr'ni-thō-rin'kəs), *n.* [< *ornitho-* + Gr. *rhynchos*, bill, snout], a duckbill, or platypus.
- o-ro-** (ôr'ō, or'ə), [< Gr. *oros*, mountain], a combining form meaning *mountain*, as in *orography*.
- or-o-ban-cha-ceous** (ôr'ə-ban-kā'shəs), *adj.* [< Mod. L. *Orobanchaceae*, name of the family (< L. *orobanche*, broomrape); + *-ous*], of the broomrape family of leafless parasitic plants.
- or-o-gen-e-sis** (ôr'ə-jen'ə-sis), *n.* orogeny.
- or-og-e-ny** (ôr'ə-roj'ə-ni), *n.* [*oro-* + *-geny*], the formation of mountains, especially through a disturbance in the earth's crust.
- or-o-graph-ic** (ôr'ə-graf'ik), *adj.* of orography.
- or-o-graph-i-cal** (ôr'ə-graf'i-k'l), *adj.* orographic.
- o-rog-ra-phy** (ôr'rog'rə-fī), *n.* [*oro-* + *-rakhv*], the

Being self-referential, the craft traditions of ornament were submerged into a singular architectural object. The architect's role as an ornamentalist would appear to have effectively increased as the building physiognomy became ornamental. Ornament became structuralized and used as a didactic element of structural articulation. As a working method, ornament exists in constructional and/or technical display. Simultaneously, ornament became related both to constructional articulation and the overall geometrical basis shaping the form.

If one looks to the ancient architectures of the Greeks and Egyptians, one finds two varying relations of ornamental form to structural form. The elaborations of the stone Greek temple were a development of the structural forms of the previous timber constructions. These elaborations, though residual stone forms of timber forms, are tightly bound to and inform the structural work being performed.

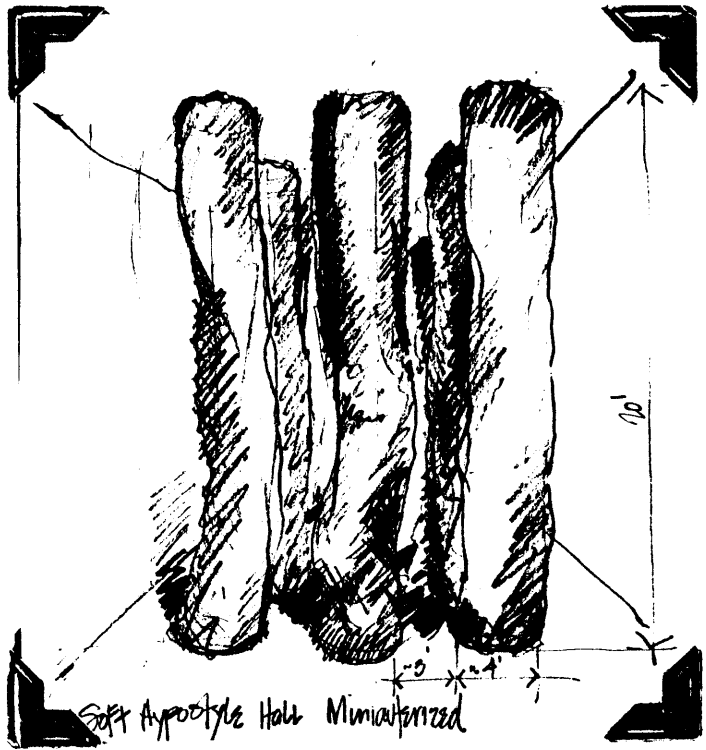
Egyptian ornament, in contrast, is not so tightly bound to structural articulation. Where the Greek or-

namental system can be seen as sculpted in both addition and subtraction, the majority of Egyptian ornament must be understood in relation to the architecture's inertness. That ornamental system is one of inscription. The symbols, figures, and hieroglyphs lie within the stone, the mass, the architecture. The building process is an additive one of placing stone upon stone to act in compression. The ornamental process of inscription is additive in terms of iconography and subtractive in terms of shaping. The architecture becomes literally a three-dimensional mass that is carvable. The figures, animals, and symbols maintain their own life regardless of and passing over constructional stone joints. The ornament is a recording on a wall, possibly akin to actual scribes on stone tablets of the time.



Corbusier's Egypt

The axial, ritual, ceremonial nature of the monumental architecture produced a layering of space, objects, walls, and columns. Sphinxes, lions, and rulers are shaped three-dimensionally as markers of sacrosanct, monumental realms. They can be thought of as surrogate



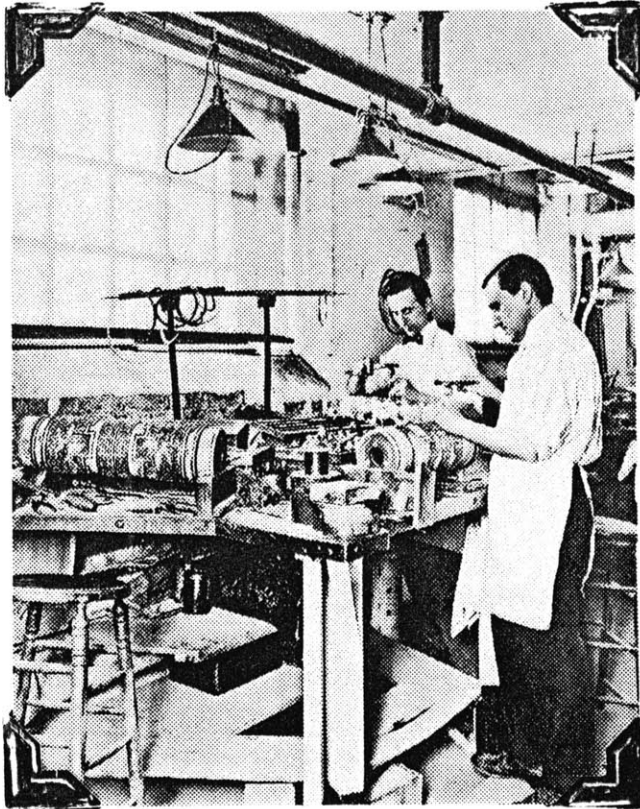
guardians of the place, a claiming of territory. These objects are a transcribing of the body or landscape into architecture and, as such, is subjected to physical forces as is our own body and the landscape it acts in. However, that transcription is not a literal mapping of the living form, which would tend to be reductionist. The sphinxes are stone objects, inert. They are set up on bases, apart from the earth, but of it. They body forth as mass, assert a presence. The mass, stone, asserts a bodily, physical presence, and the conventionalized natural forms assert a presence of inhabitation, guardianship. The duality of physical and metaphorical presences claims the territory on a physical, primary level as well as on an associational, secondary level.

This duality would seem to suggest a dialectic operating within architectural form. This dialectic has taken many forms through the history of architecture and has given rise to numerous discourses on the theory or practice of architecture since Alberti. That dialectic-

'Life is probably round.'
Van Gogh.

tic has been given various descriptions, including primary and secondary processes, construction and architecture or beauty, Perrault's positive and arbitrary aspects of architecture, structure or construction and ornament, the "duck" and the "decorated shed," Greek or Gothic revival, ad nauseum. All of building and man's relations to it are concerned with artifice, the artificial as circumscribed by the social.

The natural, the noble savage, the organic are simulations. Form differentiates itself from a "natural" state in the act of its making. Form-making is the inherent tendency of human beings to build an artifice, a place in the world, a claim. In this respect, it may be of value to examine differentiation of form and elaboration of form. Differentiation of form suggests an adapting or accomodating purpose of form on a primary use level. Elaboration of form suggests an intensification or non-causal articulation of form via a secondary, attitudinal, or sensory response within a given context or society.

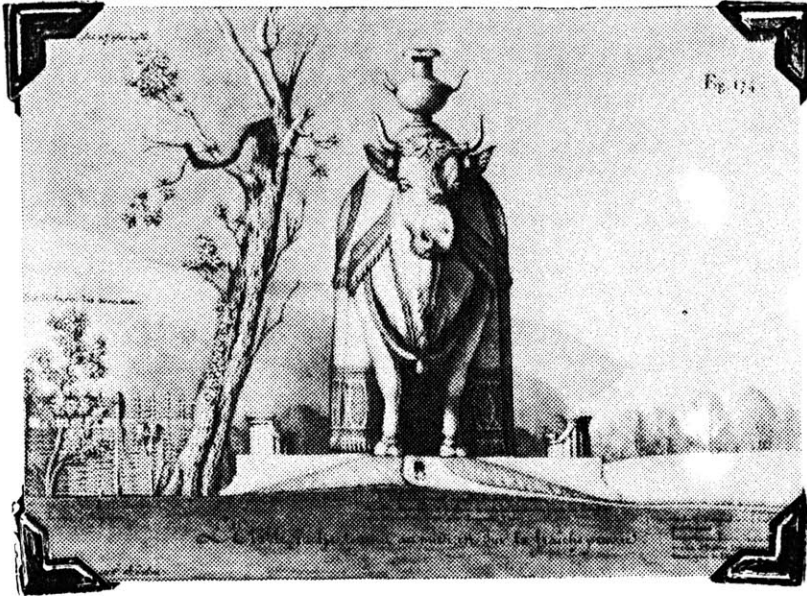


The two above-mentioned aspects of form are indeed difficult to disengage, if they should be at all, as each is ultimately related to use, even if that may present itself as uselessness. In traditional societies, differentiation and elaboration of man-made forms come under the larger rubric of cosmology, relation to the universe. Forms are a re-creation ritualistically of the cosmos, a gift to the gods. The building process is an exchange of gifts amongst a discrete group of people not necessarily based upon economic considerations. Building and images have a direct communicative or ritualistic role.

ORNAMENT AND NECESSITY

The schism in the eighteenth-century theories of architecture brought a moral tone to the study of ornament centering primarily around the issue of necessity. As cosmological conceptions of the universe became of lesser importance to be embodied in an architecture, an investigation of the necessities of ornament ensued. A parallel development in Western society at the time was the accumulation of capital in private hands. The secularization of society and architecture established norms of worldly necessity and an ascetic compulsion to save, that is, to accumulate capital. Under these conditions of a less encompassing cosmology and a new economic asceticism, architecture came under new scrutiny; new sets of architectural norms were put forth.

The distinction between structural necessity and



ornament is made necessary by two approaches to the role and nature of architecture. The first approach is derived from Vitruvian interpretations, defining the function of buildings as the simple requirement of shelter. From this point of view, there would appear to exist a clear difference between what is needed to erect a stable structure and what is added to the established "essentials." However, the difference between physical and mental or spiritual needs is less self-evident than it might appear. Physical and social requirements of man express themselves as mental needs, with those needs served by the architect as interpreted through bodily, physical needs. Any reasonable distinction between protection from the sun, enough light to read a book, or enough material to satisfy a belief in the building's grounding is an interpretive distinction and deals minimally with essentials. Attempts to understand a distinction between structural necessity and ornament assumes that architecture has an essence. Attempts to find an essence of architectural form deny



SIR HENRY BESSEMER.

If we cannot imagine, we cannot foresee
and act.

the fact that use, form, structural necessity, and ornament are inextricably linked and inform the shaping and use of any architecture.

Actually the historical criterion for functionality refers not to the satisfaction of human "physical" needs, but more simply to the elements needed to create and uphold the building's physical structure. Vitruvius's chapter on the ornaments of the orders makes a distinction between the contribution of the carpenter and that of the artist. They may in fact be one in the same person, with the carpenter setting the columns, pilasters, and beams, and the artist cutting off projecting ends, making an even surface, carving the triglyphs, and so forth. He strives to produce "beauty more than usual" and to avoid "an ugly look." It is most apparent that more than structural norms are operative in such thought. However, the focus on the building's physical structure had led through Alberti to the present day in an emphasis on the internal congruence of the building's physical parts. Architecture's referential sys-

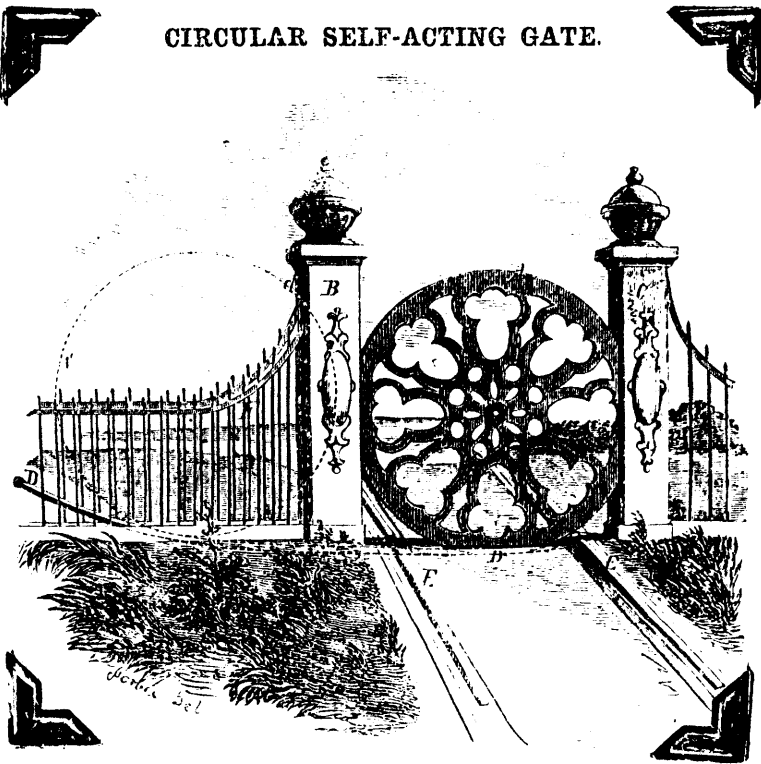
Our associations in architecture are scored by social purposes, with very little of it intrinsic to the material itself.

tem took shape within its own internal workings, rather than the larger physicality of its existence and larger reference system of "social-physical" needs.

A similar internal congruence and similar distinction is reached by a second approach. This approach is Rousseauian in its relation to 'primitivism' and seemingly Platonic in its intent to define the bare essentials of a building's being. Marc-Antoine Laugier (1711-1769), in his essay on architecture, looked to the notion of the primitive hut, not to derive standards from the historical origin of architecture, but rather to establish some principle, any principle, that would allow him to distinguish essentials from non-essentials. He derived from "his" primitive hut the essential elements to be columns, entablature, and pediment: in effect, the outside of a Greek temple. Laugier excludes any inhabiting needs as non-essentials, indeed, even walls are considered as non-essentials. Laugier's theory can operate rigorously only as theory. It is reactive against his contemporaries' tendency toward "excessive ornamentation."

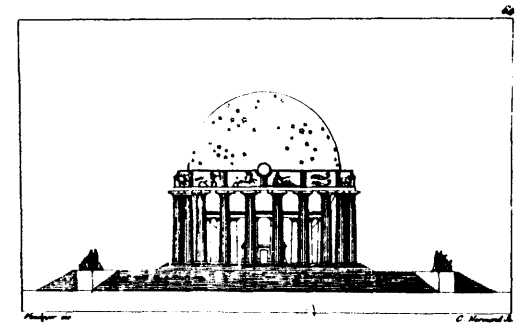


CIRCULAR SELF-ACTING GATE.



In the twentieth century, a similar reaction led to the stripping of architectural form to bare geometry. The bare geometrical construction of architectural form in no way came to discover an essence, but rather it introduced a stylistic alternative.

This shift in architectural form at the beginning of the twentieth century has many roots in the philosophical, artistic, social, and architectural movements that preceded it. It can be seen as a re-emergence of the French Ordre Absent in its interest in the simple Platonic solids and its search for a non-hierarchical form vocabulary. Cubist formal principles were employed, and the Cubist rejection of representation as the last link to the patron that established painting as an autonomous field may imply philosophical origins for the stripping of architectural representation or ornament from the architecture of the early European modernists. Lastly, it was an affront to Victorian bourgeois sensibilities in that it "declothed" objects. In Victorian society, ornament was seen as a kind of clothing



UL/ING], [*< L. nebula, mist (see NEBULA); + -ize*]. 1. to reduce (a liquid) to a fine spray. 2. to spray (a disease) or injured surface) with a medicated liquid.

neb u lose (neb'yoo-lōs'), *adj.* nebulous.

neb u los i ty (neb'yoo-los'ə-ti), *n.* [*Fr. nébulosité; LL. nebulositas*]. 1. the quality or condition of being nebulous. 2. [*pl. NEBULOSITIES (-tiz)*], a nebula.

neb u lous (neb'yoo-lōs), *adj.* [*ME. nebulus; L. nebulosus*]. 1. of or like a nebula or nebulae. 2. cloudy; misty; indistinct; hence, 3. unclear; vague; indefinite.

nec es sar i an (nes'ə-sār'i-ən), *n. & adj.* necessitarian.

nec es sar i ly (nes'ə-ser'ə-li, nes'ə-sār'ə-li), *adv.* 1. because of necessity; by or of necessity; as, that is not necessarily so. 2. as a necessary result.

nec es sar y (nes'ə-ser'i), *adj.* [*ME.; L. necessarius < necesse, unavoidable, necessary < ne-, not + cedere, to give way*]. 1. that cannot be dispensed with; essential; indispensable: as, water is necessary to life. 2. resulting from necessity; inevitable. 3. that must be done; mandatory; not voluntary; required. 4. inherent in the situation; undeniable; unavoidable from the premises. 5. [*Archaic*], rendering some essential and intimate service. *n.* [*pl. NECESSARIES (-iz)*]. 1. often in *pl.* a necessary thing; thing essential to life, some purpose, etc. 2. [*Dial.*], a privy or water closet; toilet. 3. *pl. in law*, those things essential to maintaining an incompetent or dependent in comfort and well-being. —*SYN.* see essential.

ne ces si tar i an (nə-ses'ə-tār'i-ən), *n.* a person who believes in necessitarianism. *adj.* of or like necessitarianism. Also *necessarian*.

ne ces si tar i an ism (nə-ses'ə-tār'i-ən-iz'm), *n.* the theory that every event is determined by causal necessity and that the action of the human will is not free, but is caused by previous actions and experiences.

ne ces si tate (nə-ses'ə-tāt'), *v.t.* [*NECESSITATED (-id), NECESSITATING*], [*< ML. necessitatus, pp. of necessitare < L. necessitas, necessity*]. 1. to make (something) necessary or unavoidable; involve or imply as a logical outcome. 2. to compel; require; force; usually in passive, as, I am necessitated to act alone.

ne ces si tous (nə-ses'ə-tōs), *adj.* [*Fr. nécessaire; see NECESSITY & -OUS*], in great need; destitute; needy.

ne ces si ty (nə-ses'ə-ti), *n.* [*pl. NECESSITIES (-tiz)*], [*ME. necessite (cf. Fr. nécessaire); L. necessitas < necesse; see NECESSARY*]. 1. the power of natural law that cannot be other than it is; natural causation; physical compulsion placed on man by nature; fate. 2. anything that is inevitable, unavoidable, etc. as a result of natural law; that which is necessary in natural sequence: as, death is a necessity to life. 3. the compulsion or constraint of man-made circumstances, habit, custom, law, etc.; logical or moral conditions making certain actions inevitable or obligatory. 4. what is required by this social or legal compulsion, that which is necessary in logical or moral sequence: as, a passport is a necessity. 5. great or imperative need: as, call me in case of necessity. 6. often in *pl.* something that cannot be done without; necessary. 7. the state or quality of being necessary. 8. want; poverty; neediness. —*SYN.* see need.

of necessity, necessarily; inevitably.

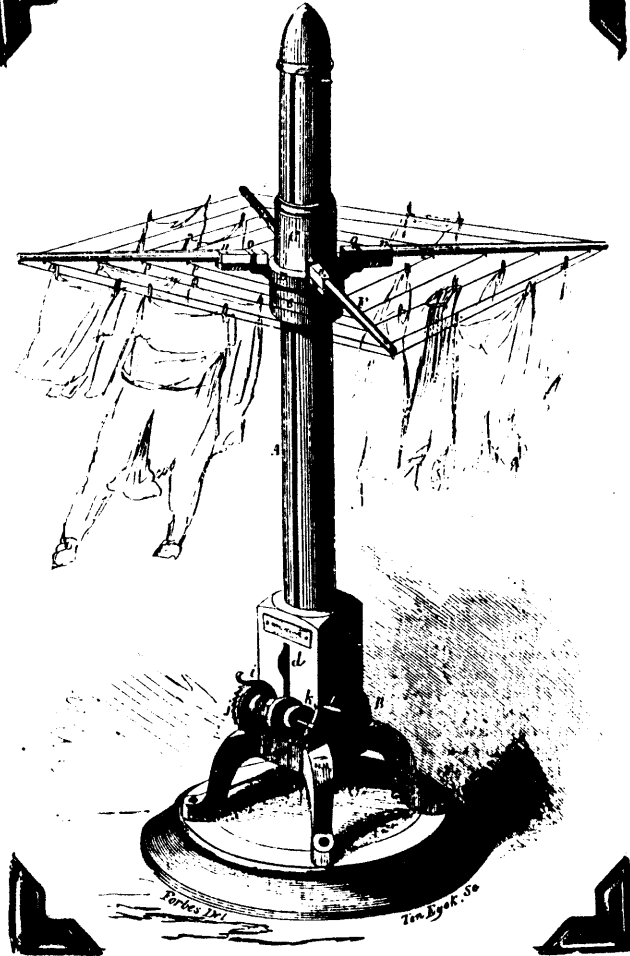
neck (nek), *n.* [*ME. nekke; AS. hnecca; akin to G. nacken; Gmc. *hanak-; IE. base *keng-, peg, hook (cf. HANG); for v.t. 2 & v.i., cf. AS. heal:gebedda, beloved bedfellow, healsmægeth, beloved maid < heals (G. hals), the neck*]. 1. that part of man or animal joining the head to the body, including the part of the backbone between the skull and the shoulders; hence,

on objects. A table, for example, had ornament on its legs, feet, sides, and the top was left uncarved. However, that table always had a tablecloth on it to "cover it up." Victorian building displayed status in society through the lavishness of the clothing, the ornament. As ornament was stripped from the architecture, the debate shifted onto moral grounds, both for and against the use of ornament.

In re-examining the problem of ornament, the underlying assumption of both approaches is the conception of essence. Another perspective on the problem of ornament begins to understand ornament as a necessary attribute of an object or person. In lieu of a search for an internal congruence of the building's physical structure, a search ensues for a bodily need, a physical or social need, manifested in the artifact as necessary. That search is not of an essential nature, but rather of a relative, experiential nature, no less physical.

Prior to the secularization of society in Western culture, ornament or decoration did not stand for gra-

CLOTHES DRYING MACHINE.



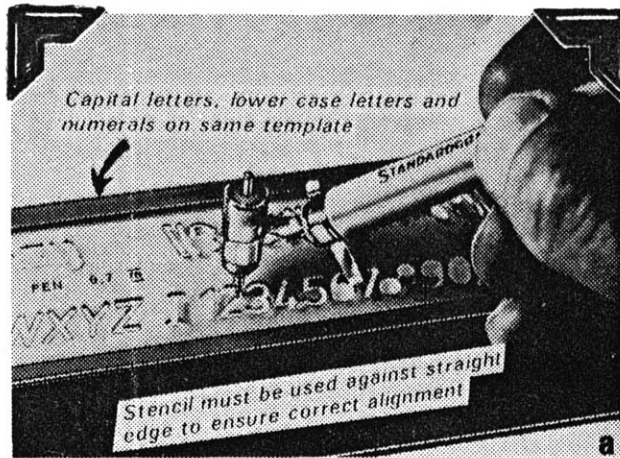
tuitous prettification but, on the contrary, referred to necessary attributes of an object or person. Necessary attribution is evident even in the original meaning of these terms and their equivalents in other languages. Ornament refers originally to necessary equipment, such as the ornaments of a ship or an altar, or, in rhetoric, to what is needed for effective communication by speech. Decoration comes from decorum and indicates what is needed for a thing or person to perform its functions properly. What we call charming is originally something that exerts a charm, namely a magic power, and 'cosmetic' derives from 'cosmos' and designates what is needed for proper order. The original meanings of these terms preserve an attitude to which rendering a distinction between what is needed to perform physical functions and what gratuitously pleases the senses is entirely alien. The pair of eyes painted on the prow of a boat in ancient Greece or in New Guinea is as necessary to a safe journey as the proper shape and wood for the boat "itself." In South African cul-

There are more things in a highly-crafted
ornamented box than in a shoe box, even
if both are empty.

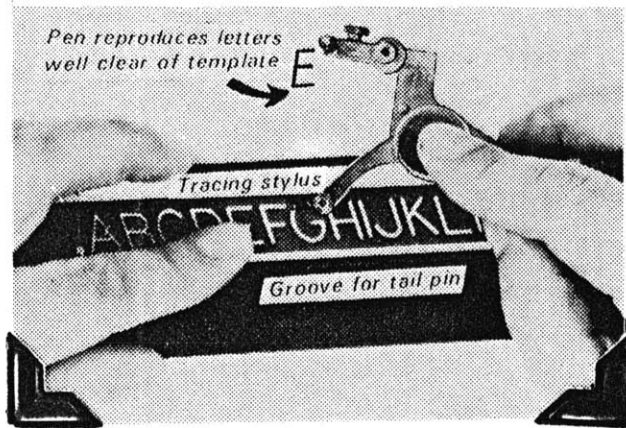
tures, the extensive painting of a house is a necessary condition prior to its inhabitation. In this way, an architecture relies on the entirety of its forms to make manifest the human existence. It is a necessary, felt efficiency; it is a power of ornamented objects.

Ornaments also exist in music, but, significantly, they do not serve to distinguish between the essentials of a composition and gratuitous additions. Instead, they derive from a division of labor between composer and performer that was, until recently, somewhat alien to modern concert practice. This practice assigned the basic structure of the piece, whose execution in fully-developed form was the performer's responsibility. Architectural parallels can be found when building does not proceed autocratically from a fully-developed plan but takes off from a generic plan and leaves the execution to the skills of the constructors. In neither case does 'ornament' refer to something that could be done without.

The difficulty is ensuring that the architecture's

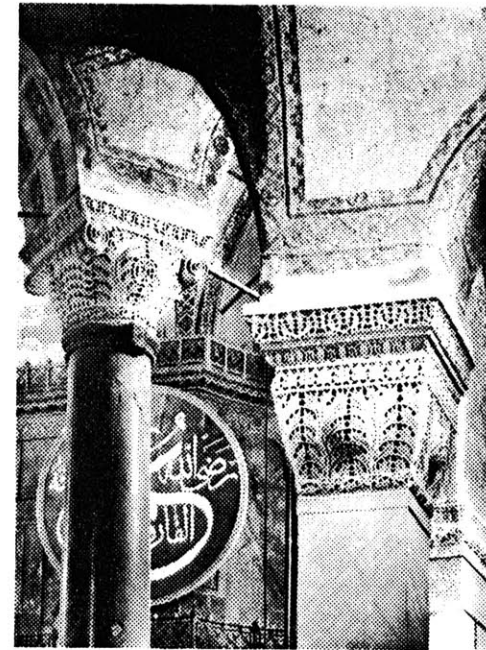


Page 66: Stencilled lettering a using Standardgraph stencils b Copiograph stencil which operates on the pantograph principle



underlying, formal structure emerges and is extended in its elaborations. Successful patterns are organized in such a way that details are understood as having a life of their own as well as being elaborations of an underlying structure. This normally leads to a hierarchic structure of formal vocabulary and building process as in the classical vocabulary, yet an underlying, formal structure may also take non-hierarchical vocabularies and uses. However, it is the interplay, or repercussive consequences, of a simple assertion and the rich consequences of its built presence that the substance of architecture resides in. The quality of an architecture lives not in its basic structure nor in its surface texture, but, as the musicologist Heinrich Schenker has taught us, in the 'middle ground' of the design. It is in that 'middle ground' of mating that the substance resides. Dialectics and polarities define and illuminate opposites; one must dive to the 'middle ground' to bring together both.

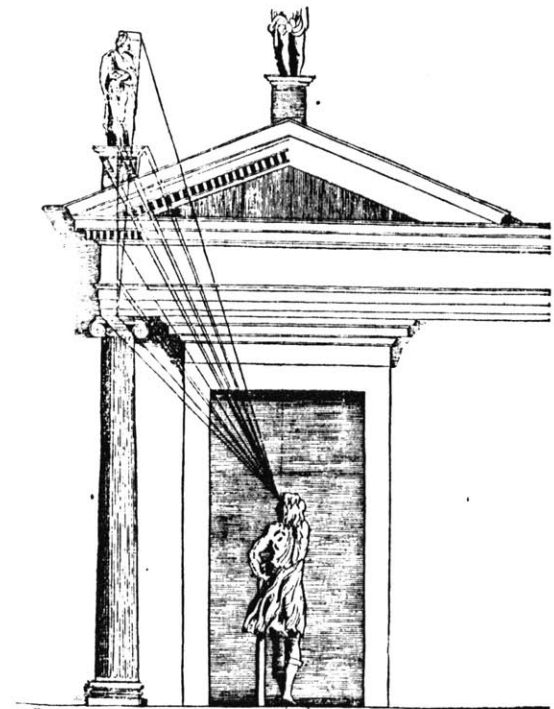
Architecture dealing with artifice in its shaping and making necessarily deals with discontinuities and



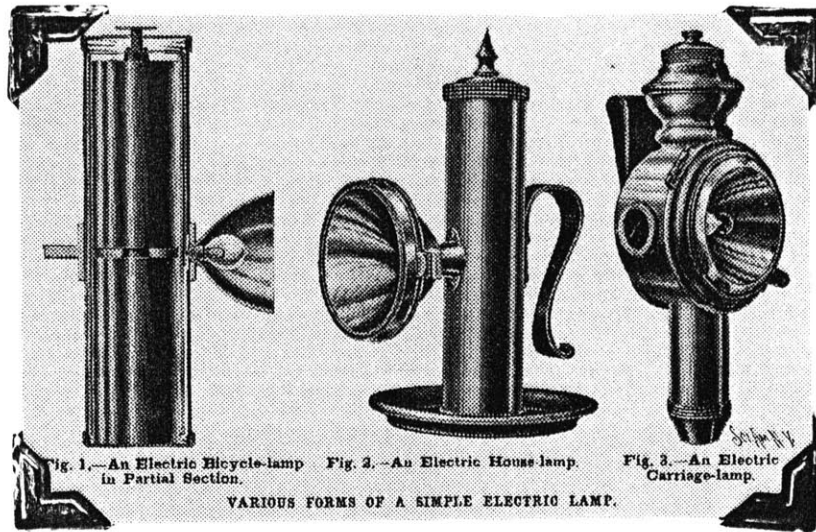
Middle-ground

polarities: ground elements differ from sky elements, publicness from privateness, wall from window, and so on. Yet, if one is to work in the 'middle ground' defined by polarities, those polarities must not be denied. That 'middle ground' may and has been described using terms such as reciprocal continuity, 'slack', or the symbolic articulation of perceived discontinuities. Architectural ornament appears to be one of those elements that fall into the 'middle ground' defined in large degree by the polarities that surround it. In this way, ornament never exists in isolation nor is it ever completely absent.

Ornament never exists in isolation in a physical sense by the very need for it to have a material vehicle of support. It exists, is made manifest, in material. The ornament may obscure or imitate the physical properties of any material (e.g., fiberglass brick), but it is still residing in a physical support. Louis Sullivan shaped terra cotta tiles into complex, fluid forms to eliminate effectively the background of the tile itself;



26. Jean Martin. Illustration to demonstrate need for inclining highly placed objects forward (from *Architecture . . . de Vitruve*, 1547)



still his ornament is in the material, and, on another level, it is applied to a structural wall or frame. Conversely, structural details offer a range of methods of performing their work, and the particular method utilized has ornamental implications, whether they are used consciously or not.

With ornament ever-present in architecture, approaches to ornament seem to take two possible directions. One approach appears to be outward, toward a study of the meaning of ornament--iconographic, metaphorical, or psychological. The other approach appears to be an examination of architecture itself as a medium of emotional communication. Of these two directions, the latter seems to be the approach that leads ornament into a viable role in the working methods used in design, so I shall delay the study of ornamental meanings in order to pursue the architecture itself.

CONCEPTUAL FRAMEWORKS: 'MULTI-DIMENSIONAL OBJECTS'

In examining the conceptual framework of architecture, beginning in the seventeenth century with the Royal Academy in France (1671), one finds a search for an essence grounded largely in utility. The archaic conceptual framework was an analogous thought process referring design decisions to a divine law, a relation and/or reflection of the cosmos. The modern conceptual framework originating in seventeenth-century France referred to a set of design decisions warranted by the need to maximize utility and minimize cost. The validity of warrants and decisions in the archaic framework had been founded on simple statements of classification, a taxonomy, while the modern one, it was to become founded on statements of causality backed by empirical data.

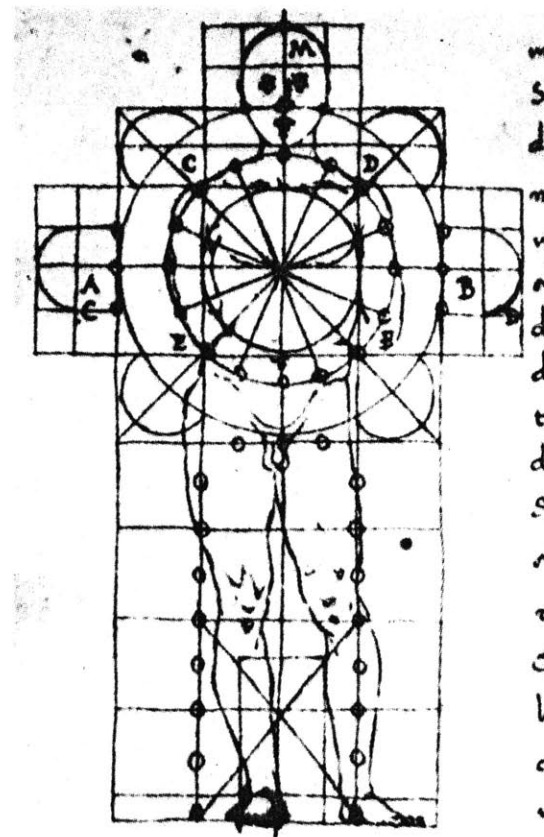
A conceptual framework is a structure of argumentation which brings together design actions

Ornament is a hoarding of power...social,
political, economical, or magical.

and purposes, facts and directives, natural and social constraints and technological and cultural norms. It validates the adoption or the rejection of design actions and legitimizes norms.¹

The modern preoccupation with essence and causality leads to norms dealing with the physical structure of architecture, in effect, the laws of statics. By accepting norms of static essence and causality in a mechanical sense in an argumentation, one accepts a conceptual framework in its entirety, which means not only an idea of the work as it is, but, in addition, how it can or should be.

The framework of archaic design was carried by many "multi-dimensional" objects, with the human body being the one most frequent and widespread. References to the human body relate simultaneously to all levels of the archaic framework. The building is a human body that exists in a landscape that is topologically ordered in relation to the same framework. In accepting that concept, the overall framework of archaic methodology then becomes a commitment. Sacred harmony becomes a warrant through a quasi-deductive logic of inference.

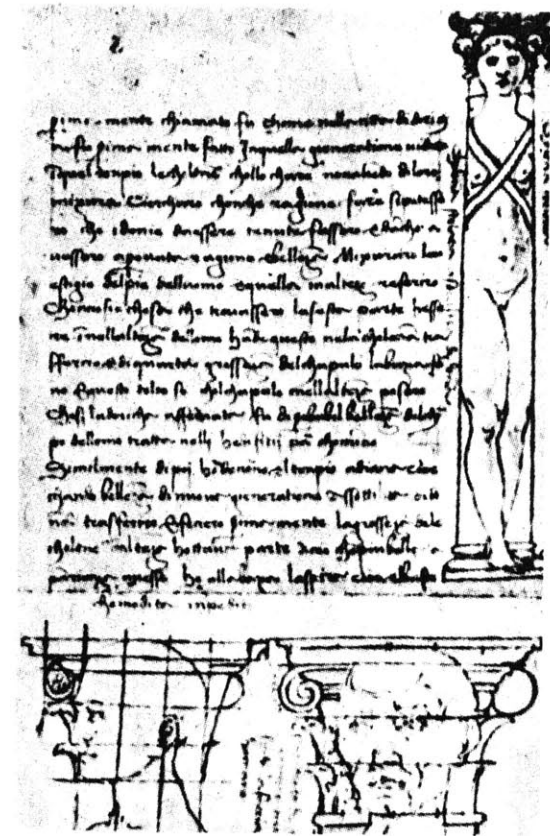


1a—Francesco di Giorgio. Drawing from Cod. Magliab., Bibl. Naz., Florence

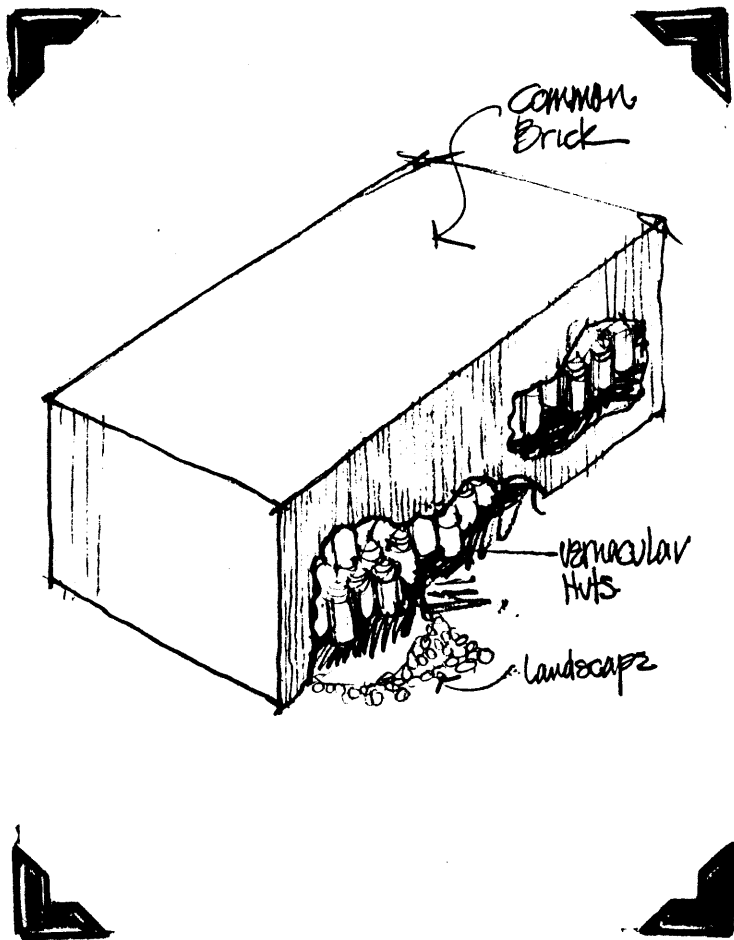
A taxonomic foundation justifies design decisions and authority validates them; and the repertory of design decisions centers around proportion, size, and shape.

Accordingly, the transformation to a modern or rigorist framework changes norms and design decisions, as well as the kinds of foundation and backing. This new framework found the body of mechanics to replace the human body as its "multi-dimensional" object. The new framework took two directions: one is the body of the building as mechanic, and the other is the bodies of the inhabitants of the building as mechanic. In this way, architecture becomes quantifiable physically and is verified empirically.

The archaic preoccupations with number and proportions are replaced by the concern for exact size, shape, and 'mass'. These are considered to be norms established through mechanical or static causality, as opposed to the simple classification in accordance with archaic, bodily norms. For example, a certain proportion is categorized as harmonious in the archaic framework.



1c—Francesco di Giorgio.



In the modern one, it becomes the cause of a certain sensation of pleasure. In addition, in order to back causal or conditional statements, modern methodology replaces claims of authority with empirical verification.

The commitment to objectivity in building succeeded in establishing a causal relationship between architectural means and desired utilitarian effects. These, in turn, led to the calculation of optimal dimensions of construction elements and of the optimal use of materials. As a result, great potentials for economization, through the minimization of cost, were created.

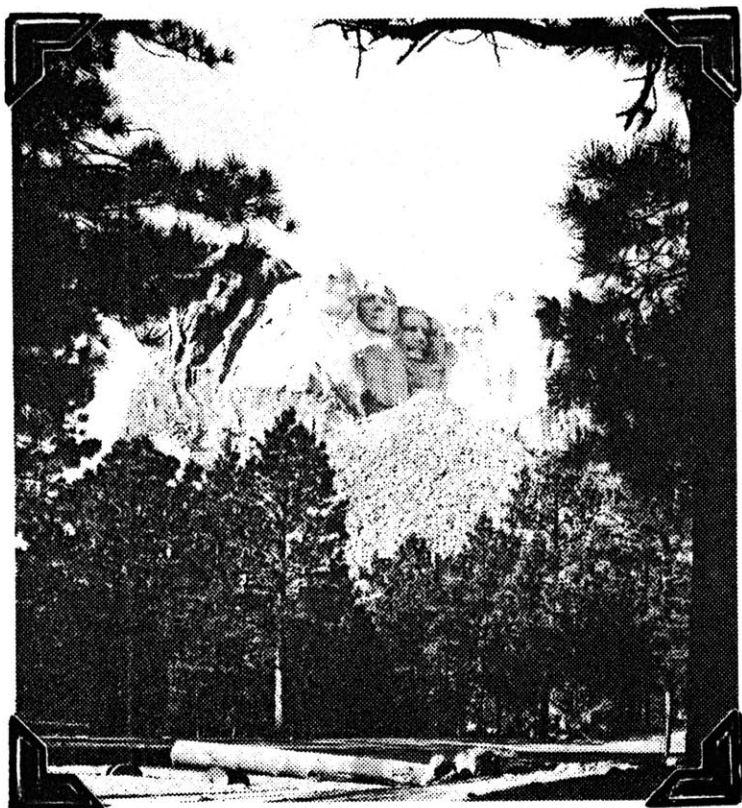
The other direction of the new framework was to consider the inhabitants of the building as operating in a causal, mechanical way to external forces or objects. The building is seen to affect the body-psyche complex by causing it to have a sensation. Whatever the cause, it is a composition artificially assembled that causes effects in man. Shapes, shadows, tones generate in the body-psyche complex reactions either of pleasure or of pain. The causality of pain-pleasure

- caul** (kɔl), *n.* [ME. *calle*, *kalle*; OFr. *cale*, kind of cap < *calotte*; see CALOTTE]. 1. the membrane enclosing a fetus, or a part of this membrane sometimes enveloping the head of a child at birth: formerly believed to bring good luck. 2. the part of the peritoneum that extends from the stomach to the large intestine: also called *great omentum*.
- cauld** (kɔld, kɔd), *adj.* [Northumbrian AS. *cald*], [Scot. & North Eng. Dial.], cold.
- caul-dron** (kɔl'drɔn), *n.* a caldron.
- caul-les-cent** (kɔ-les'snt), *adj.* [< L. *caulis*, a stem; + *-escent*], in *botany*; having an obvious stem above the ground.
- caul-li-cle** (kɔ'li-k'l), *n.* [L. *cauliculus*, dim. of *caulis*, a stalk, stem], in *botany*, a small or rudimentary stem, as in an embryo.
- caul-li-flow-er** (kɔ'lə-flou'ɛr), *n.* [earlier *cole florye* (see COLE) < Fr. *chou flori* (now *chou-fleur*), cauliflower; mod. sp. after L. *caulis*, a cabbage], 1. a plant with a compact white head of fleshy stalks bearing small flowers and buds: it is a variety of cabbage. 2. the head of this plant, used as a vegetable.
- cauliflower ear**, an ear permanently deformed as a result of being injured in boxing, etc.
- caul-line** (kɔ'lin, kɔ'lin), *adj.* [< *caulis*], in *botany*, of or growing on a stem, especially the upper part of a stem.
- caul-lis** (kɔ'lis), *n.* [*pl.* CAULES (-lēz)], [L. < Gr. *kaulos*], in *botany*, the main stem or stalk of a plant.
- caulk** (kɔk), *v.t.* to stop up (a crack or joint), as with tar, oakum, etc.; see *calk*.
- caulk-er** (kɔk'ɛr), *n.* 1. a person who caulks boats, ships, etc. 2. a tool used in caulking. Also spelled *calker*.
- caus.**, *causative*.
- caus-a-ble** (kɔz'ə-b'l), *adj.* that can be caused.
- caus-al** (kɔz'l), *adj.* [L. *causalis*]. 1. of a cause or causes. 2. like or constituting a cause. 3. relating to cause and effect. 4. expressing a cause or reason. *n.* in *grammar*, a causal connective, as *since*, *therefore*, *for*.
- caus-al-ge-ni-a** (kɔ-zal'ji-ə, kɔ-zal'jə), *n.* [Mod. L. < Gr. *kausos*, fever, heat + *algos*, pain], neuralgia characterized by a burning sensation.
- caus-al-i-ty** (kɔ-zal'ə-ti), *n.* [*pl.* CAUSALITIES (-tiz)], 1. causal quality or agency. 2. the interrelation of cause and effect; principle that nothing can exist or happen without a cause.
- caus-al-ly** (kɔz'l-i), *adv.* 1. as a cause. 2. by the operation of cause and effect.
- caus-a-tion** (kɔ-zā'shən), *n.* 1. a causing or being caused. 2. a causal agency; anything producing an effect. 3. causality.
- caus-a-tive** (kɔz'ə-tiv), *adj.* [L. *causativus*]. 1. producing an effect; causing. 2. expressing causation, as certain verbs: *fell* is a *causative* verb meaning "to cause to fall": abbreviated *caus.* *n.* a causative word or form.
- caus-a-tive-ly** (kɔz'ə-tiv-li), *adv.* 1. as a cause or causative. 2. by causality.
- cause** (kɔz), *n.* [ME.; OFr.; L. *causa*, a cause, reason, judicial process, lawsuit]. 1. anything producing an effect or result. 2. a person or thing acting voluntarily or involuntarily as the agent that brings about an effect or result: as, a woman was the *cause* of his downfall. 3. a reason, motive, or ground for producing or trying to produce a given effect. 4. reason enough: as, *cause* for divorce. 5. any activity or movement that a number of people are interested in and support: as, slum clearance is a good *cause*. 6. in law, a cause is a lawsuit.

by an external object (i.e., building) begins the development of architecture's being considered as a moral endeavor. Morality is seen to be embodied in the physical material of architecture, not in its social use. The morality of architecture then centers around sensation, the morality of styles, ornament.

In architecture, it is not possible to measure or to establish empirically the emotional or aesthetic effects of a building, at least not in the same way an engineer measures the statics of a building. As a consequence, no design norms were scientifically established on the basis of exact psychological norms. Theorists then turned to the physiological effects of space, which were felt to be more tangible and measurable. Consequently, the condition of causality pushed the design of buildings into a physiological, largely visual, framework.

The historical limitations of both approaches of the mechanical and the visual in replacing the archaic cosmological frameworks leads one to search in other



Ornament on a wall makes that wall
inhabitable in virtuality.

directions. The centrality and referential aspects of the human body in the archaic framework has lost most of its divine or cosmological basis. However, one might examine the body experience and the body's spatiality as an essential perception and involvement of buildings. The psychic and physiological sense of one's body is necessarily a percept of the landscape, built or natural, in which one's body moves, operates, and exists. It also implies an ability to act in that landscape, concretely, physically. The building then becomes a field of action, a ground; it involves potentialities, loose ends. It in some way renders the building inhabitable in an actual sense. The inhabitants, makers, become producers of the environment and pieces of their body experience are marking it.

In terms of understanding one's self-identification relative to a building, it is the registry of our ritual actions, actual and virtual, on the elements of architecture that the narrative of a building is experienced, relative to one's own bodily self. Those elements can

be manipulated to shape space by virtue of their tactility, their existence as three-dimensional objects. Space in and of itself lacks tactility. Ultimately, its value is derived from the surfaces and uses that describe it, producing an exchange between the space and the physicality of its enclosures.

Reference is made to inhabitation through the elements of architecture, such as walls, windows, and doors. Windows and doors, in their traditional forms, make direct reference to the people who appear in them to open or close them, to sit behind them, or walk through them. Stoops and balconies and bays make sense only as places for people to be, a form of extension of the private realm into the public realm. Pedimented overhangs and canopies are there to shelter someone or something. The traditional form of the window in its vertical shape is a body-related shape. The traditional window also had literal framing elements--head, sill, jamb, and mullions. The framing elements acknowledge the discontinuities in a continuous surface and often



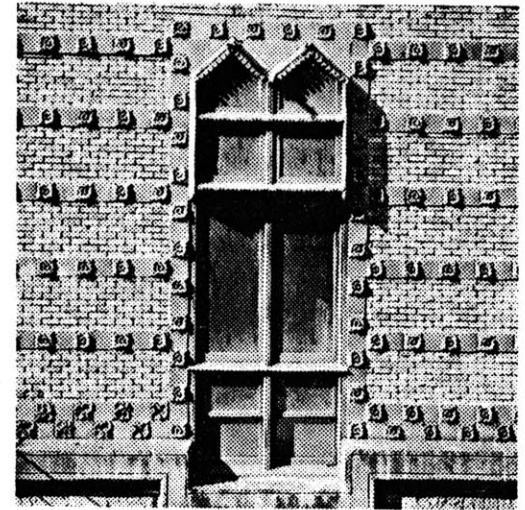
'A wall has no business to be dead...'

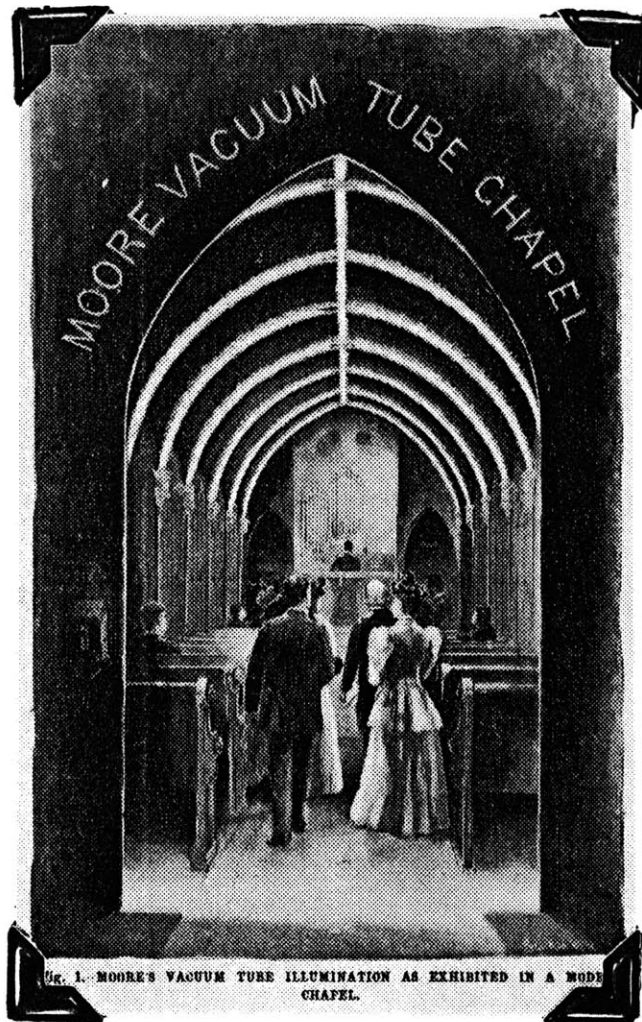
John Ruskin.

suggest a form of shelter above it with a cornice or pediment. The understanding of the relationship between inside and outside is provided by the window framing elements. The door is an analogous element, with the addition of the threshold as a passage to differing realms.

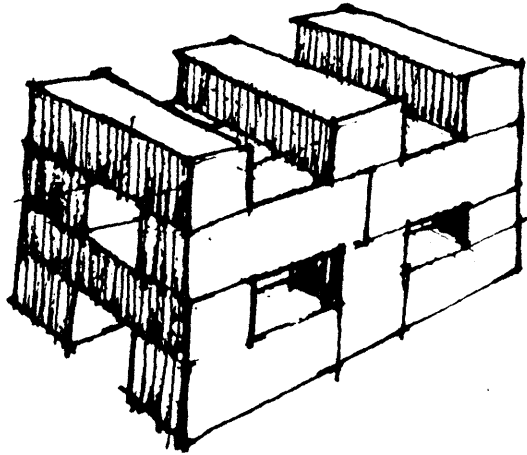
It appears that it is these areas of inhabitation that become the field of action or the potentialities of ornament, care, embellishment. They become inhabited through size reference and ornament, whether actual or imagined. The inhabited public edge is intensified in use, form, and color. In this way the public edge becomes continuous and potentially inhabitable. Ornament is normally found in or on bounding surfaces; it informs that boundary whether that be the "dome of the heavens," the entry, or the public face or facade.

The words, 'face' and 'facade', are derived from the Latin root facia, meaning the face, appearance. Facade may also be used figuratively with implications of an imposing appearance concealing something inferior.





It is this aspect of concealment and revealment that somehow makes the face or facade describe the mass or life that it is bounding. It is difficult to imagine a building facade without something behind it, looking out of it. Psychologically, there are more things in a closed box than in an open one. There are more things in a highly-crafted, ornamented box than in a shoe box, even if both are empty. A locked box is even more of a psychological threshold. Facades may also enclose an internal oasis, attics, and unrevealed fantasies. The articulation and ornamenting of a facade reveals or conceals the building's internal workings. It tells something to the public. The public imagines things that go on in it through dreams, memory, and recollections. It is a way to imagine, or actually inhabit it. It is superfluous for these images to be true; they exist and are no less real. People can inhabit a building in unreal, imagined terms and in actual terms. One can imagine being in a bell tower, bay window, or amphitheatre. One can imagine looking out a dormer in a roof,



ONE FRESH EGG IMPRISONED BY
COMMON RED BRICKS ON VERGE
OF COLLAPSE.

walking up an entry stair, because they relate to body dimensions and action. Imagination is a major power of human nature. It is not a question of observing, but of experiencing in immediacy. We imagine before we know, and we dream before we verify.

Architecture, space, form and material have imagined values attached to their protective values. Seized upon by the imagination, architecture cannot remain indifferent. It has been lived in, not only in its protectivity, but in the partiality and virtuality of the imagination. It exercises a corporeal attraction. It is productive to the body and the psyche, for if we cannot imagine, we cannot foresee and act. Imagination separates us from the past as well as from reality; it looks to and acts in the present and future. The function of reality is wise in the past: one must interpret that past and add to it the equally positive function of unreality. Ornament cannot be verified empirically, with our inclination to enjoy things preceding any attempt to rationalize or defend that enjoyment. In a curious way,

ornament becomes an act of faith, a bodily faith. Ornament is a giving to the public, the craftsman, a joy in its creation and existence.

Architectural ornament today is commonly assumed to be a system of conventional signs telling what a building is ("this is a museum") or identifying its part ("this is an entry"). In nineteenth-century theories of ornament, one does not find anything so mundane or abstract as this system of signification. In lieu of abstract, operational signification, the nineteenth-century theories of ornament were elaborate systems of analogous thought. Those analogies attempted to dissolve whole buildings into interpenetrating illusions. The structural parts of the building are seen as episodes in those illusions.

The nineteenth-century theories of ornament were shaped in an era of an architecture of worked surfaces. Those surfaces were worked and crafted by hand in a slow, deliberate process. That architecture was largely an architecture of masonry, bearing surfaces, and com-

Those illusions need not be academic;
they can be live illusions, those
relating to actual life processes.

pression. The nineteenth century was fascinated by the meanings inherent in architectural surfaces.

The nineteenth-century architect and theorist Gottfried Semper theorized about the primordial elements of architecture and attempted to tie each of these to a primordial technical process. In his Die Vier Elemente der Baukunst of 1851, he theorizes that those elements are the hearth, roof, walls, and foundation, with their attendant primordial technical processes being ceramics, carpentry, weaving, and masonry. Again in a search for an essence, we find another construct of the "primitive hut." Semper argues that the primordial process is always preserved in the ornamentation of its equivalent element, even if an altogether different technical process is utilized in the construction. The actual building elements become a support for the primordial process through ornamentation.

Semper states:

Generally . . . the tapestry remains the wall's primordial sheath; and even when the erection of a solid wall is necessary, this remains only

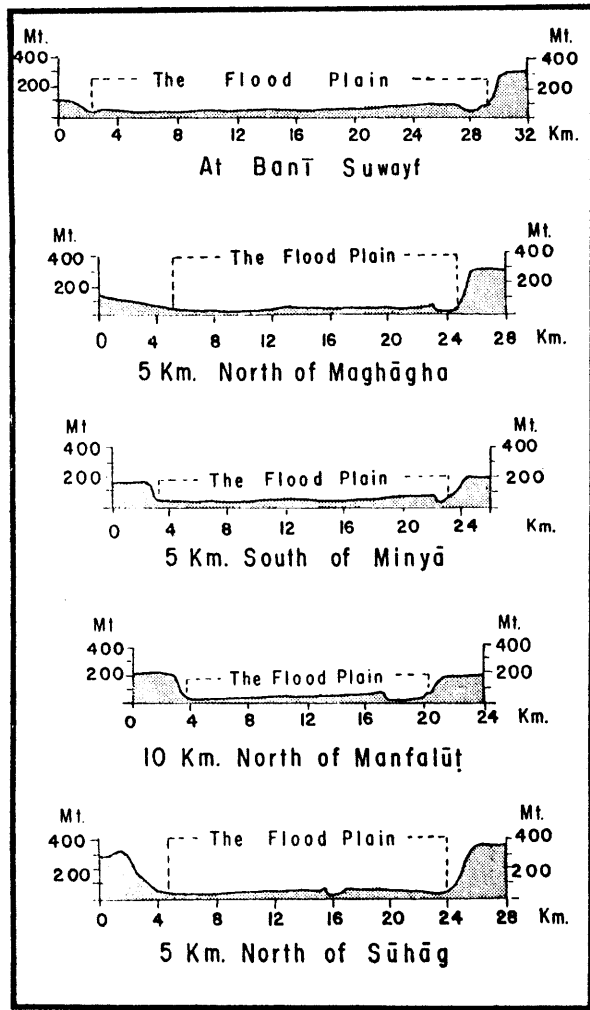


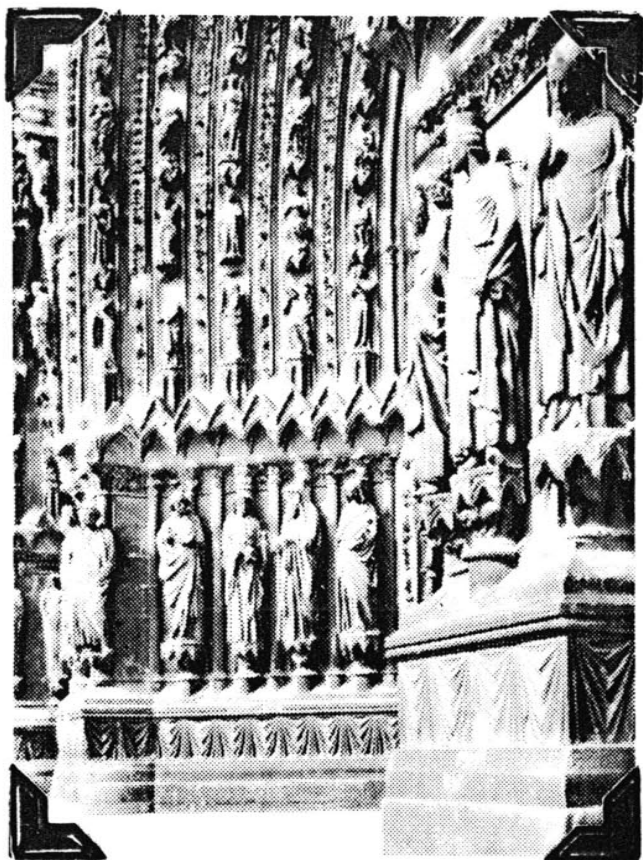
Fig. 19. Cross-Sections of the Nile Valley, showing the width of the Flood Plain.

an inner invisible scaffolding, concealed behind the true and legitimate representation of the wall, the colorfully-worked tapestry.²

For Semper, then, the real foundation, hearth, wall, and roof were not simply the erected physical structures, but their primordial originals represented by the ornamentation of these elemental surfaces. Ornament was a means of denying the actual physical reality to reveal a transcendent reality of the original, primordial elements.

John Ruskin was also fascinated by the latent meaning in architectural surfaces. In Ruskin's The Stones of Venice, he considers both the structural purposes and the metaphorical meaning of building elements. In his discussion of walls, he introduces the term 'wall veil', which may suggest an idea similar to Semper's wall tapestry; however, he explains it quite differently:

When meant for purposes of mere partition or enclosure, it remains a wall proper; but it has generally also to sustain a certain vertical or lateral pressure, for which its strength is at first increased by some general addition to its thickness; but if the pressure becomes very great, it is gathered up into piers to resist



vertical pressure, and supported by buttresses to resist lateral pressure.

If its function of partition and enclosure are continued together with that of resisting vertical pressure, it remains as a wall veil between the piers into which it has been partly gathered; but if it is required only to resist the vertical or roof pressure, it is gathered up into piers altogether, loses its wall character, and becomes a group or line of piers.³

Ruskin also suggests how the wall's parts express the history and circumstances of its erection:

These levelling courses are a kind of epoch in the wall's existence; something like periods of rest and reflection in the human life, before entering upon a new career.⁴

Ruskin's thoughts emphasize the constructional aspect of building as embodying latent meanings about a building's erection and biography. In ornament, the structural and the commemorating functions of a building are fused.

Ornament, to Semper, Ruskin, and their nineteenth-century contemporaries, embodies an illusionary, transcendent experience. This experience was nothing so simple as the identification of the whereabouts of an entry door or the articulation of the present function of a

mining, to wash (gold-bearing sand) in a cradle. *v.i.*
 1. to lie in or as in a cradle. 2. to cut grain with a cradle scythe.

rob the cradle, to take as one's wife, husband, sweetheart, etc. a person much younger than oneself.

cradle scythe, [see CRADLE, *n.*, 9], a scythe with a frame fastened to it for laying the cut grain evenly.

cradle song (krā'd'l-sōŋ'), *n.* a lullaby.

cradle telephone, a telephone in which the mouthpiece and receiver form a unit, which lies on the connecting switch between u-shaped supports when the telephone is not in use.

craft (kraft, kräft), *n.* [ME. *craft*; AS. *craft*, strength, power; akin to G. *kraft*, strength, force; sense "skill" only in Eng.; IE. base **ger-*, to twist, turn (cf. CART, CRADLE); basic sense "cramping of muscles during exertion of strength"], 1. some special skill, art, or dexterity. 2. skill in deceiving or underhanded planning; guile; slyness. 3. an occupation requiring special skill; especially, any of the manual arts. 4. the members of a skilled trade: as, bookbinders are a *craft*. 5. [prob. < phr. *vessels of small craft*, lit., of small power], a) a boat, ship, or aircraft. b) boats, ships, or aircraft, collectively. —*SYN.* see art.

-craft (kraft, kräft), [*< craft*], a terminal combining form meaning *the work, skill, or practice of*, as in *handicraft, witchcraft*.

craftily (kraf't'l-i, kräf't'l-i), *adv.* in a crafty manner.

craftiness (kraf'ti-nis, kräf'ti-nis), *n.* the quality of being crafty; cunning.

craftsman (krafts'mən, kräfts'mən), *n.* [*pl.* CRAFTSMEN (-mən)], [*craft's* + *man*], 1. a skilled workman; worker in a skilled trade; artisan. 2. an artist: sometimes said of one skilled in the mechanics of his art, but lacking higher excellence.

craftsman-ship (krafts'mən-ship', kräfts'mən-ship'), *n.* [see SHIP], the skill, art, or work of a craftsman.

craft union, a labor union to which only workers in a certain trade, craft, or occupation can belong: distinguished from *industrial* (or *vertical*) union: also called *horizontal union*.

crafty (kraf'ti, kräf'ti), *adj.* [CRAFTIER (-ti-ēr), CRAFTIEST (-ti-ist)], [see CRAFT], subtly deceitful; sly; cunning; artful: as, a *crafty* rascal. —*SYN.* see *sly*.

crag (krag), *n.* [northern ME. < Celt.; cf. W. *craig*, Ir. *carraig*, Gael. *creag*], a steep, rugged rock that rises above others or projects from a rock mass.

crag (krag), *n.* [*< ON. kragi* or MLG. *krage*; cf. CRAW], [Scot. & North Eng. Dial.], the neck, throat, or craw.

cragged (krag'id), *adj.* craggy.

cragginess (krag'i-nis), *n.* the quality or state of being craggy.

craggy (krag'i), *adj.* [CRAGGIER (-i-ēr), CRAGGIEST (-i-ist)], having many crags; steep and rugged; rough.

crag-man (kragz'mən), *n.* [*pl.* CRAGSMEN (-mən)], an expert climber of crags.

Craigavon (kräg-av'ən), first Viscount, (*James Craig*), 1871-1940: Irish statesman; first prime minister of Northern Ireland (1921-1940).

Craik, Sir William A. (krä'gi), 1867-1957; British lexicographer.

Craik, Dinah Maria (kräk). (born *Dinah Maria Mulock*)



CRADLE SCYTHE

volume in an architectural massing. It was, rather, the opening of mental vistas into the evolution and erection of architectural forms. Ornament rendered the building in a palimpsest recording the biography of the building, its constructors, and its inhabitants. As both Semper and Ruskin demonstrate, the memories embodied in ornament were extended complexes of ideas embracing both pure illusion--the wall as a tapestry, the column as a man--and pure technology--the facts inherent in the working of the masonry.

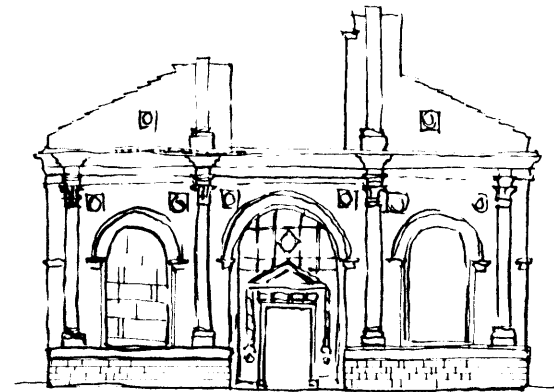
In the nineteenth century, the execution of ornament was a slow, labor-intensive craft. It was usually both designed and executed after the actual structural masses of the building were complete. These masses, their surfaces, and the spaces they defined were perceived to be imbued with latent metaphors. All builders, Greek, Medieval, or Renaissance, ornamented their buildings, and that act seems to be a mystical transforming of the raw masses of buildings. It can be seen as a kind of fetishism. The nineteenth-century

ideas on ornament seem to be a rationalization and concretization of that fetishism.

The late nineteenth century witnessed a change in technology and the division of labor in many fields. There was a subsequent change in architectural technologies. The nineteenth-century architectural technology of Semper and Ruskin was a technology of worked surfaces, crafted material. The Victorian era of the late nineteenth century was an architectural technology of mass-produced sticks, cast iron, terra cotta, glazed tiles, and glass. Victorian technology provided an entirely new situation in which ornament was made available to be purchased by everyone and then used. It, in effect, became an available commodity. Ornament was used to emphasize individuality and the hierarchical structure within Victorian society. Ornament was a form of hoarding power and attempting to legitimize that power through literary illusions of past cultures. In this way, ornament became a signifier of power gained by some member of society over others.

Ornament is a relation between things and, as such, forms a part of a socially-constructed reality. That reality may be of a political, economic, or magical nature, but ornament is still present as a social marker. However, ornament also exists in physical space, material, and use. In this way it takes on both a social value and a bodily value. One might then begin to look at the location and dimensions of ornament as it is shaped and shapes physical space.

Front and back are unequal in social value. Simply consider such phrases as: "face up to it," "don't back down," "behind one's back," "fly in the face of." The architectural work, 'facade', is derived from the Latin word for face and has definite social value. Up and down also differ physically and socially: "don't back down." These somatic and psychological asymmetries are projected in space and occur at different scales. If building is part of a continuum and not a discrete thing, then these asymmetries of front and back, up and down, become crucial to an understanding of architectural



A combination of plastic forms has a sensuous value apart from anything we may know about them.

form and ornament. In contrast, when a thing becomes isolated, it becomes round and assumes a figure of being that is concentrated upon itself.

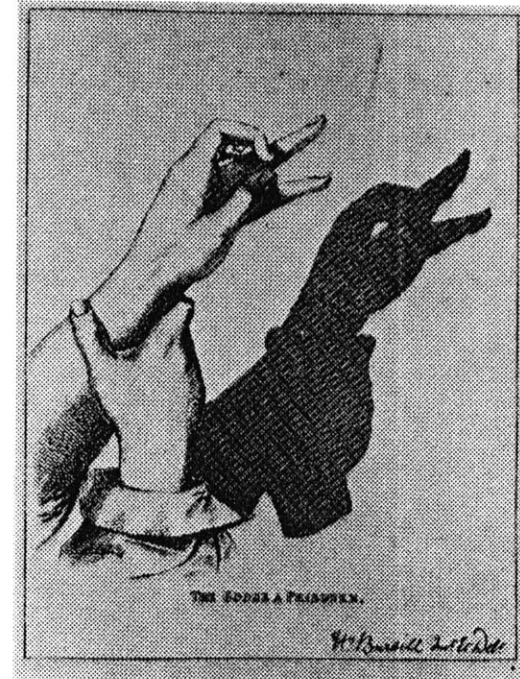
Urban architectures in large part are continuous and deal with the asymmetries of social value. The urban row-house is two-sided, front and back. The front is ornamented (doors, windows, stairs), and the back is less ornamented: a distinction between public and private faces. The public facade can be seen as a kind of public 'persona', the self viewed by others. This 'persona' is an investing of the house with human qualities. It may be an expression of the self or a defender of the self. The facade presents a dimensional, vertical face that forms the private, interior rooms and the public facade of the street. It is two-sided.

Walls, doors, windows, and stairs are employed first to divide and then selectively to reunite inhabited space. In this respect, architecture is an accessory to human action. That human action is the principal dimension of the horizontal, the ground sur-

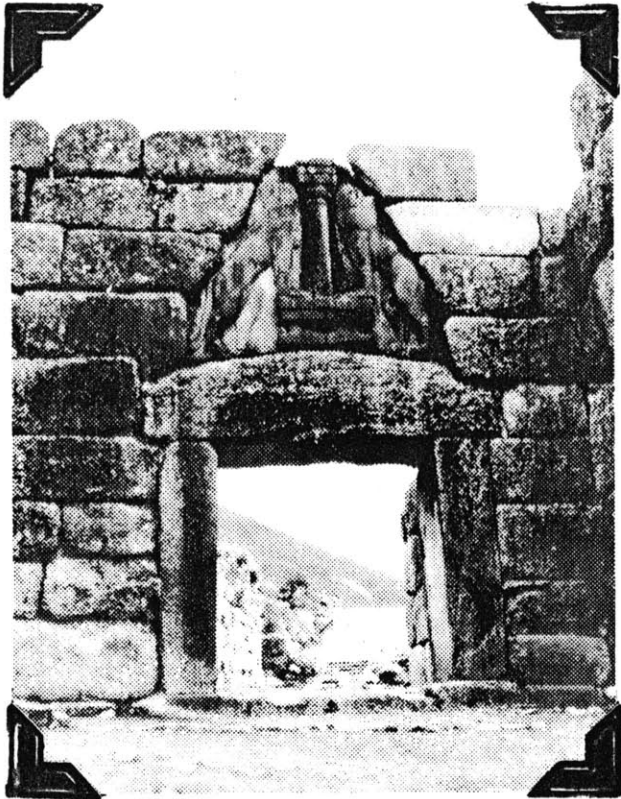
Ornament is in, on, of, and beneath a
surface or object.

face, actual and virtual. The ground surface may be hundreds of feet in the air, but it is still horizontal and concerned with action, with that action being modified by its outlooks, views, and relation to actual earth.

The vertical surfaces, being planar or dimensional, describe those horizontal surfaces, and their principal dimension is vision, imagination, and outlook. This principal dimension of vision does not deny the inhabiting, acting in that wall. Windows open, let in air, have laundry hanging out of them, have flower boxes, sills, etc. Yet, many of these actions within a wall take place on a small dimensional horizontal surface. Ornament on a wall makes that wall inhabitable in virtuality. It is a recording of virtual inhabitation on an uninhabitable surface. As such, it may deal in pure illusion (paint), be referential to previous inhabitation (the filling in of an arch), or record the erection of the wall (levelling courses). These imagined acts of inhabiting take place in a non-causal realm of the



Imagined Acts



imagination.

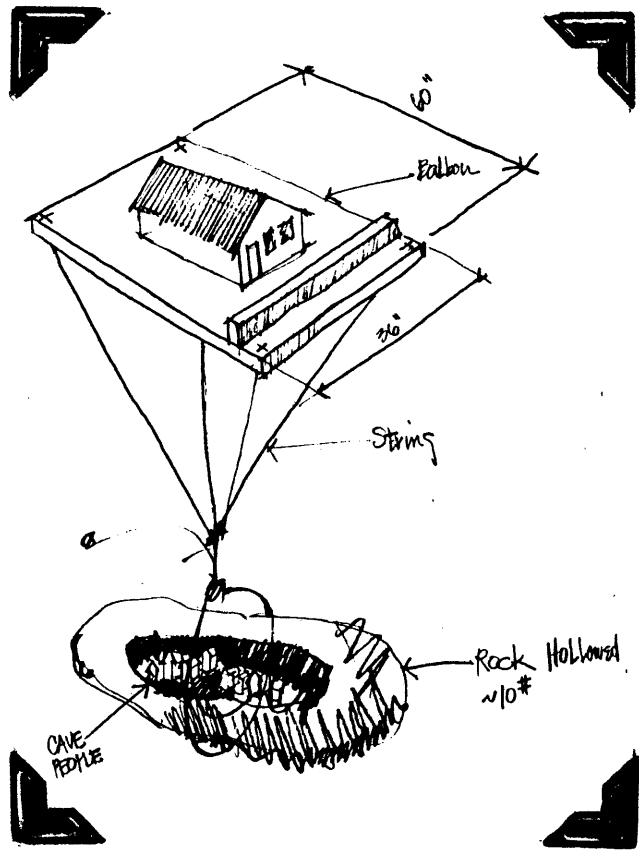
These principal dimensions of the reposing and the upright can be examined historically as elements of a socially-constructed world. In Europe, between A.D. 1500 and 1700, the medieval conception of a vertical cosmos yielded slowly to a new and increasingly secular way of representing the world. The vertical dimension was being displaced by the horizontal. 'Vertical' here means more than a dimension of space. It is charged with meaning. It dreams upwards to the seasons and weather. It signifies transcendence and has an affinity to a cyclical conception of time. The vertical dimension is latent with metaphorical meaning. It is a stratified world of gods, priests, and rulers. To the man of the Middle Ages, absolute up and down made sense. The earth occupies the lowest place in the heavenly hierarchy: movement to it is downward movement. The medieval cosmos is immense but finite.

The shift from cosmological, vertical to a horizontal, secular universe can be seen in the history of

Continuity concerns what is potential,
whereas actuality is uncurably atomic.

European landscape painting, which has implications for architectural ornament. A tapestry hanging on a wall hangs on that wall; it does not destroy the vertical plane or allude to horizontal vistas. A landscape painting on the wall, however, has the effect of opening a window through which a person can direct his gaze outward to the horizon. Renaissance villas had landscapes painted on their walls for the inhabitants to enjoy the illusion of expansive vistas. The discovery and use of spatial perspective can be seen as a development of this shift in vision. Painting frames became literally window frames, a convention still with us in television. The frame becomes a suspension of belief in the actual size of the images. The reality of these images lives in the virtuality of the imagination.

The Beaux-Arts concept of 'encadrement' is an architectural extension of the frame-vista conception of a wall. Encadrement is the fictive frame around a void. In this case, the void is actual and the frame is the fiction, the illusion, the narrative. This



architecture is an architecture of literary illusions, academic illusions. However, those illusions need not be academic; they can be live illusions, those relating to actual life processes. They collect their energies from a non-causal realm and craft them in order to make them somehow more visible. In this way, the life process itself becomes the conceptual framework for an architecture of active shaping.

NON-CAUSAL IMAGINATION AND THE CRAFT OF ORNAMENT

Architectural thought is wholly bent upon the art of using reason as a technique or instrument to achieve an always closer approach to concrete reality. Reason becomes a technique only to describe those realities of a technical or reflective nature. Ornament appears to reside in an area not bounded purely by reason. Ornament is part of an imagination that is a cosmic force as much as a technical or psychological faculty. It has an "is-ness."

Ornament, not being a function of some psychological faculty and possessing a kind of a-rational logic, produces a sudden and continuing salience on the psyche. Nothing general and coordinated seems to serve as a basis for a system of ornament. Ornament has been attempted to be described in the past, and probably will



'Declothed objects'

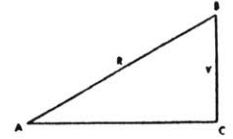
in the future, be described in terms of geometrical principles, constructed principles. The idea of principle or "basis" in this case would be disastrous, for it would interfere with psychic actuality, the concreteness of its existence. That psychic actuality may include elements beyond its actual physicalness bringing forth its "is-ness" from non-causal realms of memory, reflection, illusion. A philosophy of ornament must acknowledge that the creative act has no past in which its preparation and appearance could be causally followed. On the contrary, through the brilliance of an image, the distant past resounds with echoes, and the depth and reverberation and dying away of those echoes is difficult to know. Ornament is in, on, of, and beneath a surface or object. It is elemental in this sense, and it cannot be pulled out without the destruction of its physicality, as existing. Ornament has an entity and a dynamism of its own. In this respect, it is referable to a direct ontology.

Very often it is in the opposite of causality,

Cos., cos., 1. companies, 2. counties.

cose (kōz), *v.i.* [COSED (kōzd), COSING], & *n.* coze.

co-se-cant (kō-sē'kənt), *n.* [Fr. *cosécante*, for *co. secans*, short for Mod. L. *complementi secans*, lit., secant of the complement], in *trigonometry*, the secant of the complement of an angle or arc: abbreviated cosec, csc (no period).



co-seis-mal (kō-siz'm'l, kō-sis'm'l), *adj.* [co- + *seismal*], of or designating points, or lines connecting such points, simultaneously affected by an earthquake shock. *n.* a coseismal line.

co-seis-mic (kō-siz'mik, kō-sis'mik), *adj.* coseismal.

co-sey (kō'zi), *adj.* [COSIER (-zi-ēr), COSIEST (-zi-ist)], & *n.* [pl. COSEYS (-ziz)], cozy.

Cos-grave, William Thomas (koz'grāv), 1880-; Irish statesman in the Irish Free State.

cosh-er (kosh'ēr), *v.t.* [< Ir. *cōisir*, a feast], to feed richly; pamper (sometimes with *up*).

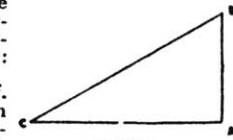
co-sle (kō'zi), *adj.* cozy.

co-sig-na-to-ry (kō-sig'nə-tōr'i, kō-sig'nə-tō'ri), *adj.* signing jointly. *n.* [pl. COSIGNATORIES (-iz, -riz)], one of two or more joint signers, as of a treaty.

co-sign-er (kō'sin'ēr), *n.* a person who signs a promissory note in addition to the maker, thus becoming responsible for the obligation if the maker should default: also called *co-maker*.

co-si-ly (kō'z'l-i), *adv.* cozily.

co-sine (kō'sin'), *n.* [Mod. L. *cosinus* < *co. sinus*, short for *complementi sinus*, lit., sine of the complement], in *trigonometry*, the sine of the complement of an angle or arc: abbreviated cos (no period).



cos-met-ic (koz-met'ik), *adj.*

[Gr. *kōsmētikos*, skilled in arranging < *kōsmein*, to arrange, adorn < *kōsmos*, order], beautifying or designed to beautify the complexion, hair, etc. *n.* any such preparation for application to the skin, hair, etc., as rouge and powder.

cos-met-i-cal-ly (koz-met'i-k'l-i, koz-met'ik-li), *adv.* 1. by means of cosmetics. 2. as regards cosmetics.

cos-me-ti-clan (koz'mə-tish'ən), *n.* a person whose work is making, selling, or applying cosmetics.

cos-me-tol-o-gy (koz'mə-tol'ə-ji), *n.* the study of cosmetics and their use.

cos-mic (koz'mik), *adj.* [Gr. *kōsmikos* < *kōsmos*, universe, order], 1. of the cosmos; relating to the universe as a whole. 2. of the universe exclusive of the earth: as, *cosmic dust*. 3. vast; grandiose. 4. [Rare], orderly: opposed to *chaotic*.

cos-mi-cal-ly (koz'mi-k'l-i, koz'mik-li), *adv.* 1. in relation to, or according to the principles of, the cosmos. 2. on a grandiose scale.

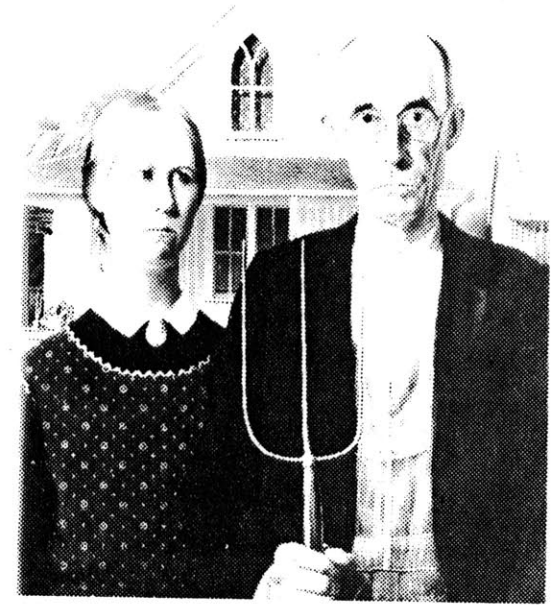
cosmic dust, small particles, probably meteoric fragments, falling from interstellar space to the earth.

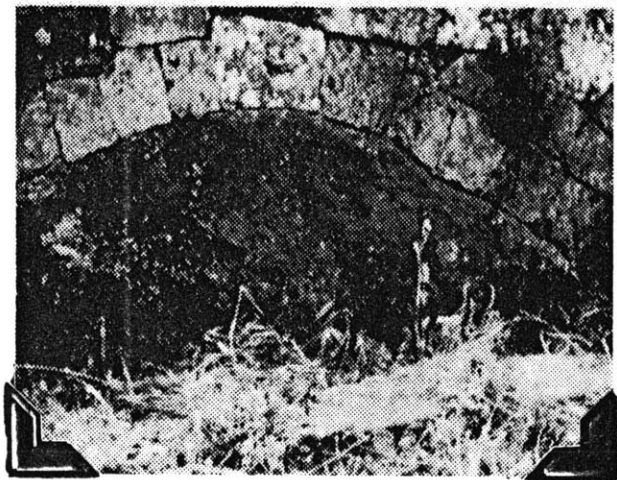
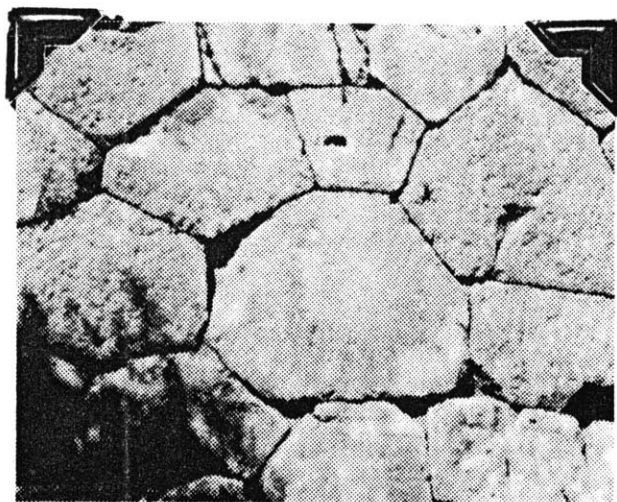
cosmic rays, rays of extremely short wave length and great penetrating power, which bombard the earth from beyond its atmosphere: also called *ultraviolet rays*.

cos-mism (koz'miz'm), *n.* the philosophy of the evolution of the universe; theory that the cosmos can be scientifically explained as a self-existent system.

that is, in reverberation, that the real measure of ornament resides. Ornament as a part of life is not solely a feeling of being, of existence, but a feeling of participation in a flowing onward, necessarily expressed in terms of space. The auditory metaphor of reverberation seems appropriate, for, like sound, ornament epitomizes both time and space: geologic time through past and present/future, and space through actual, physical space and imagined, fantastic space.

To propose that ornament is independent of causality in terms of imagery or existence is to make a rather serious statement. Psychoanalytic or historical causes can never really explain the wholly unexpected nature of a new image, nor the attraction it holds for a person that is foreign to the process of its creation. A combination of plastic forms has a sensuous value apart from anything we may know about them. A design does not confer the past of its image upon a person, and yet the work can immediately take roots in that person. The creative act itself, the flash of being





in the imagination, is inaccessible to "scientific" investigations. Ornament is variational, and not, as in the case of scientific concepts, constitutive. Ornament is not to be considered as an object, or the substitute of an object, but rather to be seized as a specific reality.

Ornamental imagery is exact, specific, simple. It is an immediate and direct relation, rather than a mediate and indirect relation to some other object. As opposed to scientific thought, which is related thought, ornament may have no consequences; it has no need for scholarship, literacy. Cease to consider it as an "object."

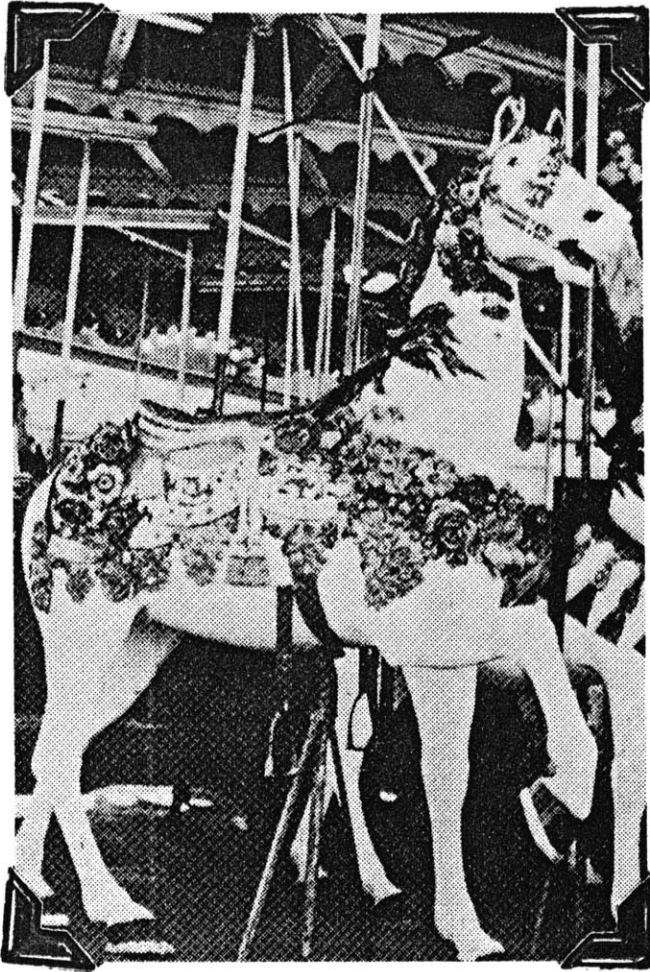
An "objective" attitude stifles reverberation. The psychologist insists on trying to describe his feelings, gain control of them, objectify them. Psychoanalytic method intellectualizes ornament, losing the reverberations in order to interpret them. The interpretation is always a translation, explanation in another language. Ornament, possessing a quality of inter-



subjectivity, eludes causality. Causal doctrines, like psychology and psychoanalysis, cannot determine an ontology of ornament. In this respect, ornament is an origin, and one must concentrate on the quality of origin rather than the causality of objects. The critic, the structuralist perform critical tasks, rarely creative tasks.

Ornament puts architecture, matter, in a condition of emergence, the experience of emerging, with life becoming manifest through its vivacity. Ornament appears as a phenomenon of freedom of life processes. The slightest critical intervention arrests this impulse by putting the mind in second position, destroying the primitivity of the imagination. Ornament pushes architecture beyond a language of signification. It goes beyond the passivity of contemplative attitudes with the inhabitant participating in the joy of creation.

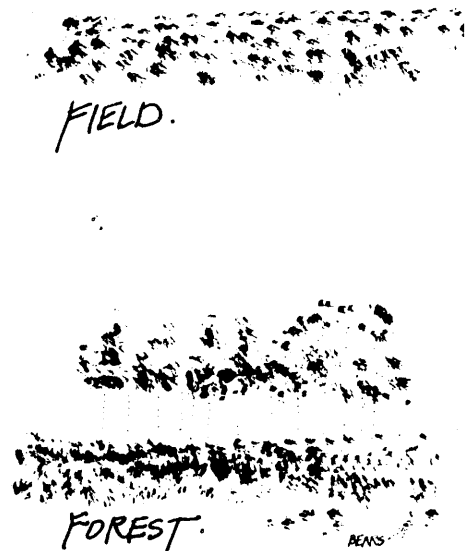
One must abandon the problems of description, whether that description be objective and dealing with facts or be subjective and dealing with impressions.



We imagine before we know, and we dream
before we verify.

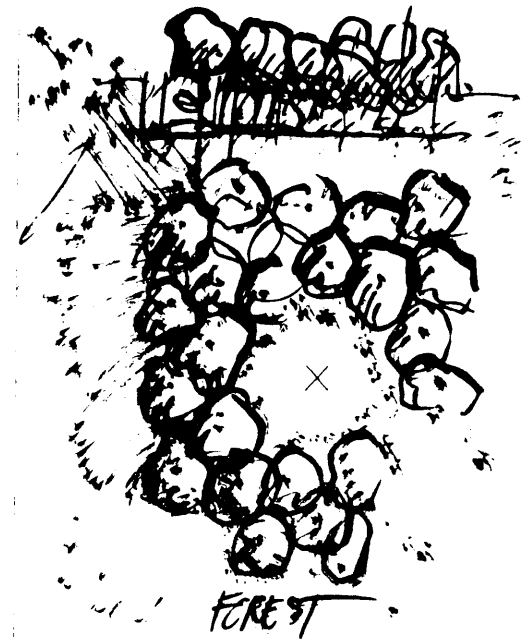
One must seize primary relationships, those that reveal an attachment that is native in some way to the primary function of inhabiting. Those relations include elements of memory, illusion, and fantasy, as well as physical actuality. It is an immediate well-being that encloses. Ornament is not an additional, superficial coloring, but rather a way to inhabit vital space, day after day.

All really inhabited space bears the notion of the human body, the forest, the field, the center. The imagination inhabits space whenever the human being has found the slightest shelter; the non-I protects the I. By means of thought and dreams, inhabitants experience place, not only in its actuality, but also in its virtuality. It is no longer in its strictly positive aspects that a place is really "lived," but an entire past comes to dwell in that place through us. In this immediate past, imagination and memory work associatively in a mutual deepening. A place constitutes a community of memory and image. In this way, a place is not experienced in a temporal narrative of day-to-day use, but



rather through a wide-ranging, non-causal reference of memory and image. Places, through dreams, co-penetrate and retain pleasures and nightmares of previous days. Place thrusts aside contingencies, to allow continuity to be unceasing. Continuity concerns what is potential, whereas actuality is incurably atomic.

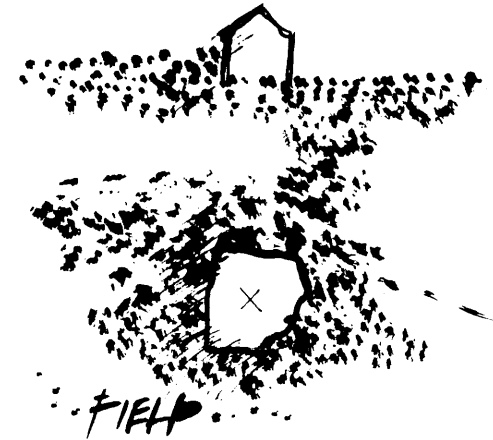
Ornament is a form of emergence from the contingent place of phenomic (empirical) and analytic statements. This emergence is toward the unknown, attempting in some way to make it more visible by giving it shape, whether that shape be actual, symbolic, or illusory. Therefore, knowing must be accompanied by an equal capacity to forget knowing. Non-knowing is not a form of ignorance, but merely a difficult form of knowing. Ornament will not submit to "recipes." It is an increase in life and should offer as much surprise as life itself. Being surprising, it is also unpredictable. This unpredictability leaves structuralist and psychoanalytic activity behind. Structuralist activity is a critical, rational logic. Claude Levi-Strauss suggests





that the mind's logic is such that "the principle underlying a classification can never be postulated in advance."¹ As such, it is in the making, doing, and warping of materials of ornament that discovery comes about. It is an a-rational logic, a process logic.

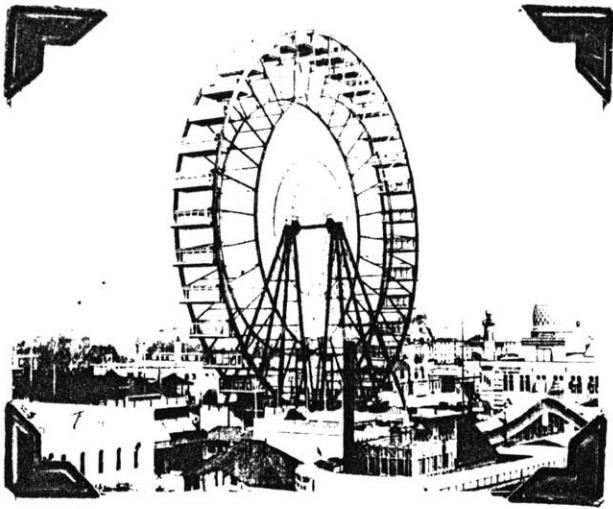
This process of "making own" of ornamental material leads back to ornament within a working method. Ornament and architecture is a bodily, active thinking, not a reflective, contemplative, passive thinking. Ornament is in a design from the first days of a making process, and as such architecture cannot escape its involvement with image-making. Whether one neglects that involvement, denies it, it is nonetheless there. It exists. Life resides in a community of memory and image, of association and bisociation. Architecture, in its image-making, can establish that image in a number of ways: oppression, publicness, liberty, and so forth. Image, architecture's existence, is always linked to use, social use. Architecture and, more particularly, ornament are nothing more than necessary, arbitrary social use shaped in form.



That social use may be oppressive, totalitarian, anarchic, or non-hierarchical and yet we have architecture. If architecture has an essence it is to be found along such ideas as: can I walk into it? build on it? merely look at it? be locked up in it?. Our associations in architecture are scored by social purposes, with very little of it intrinsic to the material itself. Similar architectures have existed with dissimilar social purposes. Both social use and architecture are partial descriptions in themselves, however, the fusion of social use into a built world is imperative. Each informs the other. As such, architecture is the record of concrete human acts made within a social life.

As part of a social life, architecture is essentially peripheral, yet necessary. The moral tradition in architecture of Viollet Le-Duc and Pugin attempts to place moral value upon the physicality of architecture. However, the architecture itself is mute, inert within an organization of power in society. How that architecture is inhabited, maintained, changed, or financed may





have moral and/or social consequence. From this perspective, Pugin's Contrasts is an attack on the Reformation rather than an attack on classical buildings. Beginning with eighteenth-century rigorists, theoreticians of architecture attempted to establish an essence to architecture based upon causality. That tradition up to the present day has searched to explain architecture in terms of outside influences: religion, politics, zeitgeist, and technical or rational justifications.

It is a belief that architecture expresses social, moral, and philosophical conditions and that, if one can determine those conditions, one can predict what the architecture will be and should be. However, architecture cannot express social, moral, and philosophical conditions, because architecture is a condition of it. Architecture exists in a social milieu, is part of it. It cannot express it because it is it.

Architecture does not deal with expressions, solutions; it deals in action, collective action. We are always looking to other fields to justify what we build,

That excess, that indulgence, is ornament.

to give it importance. Accept the fact that architecture is necessary, peripheral, and arbitrary. Architecture is simply an arena for social experience. Recently, it has been employed more as a preventive measure, an agency for peace, security, and segregation, which, by its very nature, limits the horizons of experience by reducing noise transmission, differentiating movement patterns, suppressing smells, cutting down the accumulation of dirt, impeding the spread of disease, veiling embarrassment, closeting indecency, and abolishing the unnecessary, incidentally reducing daily life to a private shadow play. But, out of any type emerges an anti-type: an architecture arising out of the deep fascination that draws people toward others, an architecture that recognizes passion, carnality, and sociality.

My preoccupation is with the occupation of building rather than the fabrication of buildings. Medievalists and modernists alike, when they surfaced a social aspect in theory and criticism, shared a conviction in the way the house was built. It became an item of so-

cial production, not social occupation. A preoccupation with sociality recognizes a corporeal attraction drawing people together for no real reason outside of desire: an inclination that could encompass the most violent antagonisms as well as the tenderest affections. This infatuation with others, in a society devoted to morality, knowledge, and work, could seem only a slender pretext for indulgence. The modern conscience suspected this kind of sociability, thinking it an excuse for promiscuity or a sign of degeneracy, and it replaced it with socialization, which is something quite different. Sociability in a society feeds on carnality and recognizes the body as person and in which gregariousness is habitual. Privatism is appropriate to a society that finds carnality distasteful and sees the body as a vessel of mind and spirit. The body as person recognizes indulgence, and architecture, like eroticism, is a system with excess. That excess, that indulgence, is ornament.

Architects themselves allow indulgence in private

de-com-pose (dē'kəm-pōz'), *v.t.* & *v.i.* [*Fr.* *decomposer*; see **DE-** & **COMPOSE**], 1. to break up or separate into basic components or parts. 2. to rot. —*SYN.* see **decay**.

de-com-po-si-tion (dē'kəm-pə-zish'ən), *n.* 1. a decomposing. 2. the fact or state of being decomposed.

de-com-pound (dē'kəm-paund'), *v.t.* 1. to compound (things already compounded). 2. to decompose. *adj.* 1. compounded of substances already compounded. 2. in *botany*, having or made up of parts that are themselves compound, as some leaves.

de-com-press (dē'kəm-pres'), *v.t.* 1. to free from pressure. 2. to free (a worker in compressed air) from compression or air pressure by means of an air lock.

de-com-press-ion (dē'kəm-presh'ən), *n.* 1. release from pressure. 2. the lowering of air pressure on deep-sea divers, tunnel workers, etc. 3. a surgical operation to relieve excessive pressure in the cranium: a flap of the skull is removed and replaced with a metal plate.

decompression sickness, a condition caused by the formation of air bubbles in the blood or body tissues as the result of a sudden lowering of pressure, as in deep-sea divers returning to the surface too quickly: it is characterized by tightness in the chest, pains in the joints, and convulsions and collapse in severe cases: commonly called *caisson disease*, *bends*, *diver's disease*, *tunnel disease*.

de-con-tam-i-nate (dē'kən-tam'ə-nāt'), *v.t.* to rid of a polluting or harmful substance, as poison gas.

de-con-trol (dē'kən-trōl'), *v.t.* [**DECONTROLLED** (-trōld'), **DECONTROLLING**], to free from controls. *n.* a decontrolling or being decontrolled.

dé-cor (dā-kōr'), *n.* [*Fr.*; *L.* *decor*, beauty, elegance, ornament < *decere*, to befit, be suitable], 1. decoration. 2. the decorative scheme of a room, stage set, etc.

dec-or-ate (dek'ə-rāt'), *v.t.* [**DECORATED** (-id), **DECORATING**], [*L.* *decoratus*, pp. of *decorare*, to decorate, adorn < *decus*, an ornament], 1. to add something to so as to make more attractive; adorn; ornament. 2. to plan and furnish a color scheme, drapes, etc. for. 3. to paint or wallpaper: as, *decorate* a room. 4. to give a medal or similar sign of honor to: as, he was *decorated* for heroism. *v.i.* to put decorations on something; *decorate* a room, house, etc. —*SYN.* see **adorn**.

dec-o-ra-tion (dek'ə-rā'shən), *n.* [*LL.* *decoratio*], 1. a decorating. 2. the fact or state of being decorated. 3. anything used for decorating; ornament. 4. a medal, badge, or similar sign of honor.

Decoration Day, Memorial Day.

dec-o-ra-tive (dek'ə-rā'tiv, dek'ə-rə-tiv), *adj.* decorating; used for decorating; ornamental.

dec-o-ra-tor (dek'ə-rā'tēr), *n.* a person who decorates; specifically, an interior decorator.

dec-o-rus (dek'ə-rəs, di-kōr'əs, di-kō'rəs), *adj.* [*L.* *decorus*, becoming < *decor*; see **DECOR**], characterized by or showing decorum, propriety, good taste, etc.

de-cor-ti-cate (di-kōr'tə-kāt'), *v.t.* [*L.* *decorticator*, pp. of *decorticare* < *de-*, from + *cortex*, bark], to remove the bark, husk, or peel from.

de-cor-ti-ca-tor (di-kōr'tə-kā'tēr), *n.* a tool or machine for decorticating.

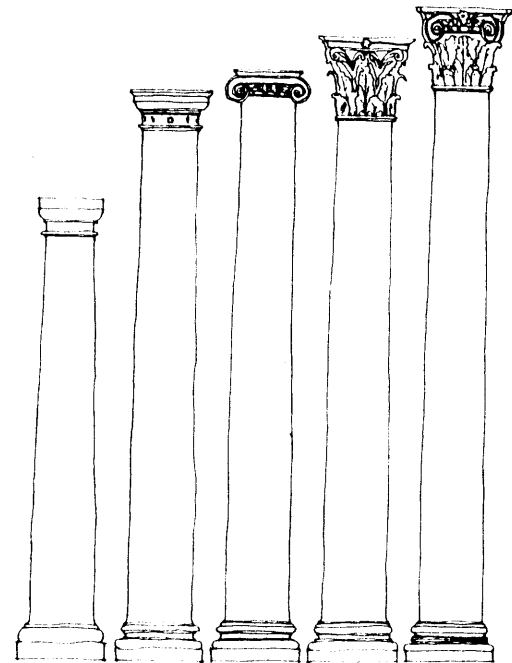
de-co-rum (di-kōr'əm, di-kō'rəm), *n.* [*pl.* **DECORUMS** (-əmz, -rəmz), **DECORA** (-ə, -rə)], [*L.*, neut. of *decorus*, fit, proper < *decor*; see **DECOR**], 1. whatever is suitable or proper; propriety; congruity. 2. propriety and good taste in behavior, speech, dress, etc. 3. *often in pl.* an act or requirement of polite behavior. *SYN.*—**decorum** implies stiffness or formality in rules of conduct or behavior established as suitable to the circumstances (levity not in keeping with *decorum*); **decency** implies observance of the requirements of modesty, good taste, etc. (have *the decency* to thank her); **propriety** suggests conformity with

realms, such as the house. Their fantasies and the client's are allowed to enter into the design process. When people design for themselves outside of commercial concerns, essence and economization are difficult to pinpoint. Fantasies, indulgences, social needs are present, and rationality is not the prime motivation. Building for oneself is active. Architecture has too long thought about itself, attempting to justify its existence through numerous references to fields of a reflective nature. Philosophy, sociology, and religion do not exist physically; architecture does. "Thinking about" is reflective, and hence irrational. Craftsmen, builders, artists, and makers think in architecture, and architects seem to think about architecture. It is this divorce from action to reflection that leads to a search for essence and causality and away from physicality and existence. The resurgence of craft, and, as a consequence, the craft of building, will lead back to an architecture of action on the part of architects, craftsmen, and artists. For an architecture to have an immediacy of



emotional and associational communication, it must have an immediacy of action in its making. Architecture as a link in the chain of production merely manifests that mode of production. The architecture of ornament, of action, "gives away" pieces of the work to craftsmen. The architect relinquishes his role as complete and final form-giver to assume a role as the actor making a 'producing structure'.

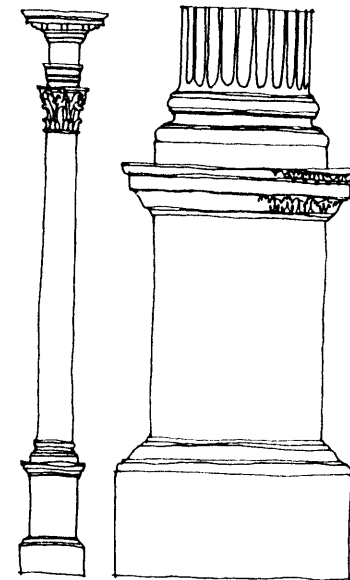
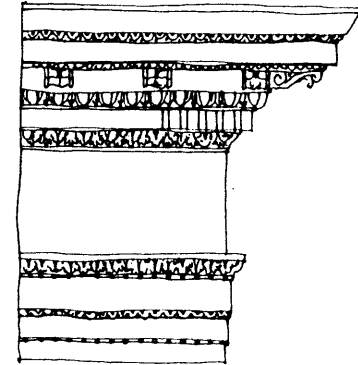
That 'producing structure' allows elaborations in the architecture as it is "produced." With an underlying 'producing structure' the 'produced structure' can accept idiosyncracies, fantasies, errors, and randomness. It can accept and delight in the making of human additions and imperfections. The architecture is potential, pregnant, and makes no attempt to come to solutions at the outset to pretend to finality. It is in this 'middle ground' of actual making that ornament takes root, with ornament residing in craft and the non-causal imagination.



THE STRUCTURE OF ORNAMENT

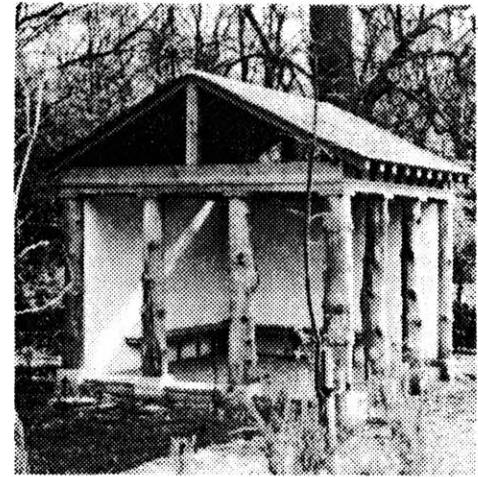
In attempting to understand 'producing structure', one might examine ornament within a working method.

The classical language in architecture can be seen to be a form of producing structure derived from an earlier constructed form. The major elements of plinth, column, entablature, and pediment can be used as a building part at the scale of the entire building, in the case of the classical Greek temple. The classical vocabulary is a trebeated structural system acting in compression. The building proceeds with the preparation of the ground form and the building of the plinth claiming the territory to erect the temple. The column drums are then set in place on the bearing base, with the interior walls of the cella also being set. As the drums are set to form columns and capitals placed, the entab-



lature is lifted to prepare the bearing surface for the roof structure. The roof structure is then constructed as a gable, producing the pediment. The triangular pediment is a latent space bounded by the constructed elements--a kind of architectural "leftover." With the raw masses of the building shaped, additive and subtractive processes of elaboration or ornament proceeded. This three-dimensional 'producing structure' became the material support of the elaboration. It established the sheltering requirements and shaped the singular free-standing object form. At this point, let it be understood that a 'producing structure' need not determine the overall physiognomy of the form; it does not necessarily need to be structural. The term 'structure' here refers to a generative principle, whether it be movement, economy, orientation, structure, edge condition, and so forth. In the case of the Greek temple, the particular 'producing structure' appears to be necessitated by the monumental, sacred functions of the form.

Within the 'producing structure' of columns, en-





'Not in ideas but in things.'

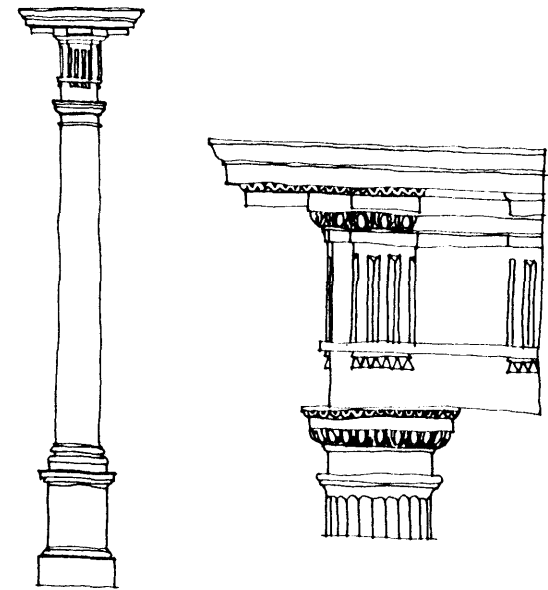
Charles Olson.

tablature, and roof, the elaborations shape the form into a 'produced structure'. The plinth normally remains unelaborated, it being a conventionalized ground form setting the super-structure above the ground. The columns surround the inner wall and stand three-dimensionally as a form of sculpted ornament. The columns are fluted as a form of ornament. The fluting describes the vertical upright, and through the concavities, describes an inward bounding, as well as an outward roundness. The column stands in space, and, when it meets the horizontal plinth and entablature, it recognizes that structural transition by diverting it to the ornamental field. The base and capital do increase the bearing surface, as there is some structural work performed, yet it is detailed in the ornamental field. It can be thought of as the symbolic elaboration of the structural discontinuity.

The base is sculpted in a subtractive process in a continuous ornamental form. The plinth at the base recognizes the horizontal it is resting on by being

elaborated horizontally in a continuous banding geometry. The torus is a further transition of the horizontal to vertical and recognizes the predominant vertical shaft by being developed along vertical axes. The fluting of the shaft in turn terminates as it reaches the base. In the elaborations of shaft, base, and ground, one finds those elaborations responding to the dominant direction of the elements surrounding it. The elaborations reside in the transition and are shaped in response to the location of that element in the transition. The elaborations can also be seen to respond to bodily, physical forces. A similar analysis can be made for the elaborations of the capital, architrave, frieze, and cornice. The frieze can be seen as a continuous elaboration, with the metopes being episodes bounded by the triglyphs, similar to comic strips.

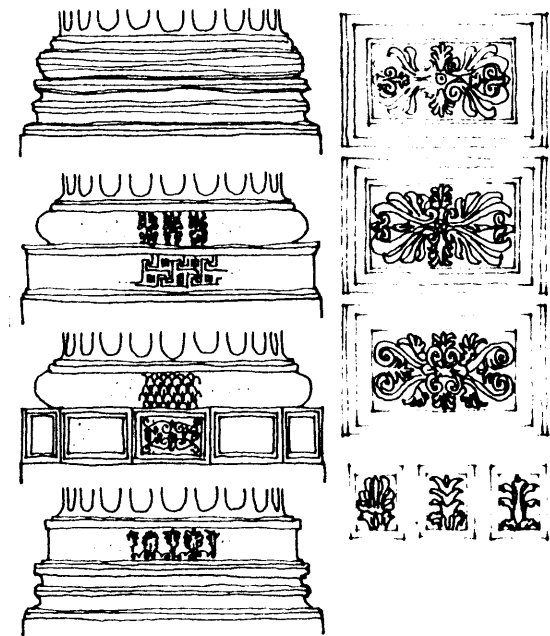
With the 'producing structure' describing the general profiles of the individual elements, there exists a variation in the elaborations of those elements within a particular building. Those elaborations



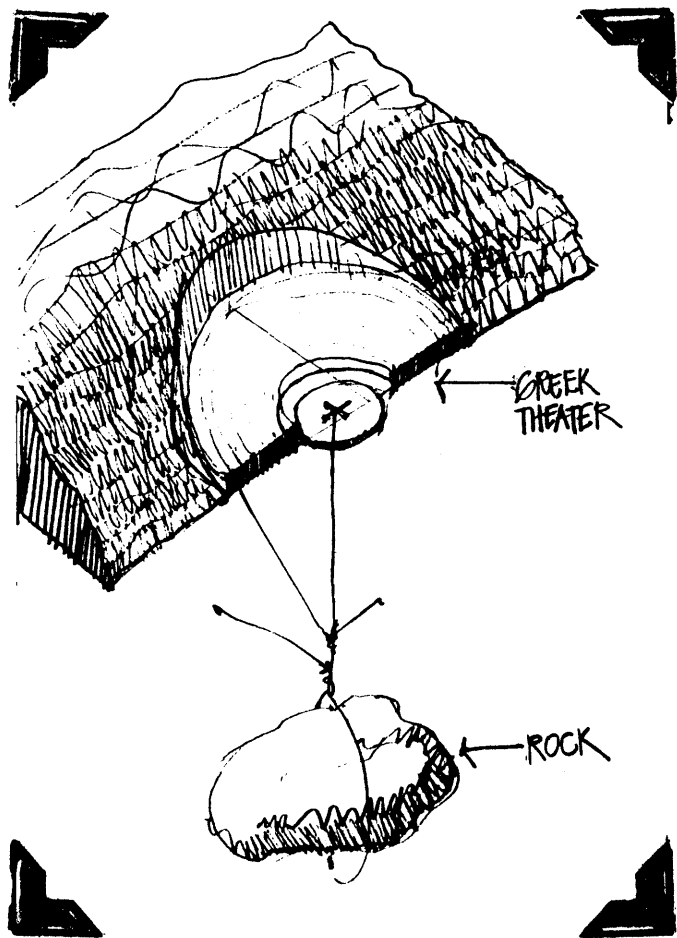


can take geometric, floral, or hybrid forms, yet the dominant relational directions are maintained. The metopes of the Parthenon Frieze exhibit the same principle. Seen at a distance, they presented a scarcely distinguishable texture of sunlit marble and cool shadow, yet in reality each is a separate work of art. The capitals of the sea-arcade at the Ducal Palace in Venice are alike in general contour but differ widely in detail and unfold a Biblical narrative. The gargoyles of Notre Dame make similar silhouettes against the sky, but, seen near at hand, they are a menagerie of monsters. In these cases, the 'producing structure' establishes a ground to be elaborated in the 'produced structure'. One has a simple assertion and its built consequence.

The pediment of the Greek temple form took a somewhat different course from the development of the continuous ornamental forms. The pediment was a bounded triangular form. By being bounded, it became discontinuous, focal, object-like. As a consequence, it came

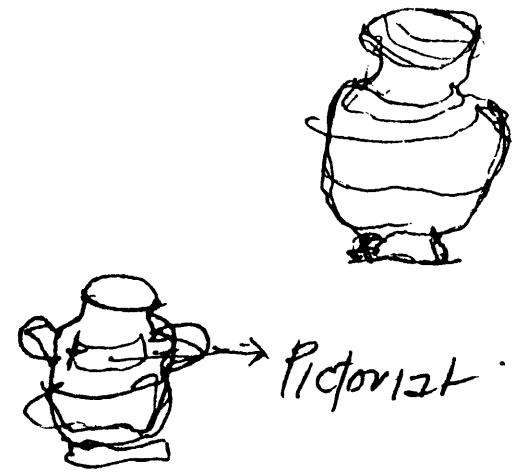


Diverse Elaborations

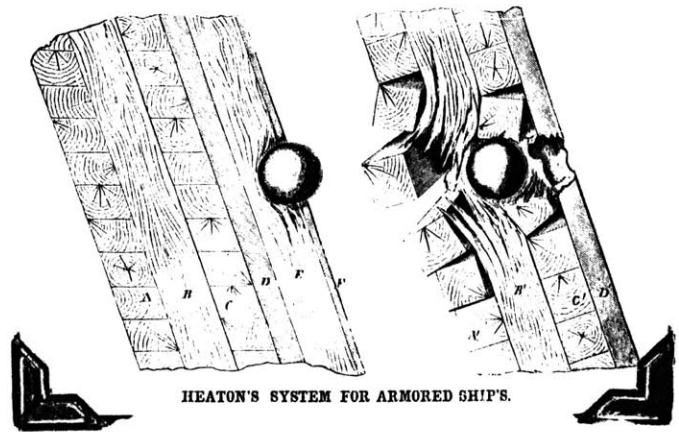
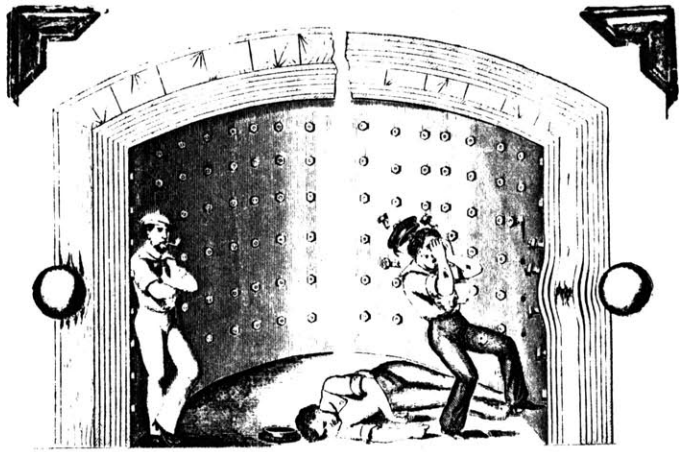


to be elaborated in a pictorial or representational manner. This differentiation of form in being bounded lent itself to another form of elaboration. This relationship between differentiation and elaboration can be seen clearly in the development of Greek pottery. When the vessel was a continuous surface, the ornament was also continuous, three-dimensionally. As handles appeared on the vessel (differentiation), the ornament at the "handle" portion of the vessel became discontinuous and pictorial. The "non-handle" portions of the vessel maintained the continuous ornamental form. One can see that a differentiation in form influences the form of elaboration. This is a principle to become important to Alberti's conception of compartmentation. The pediment being contained contains its elaboration, with that elaboration's becoming important as a focal, mythological, religious representation.

The classical form vocabulary utilized the tripartite system of articulation in its 'producing structure', and one might also think of a tripartite struc-



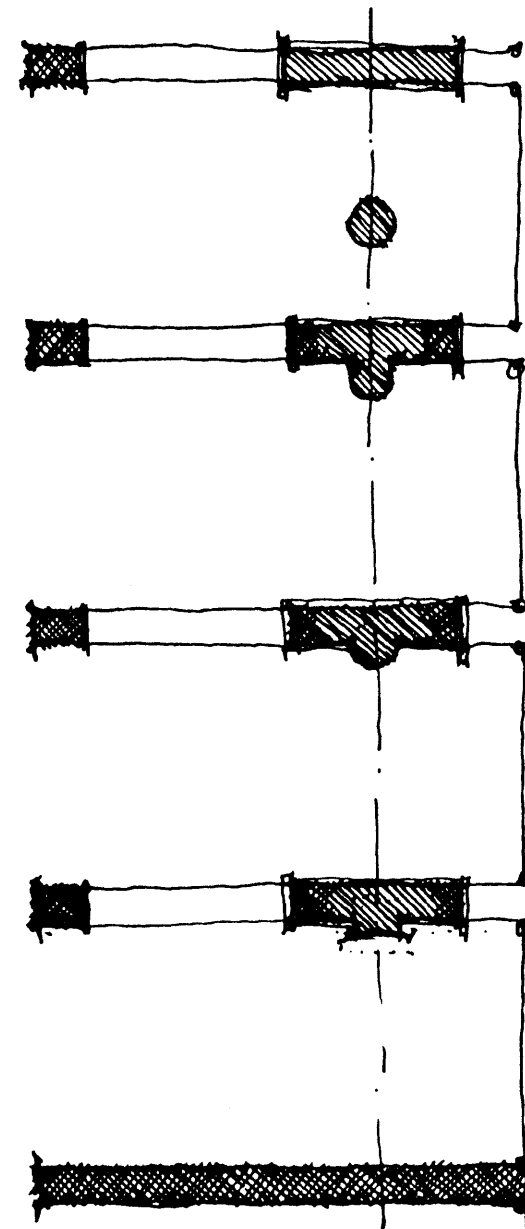
Elaboration of Greek Pots



HEATON'S SYSTEM FOR ARMORED SHIP'S.

ture of ornament. Those ornamental forms might be termed: 1) sculpted or spatial elaboration (columns); 2) continuous elaboration (base, cornice, frieze); and 3) pictorial or bounded elaboration (pediment). Each form can potentially lie within the 'producing structure'. A final form of ornament was then applied to the elaborations through the use of color. It would appear that color could be applied continuously, pictorially, and integrally to the material. Color allows for another level of elaboration. Gandhi wrote, "Ornamentation has been, is, and will be polychromatic."²

The use of the classical form vocabulary took another direction in Renaissance architecture. In Renaissance architecture the trebeated system of columns and entablature was super-imposed on Roman arch and vaulted construction systems. The classical vocabulary was used as "ornament about structure." The columns, entablature, and pediment lost their spatial qualities and became engaged with the wall. The Renaissance pilaster came to involve an ambiguous relation to the wall,



Migrating Column . 147

It cannot express it, because it is it.

as sometimes it was doing some structural work and at other times was completely structural ornament. It can be at the same time physically structural or not, symbolically structural through association, and compositionally ornamental by providing rhythm and also complexity of scale in the use of giant orders.

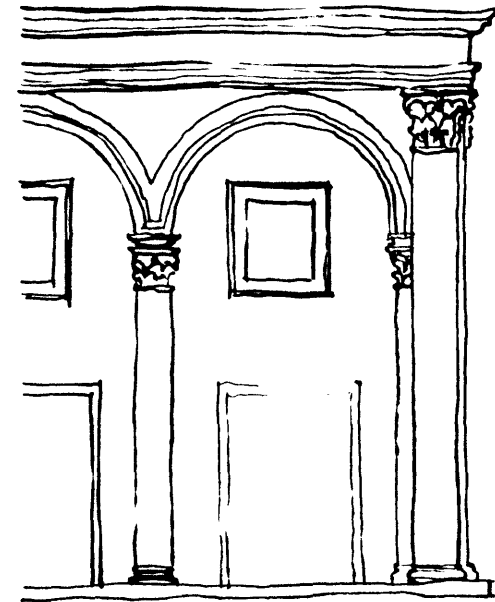
During the Renaissance, there occurred a shift in the architect's conceptual framework. Alberti introduced "historicism" into architectural theory. Yet, the cosmological conception of harmonies and proportions of the human body are still present, although they are expressed in mathematical rather than topological terms. The Renaissance was situated between an empirical use of historical forms and a cosmological use of body dimensions. The succeeding architectures took the path of the historically derived forms. In historically derivative architecture, those forms tend to take on ornamental characteristics themselves. The former constructed forms become ornamental residual forms.

Renaissance architecture can be seen as the fusion

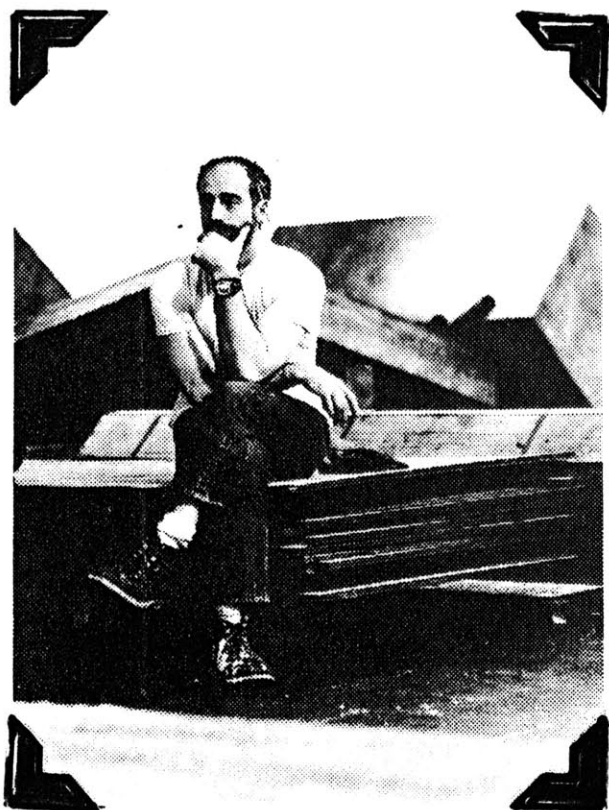
- strophos*, twisted cord; cf. STROPHE], any of various mild forms of malaria, especially common in children.
- strove** (strōv), alternative past tense of **strive**.
- strow** (strō), *v.t.* [STROWED (strōd), STROWN (strōn) or STROWED, STROWING], [Archaic], to strew.
- struck** (struk), past tense and past participle of **strike**. *adj.* closed or affected by a labor strike.
- struck-on** (struk'ŋ), obsolete past participle of **strike**.
- struck jury**, in *law*, a jury of 12 drawn from the panel of 24 names remaining after each side has been permitted to strike out 12 of the original list of 48 names.
- struc-tur-al** (struk'chēr-əl), *adj.* 1. of, having, or characterized by structure, or formation. 2. of or resulting from changes in the structure of the earth's crust; tectonic. 3. used in construction or building.
- struc-tur-al-ly** (struk'chēr-əl-i), *adv.* with reference to structure.
- structural steel**, steel prepared and shaped for use in the construction of buildings, bridges, etc.
- struc-ture** (struk'chēr), *n.* [L. *structura* < *structus*, pp. of *struere*—to heap together, arrange; cf. STREW]. 1. manner of building, constructing, or organizing. 2. something built or constructed, as a building or dam. 3. the arrangement or interrelation of all the parts of a whole; manner of organization or construction: as, they studied the *structure* of the atom, the *structure* of society. 4. something composed of parts: as, a plant is a complex *structure*. —*SYN.* see **building**.
- stru-del** (strōō'dl; G. shtrōō'dəl), *n.* [G., lit., whirlpool, eddy, pancake], a kind of pastry made of a very thin sheet of dough filled with apples, cherries, cheese, etc. and rolled.
- strug-gle** (strug'gl), *v.i.* [STRUGGLED (-ld), STRUGGLING], [ME. *strogele*, a freq. formation, prob. partly echoic], 1. to contend or fight violently with an opponent. 2. to make great efforts or attempts; strive; labor: as, she *struggled* to overcome her prejudice. 3. to make one's way with difficulty: as, he *struggled* through the thicket. *v.t.* [Rare], to bring about, make, dispute, etc. by struggling. *n.* 1. great effort or series of efforts; violent exertion. 2. conflict; strife; contention. —*SYN.* see **conflict**, **try**.
- struggle for existence**, the competition among living organisms to survive in a given environment, especially as a factor in natural selection: see **natural selection**.
- strum** (strum), *v.t. & v.i.* [STRUMMED (strumd), STRUMMING], [echoic], 1. to pluck (a stringed musical instrument) carelessly, idly, or unskillfully. 2. to play (a tune) in this way. *n.* the act or sound of this.
- Stru-ma** (strōō'mā), *n.* a river flowing through southwestern Bulgaria and northeastern Greece, into the Aegean; length, 225 mi.
- stru-ma** (strōō'mə), *n.* [*pl.* STRUMAE (-mē)], [L., a scrofulous tumor < *struere*, to build], 1. in *botany*, a cushionlike swelling at the base of an organ. 2. in *medicine*, a) scrofula. b) goiter.
- strum-mer** (strum'ēr), *n.* a person who strums.
- stru-mose** (strōō'mōs, strōō-mōs'), *adj.* [L. *strumosus*], 1. strumous. 2. in *botany*, having a struma.
- stru-mous** (strōō'məs), *adj.* [L. *strumosus*], in *medicine*, of, characteristic of, or having struma.
- strum-pet** (strum'pit), *n.* [ME.; ? connected with OFr. *strupe* (L. *stuprum*), dishonor], a prostitute; harlot.
- strung** (strun), past tense and alternative past participle of **string**.
- strut** (strut), *v.i.* [STRUTTED (-id), STRUTTING], [ME. *struten*, *strouten*, to spread out, swell out; AS. *strutian*, to stand rigid; IE. base *ster-, to be stiff, rigid], to walk in a vain, stiff, swaggering manner. *v.t.* to provide with a strut or brace. *n.* 1. the act of strutting; vain, swaggering walk or gait. 2. a brace fitted into a framework to resist pressure in the direction of its length.

of an ornamental system about structure to a bearing wall construction system. In the process, both systems were warped to influence the other. Arches began to spring from column capitals, pediments were inserted into arches, and columns were attached to walls. The Roman Colosseum used the classical orders applied to the vaulting system as ornament, without 'warping' either system. In the Renaissance, each system of structure and ornament was modified. In Renaissance architecture, the predominant 'producing structure' is the bearing wall. The elaborations then take the form of the orders, which are then further elaborated as previously discussed.

However, in the applying of the trebeated ornamental system to a bearing wall, other formal conditions surfaced. The column lost its spatial dimension. It became an articulation of the wall. It was "of the wall" and no longer spatial in a free-standing sense. The column became a bounding element of the wall. This bounding was called by Alberti "compartition."



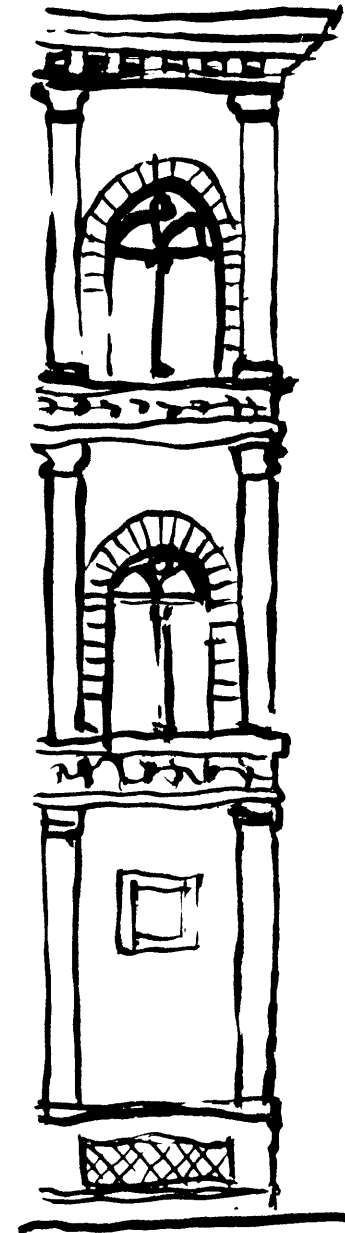
Warped Vocabularies



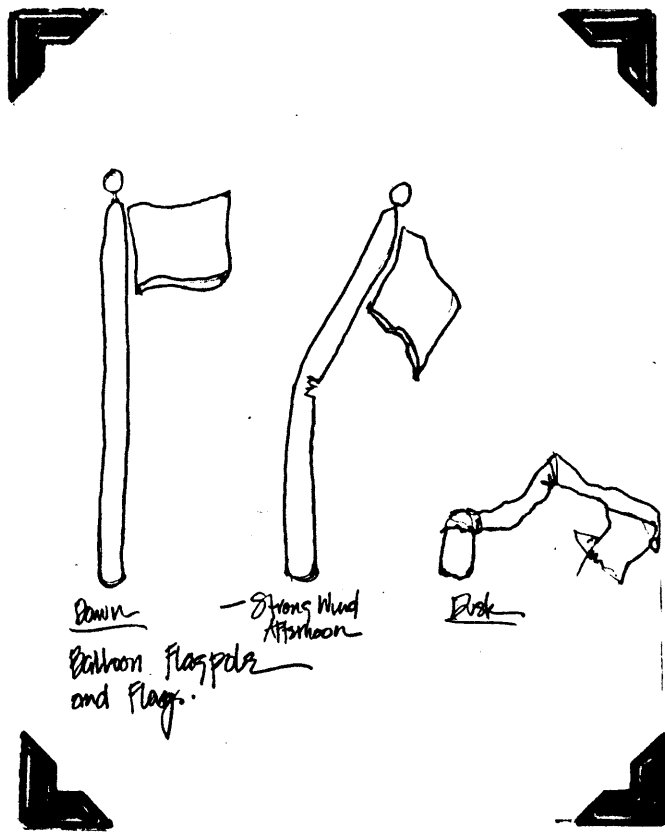
'There is no knowing how it will take shape... it always goes when it should go and stops when it has to stop.'

The condition of compartition is analogous to the bounded pediment. The wall became "compartmentalized," and, as a result, the elaborations became contained. The wall took on a pictorial and figural quality. Another change occurred simultaneously that was related primarily to use. In the Greek temple, the interior wall inside the columnar structure was the use container. It contained only the statues of particular gods, the ritual actions of priests, and the storehouse for precious gifts. The temple may be thought to contain only an 'intruder object' and the ritual actions that surround it. The Renaissance church and palazzo was inhabited by people and hence takes on an additional use dimension in the form of doors, windows, and lived space. The classical vocabulary as a consequence was also employed interiorly. The result is a subtle modification in vocabulary, with little contrast and no surprise. It was a continuity of vocabulary and not a continuity of space.

As the wall became compartmentalized, the inhabited discontinuities of doors and windows became pictorial.



Compartition



Down

Balloon flaps
and flags.

- Strong Wind
Afternoon

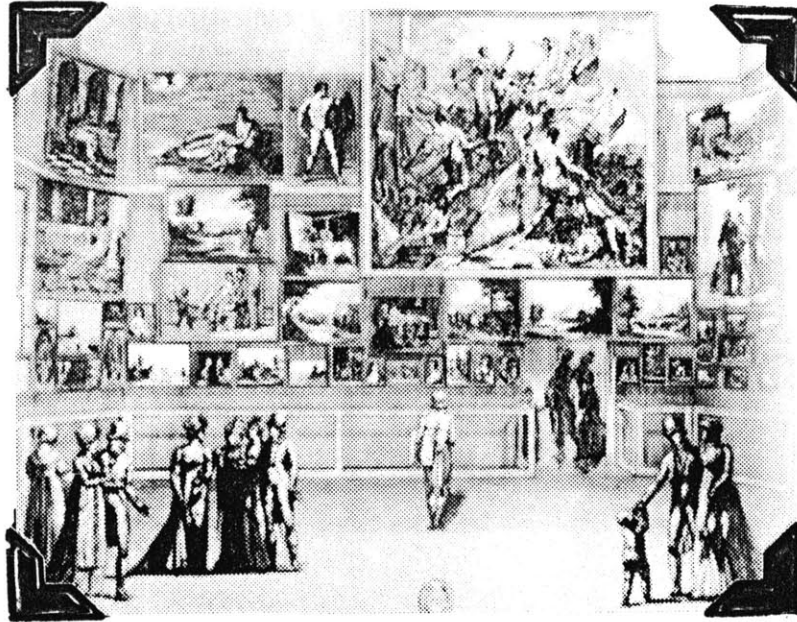
Dark

They were places for people to appear, to go in and out of. These discontinuities were recognized and elaborated with their own scaled classical vocabulary. Windows received columns, entablatures, and pediments of their own and were nested within the larger super-imposed orders. The development of the elaborations found a range of sizes, with some elaborations at the building scale, some at the floor dimensions, and others at the door or window scale. Palladio developed an elaboration of the classical vocabulary through a deployment of appropriately scaled elements. These developments grew out of the internal congruence of the available parts. The elaborations became buildings within buildings.

The idea of things within things was also used in Gothic architecture. In this way, ornament is used to make small things big and big things small. The intermediary elaborations maintained an appropriate size in relation to the form that they are elaborating. In this way, the building can be a small, big thing, rather than a small thing multiplied. The ornamental elaborations



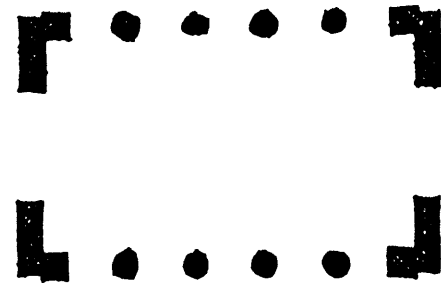
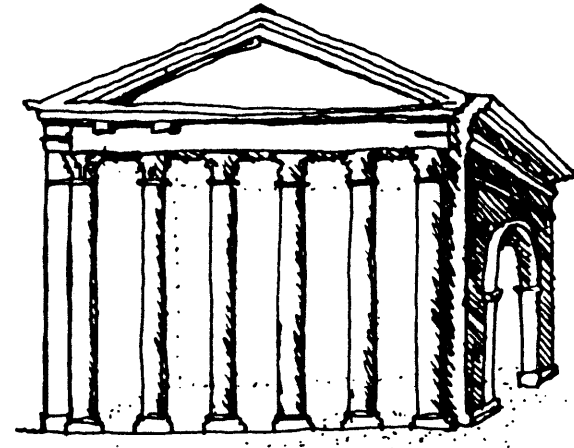
Elaborations of Scales



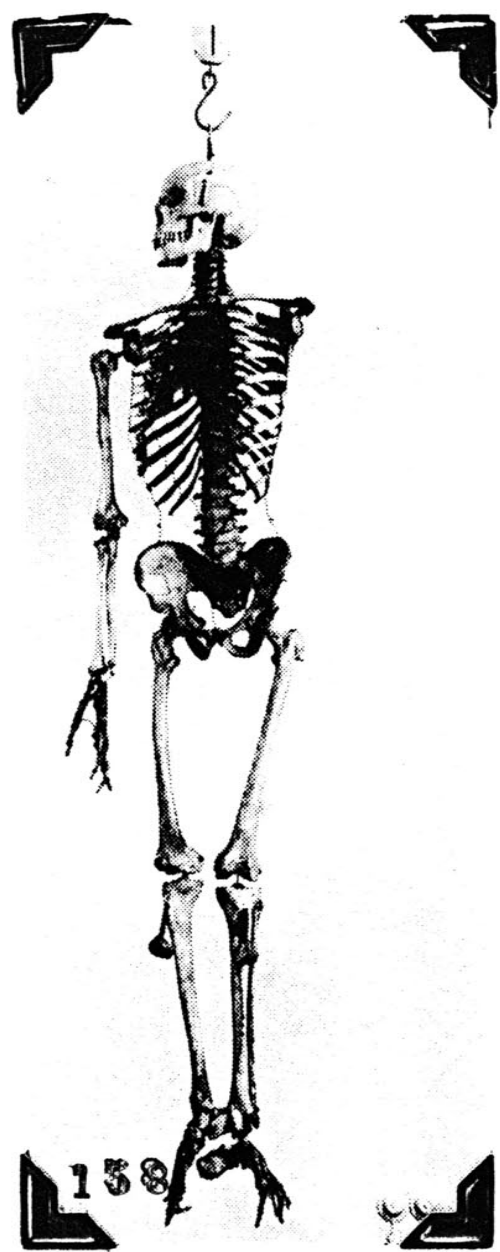
'Making' is an active process.

respond to varying scales of city, building, floors, windows. They maintain an ordering function. In this case, the 'producing structure' might be thought of as a rhythmical, ordering structure through elaborations on or in a wall. Some Renaissance facades tend to become both frame and bearing wall, and the ordering role of the trebeated system elaborated is predominant.

Palladio began to use the classical vocabulary in another way as well. By beginning to disengage the orders from the wall, the spatial dimension of the form vocabulary was re-introduced. Palladio deployed the spatial temple form as a piece of historically derived ornament. The portico can be thought of as a piece of spatial ornament used as an honorific or rhetorical device. Simultaneously, it can be seen to be a secularization of the "historic" forms. The use of a temple form in a secular building that is inhabited involves a shift in iconographic and associational content. The temple is no longer inhabited by an 'intruder object' but, rather, is inhabited by a merchant class. The use



Collaged Spatial Elements



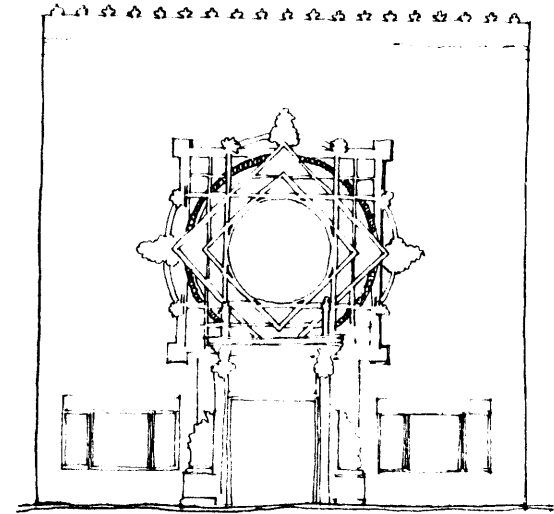
of a spatial piece of ornament at the scale of the building is a rhetorical and monumental elaboration of the house 'block'. It is a making of a small thing large. It scales up the building through the use of an ornamental device with its giant orders. This juxtaposition of elements contrasting in size yet proportional in shape characterizes a primary technique of monumentality. The Renaissance technique of super-imposing orders at varying scales resulted in a hierarchical formal vocabulary.

The Gothic also used a hierarchical form vocabulary of bundled columns and piers. It also contained things within things. Gothic portals are the scaled counterparts of the church and nave. They are also a dimensional serialization of the actual door size. The Gothic portal makes the doors big and the building small and is the elaborated transitional element between inside and outside. In the Gothic vocabulary, the bundled piers and shafts can be seen to be the 'producing structure'. The Gothic vocabulary contains more architectural "left-



overs" than the classical vocabulary. The analogous element of the Gothic rose window is the classical pediment. The rose window is a pictorial element of elaboration to both the interior and exterior. Similarly, it is of great religious importance, a kind of "target." Louis Sullivan was to use a similar target as ornament in many of his midwestern banks, and, more recently, Arata Isozaki has used it at the end of his extruded "tube" as a library. What the pediment, rose window, and target have in common is the condition of being a "leftover" at the end of an extrusion. This end condition becomes focal, terminal, and elaborated ornamentally.

The Gothic also had "leftovers" in the side, as a condition of the structural buttressing of the lateral thrusts outside the enclosure of the interior space. The spaces between the buttresses were then elaborated in stained glass. Being continuous spaces and also bounded by structural bundles, these spaces were elaborated both pictorially and continuously. Again, we have the comic strip relating a religious narrative on the

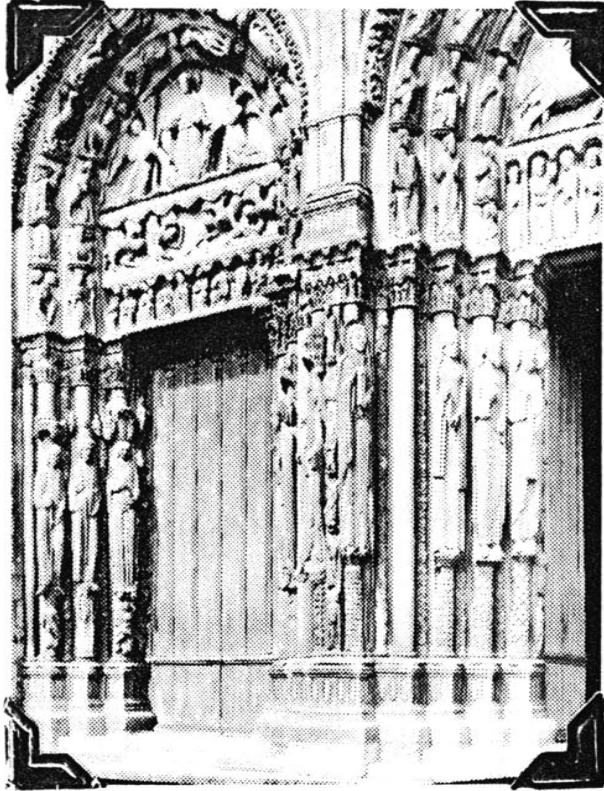


Targets

interior of the space. These "leftovers," unlike the rose window, are continuous and hence their difference in elaboration. The Gothic, like the Renaissance, also had "leftovers" in the side aisles, a space described by the outside bearing wall and the interior column structure. These spaces were inhabited by surrogate saints in the form of sculpture. They stood in niches, a kind of carved-out wall. Three-dimensional elaboration requires a space of its own--it has weight. As a consequence, a ground form is prepared for the guardians to stand on. Human forms and quadrupeds have weight, and they must find a place to stand. They stand in niches, aedicules, on ledges, the roof, or any "leftover" horizontal surface. When these gravity-related forms become sky-related, they no longer stand. God and Adam do not stand on the Sistine ceiling; they do not relate to the vertical, body direction. As forms lose their ground-relatedness, they become illusionary, literary, mythological. They become peripheral and related to sight, the mind, the imagination.



Preparation of Ground

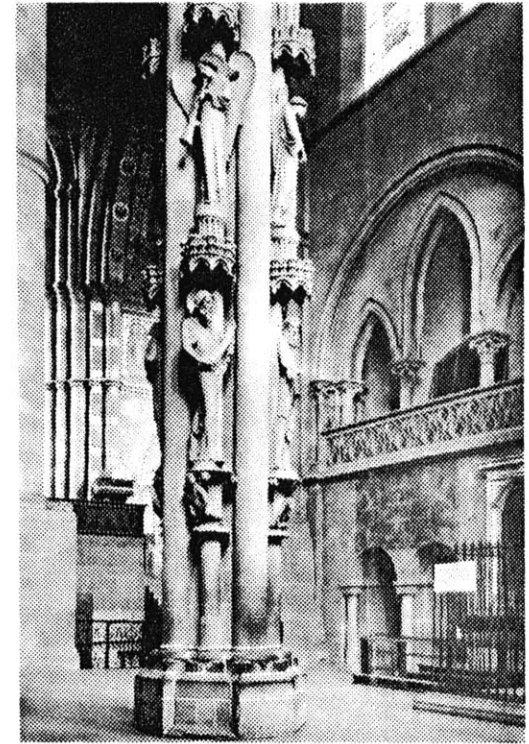


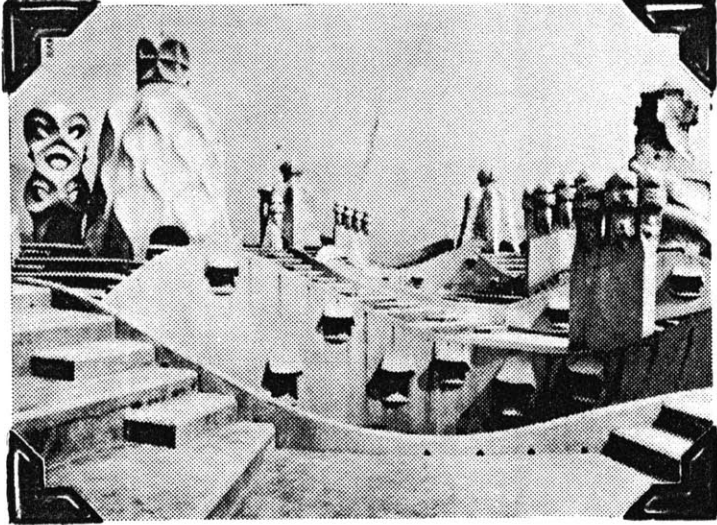
The predominant ground-related elaborations of the classical and Gothic vocabularies stem from the condition of each being developed in a compressive building material. Each vocabulary is developed from the condition of compression, however, the classical stresses a certain inertness in its wall and frame elaborations, and the Gothic stresses the vertical, filigree elaborations of bundled piers and lateral thrusts. These conditions in the differentiation of form lend a pronounced verticality to Gothic ornament. Gothic towers and spires seem to deny the physical facts, as it is difficult to think of a sinking spire.

The Gothic vocabulary implies spatial layers through the buttressing of the lateral thrusts of the roof structure. The structure is thus opened and becomes spatial. In the elaborations of the 'producing spatial structure', one finds the bundled piers elaborated three-dimensionally and continuously. The bundles split and branch to describe the vaulting structure. In the pointed arches and pediments, the elaborations take the form of a pictorial

spatial tracery. The developments of the Gothic can be seen as a spatializing of the wall. The disengaged columns find appropriate scaled sizes in relation to their location in the branching transition from ground to vault. These elements were elaborated spatially. When these elements become engaged with the wall, they are normally bundled into a spatial pier or they are elaborated in relief as surrogate personages.

The elaborations of spatial layers, as opposed to a spatial wall, was a pervasive idea in Baroque architecture. Elaborations in a building were detached from the physical structure. The structure came to support the profuse elaborations on all surfaces of the building. These elaborations warped the interior shape of the building and modified the interior light quality. Ornament took forms counter to the trebeated structural system and became plastic in curves, waves, and contortions. In Baroque architecture, ornament was developed from plastic, flowing forms and tended to disregard structural articulations of form. The exterior articu-





lations tended to follow structural elaborations in producing a spatial wall. One finds spaces inside Baroque walls. Interiorly, Baroque elaborations become detached both in form and space from the structure. In this case, the 'producing structure' might be thought of as a 'loose wall'. It produces the structural elements for its support.

The condition of the 'loose wall' establishes the interior space as being discontinuous with the exterior and is developed largely in the ornamental field. In this way, the modelling of the interior space is developed at the scale of the interior space, and the elaborations become scaled in a continuous working of that modelling. The plastic, continuous flows of surface received continuous elaborations. The conception of detaching wall layers and elaborating those layers differently exteriorly and interiorly suggests the possibility of contrasting ornamented forms in terms of where they are found in the building. The exterior shape and interior volume of a building may be contrasted through

pok-er (pō'kēr), *n.* 1. a person or thing that pokes. 2. a bar, usually of iron, for stirring a fire.

poker face, [Colloq.], an expressionless face, as of a poker player trying to conceal the nature of his hand.

poke-root (pōk'rōōt', pōk'root'), *n.* a pokeweed.

poke-weed (pōk'wēd'), *n.* [see **POKE** (weed)], any of several North American weeds with clusters of purplish-white flowers, reddish-purple berries, and smooth leaves and stems: the roots and berry seeds are poisonous.

pok-y, pok-ey (pō'ki), *adj.* [**POKIER** (-ki-ēr), **POKIEST** (-ki-ist)], [**< poke** (to push)], 1. slow; dull; trifling. 2. small and uncomfortable; stuffy, as a place. 3. shabbily dressed; dowdy. *n.* [**< ?**], [Slang], a jail.

Pol., 1. Poland. 2. Polish.

pol., 1. political. 2. politics.

Po-la (pō'lā), *n.* Pulj, Yugoslavia: the Italian name.

Po-lack (pō'lāk, pō'lak), *n.* [**< Pol. Polak**]. 1. [Obs.], a Pole. 2. [Slang], a person of Polish descent: vulgar term of prejudice and contempt. *adj.* [Slang], Polish.

Po-land (pō'lənd), *n.* a country in central Europe, on the Baltic Sea: area, 150,470 sq. mi.; pop., 29,480,000; capital, Warsaw: Polish name, *Polska*.

Poland China, an American breed of large hogs, usually black and white.

po-lar (pō'lēr), *adj.* [ML. *polaris* **< L. polus**; see **POLE**]. 1. of, connected with, or near the North or South Pole. 2. of a pole or poles. 3. having polarity. 4. having two opposite natures, directions, etc. 5. central and guiding, like the earth's pole or the polestar.

polar bear, a large white bear of the arctic regions.

polar body, one of the two cells cast off from a dividing ovum during maturation: also **polar cell** (or **globule**).

polar circle, 1. Arctic Circle. 2. Antarctic Circle.

polar distance, in *astronomy & navigation*, the complement of the declination; codeclination.

polar front, in *meteorology*, the region, or belt, serving as the boundary or transition between the cold air of a polar region and the warmer air of the middle or tropical regions.

po-lar-im-e-ter (pō'lə-rim'ə-tēr), *n.* [**< ML. polaris** (see **POLAR**); + *-meter*], an instrument for measuring the degree of polarization in light, the amount of polarized light in a ray, or the amount of rotation of the plane of polarization.

Po-la-ris (pō-lār'is), *n.* [Mod. L., short for ML. *stella polaris*, polar star], the North Star; polestar; star of the second magnitude, standing alone and forming the end of the tail of the constellation Ursa Minor: it marks very nearly the position of the north celestial pole: see **constellation**, **chart**.

po-lar-i-scope (pō-lār'ə-skōp'), *n.* [**< ML. polaris** (see **POLAR**); + *-scope*], an instrument for demonstrating the polarization of light, or for looking at things in polarized light.

po-lar-i-ty (pō-lār'ə-ti), *n.* 1. the property possessed by bodies having magnetic poles (one positive and attracting, one negative and repelling) of placing themselves so that their two extremities point to the two poles of the earth. 2. any tendency to turn, grow, think, feel, etc. in a certain way, as if because of magnetic attraction or repulsion. 3. the having or showing of two contrary qualities, powers, tendencies, etc. 4. in *electricity*, the condition of being positive or negative in relation to a magnetic pole.

po-lar-iz-a-ble (pō'lēr-iz'ə-b'l), *adj.* that can be polarized.

po-lar-i-za-tion (pō'lēr-i-zā'shən, pō'lēr-i-zā'shən), *n.* [**< polarize** + *-ation*]. 1. the producing of polarity in something, or the acquiring of polarity. 2. in *electricity*, the production of a reverse electromotive force at the electrodes of a cell, by the depositing on them of gases produced during electrolysis. 3. [Fr. *polarisation*], in *optics*, a) a condition of light or radiant heat, in

the elaboration of each according to different principles.

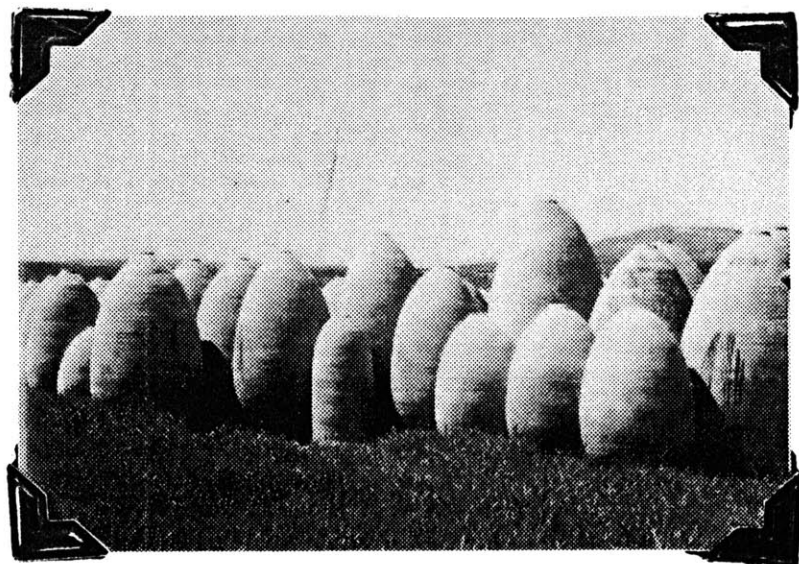
In Renaissance architecture, the elaborations of interior and exterior both followed the elaborative principles of the classical vocabulary. In the Gothic vocabulary, there were elaborations modified by the light qualities coming through the stained glass elaborations. The Gothic elaborations of structural parts were consistent, exteriorly and interiorly. However, in Baroque architecture, with its fascination with theatricality, the polar elaborations of interior and exterior take contrasting forms. With the inside different from the outside, the wall or entry becomes a point of change and results in the detachment of wall layers. The wall can be said to have an interior lining that is tight to the body at some places and let flow in others, notably the transition from the wall plane to ceiling. The lining provides a continuity in shape from wall to ceiling and ignores structural discontinuities. Rather than elaborating the juncture of vertical



SIR HENRY BESSEMER.

and horizontal locally, the entire surface is warped in the elaboration.

The elaboration of interior and exterior can be seen to respond to varying forces. The exterior can respond to urban scale contexts and elements of the environment, like rain and sun, and the interior can respond to inhabiting the space. In some places, these may be coincident and in others, not. One of the tenets of modernist dogma is the continuity between the interior and the exterior: the interior should be expressed on the exterior. The dissolution and erosion of the wall is a development of this concern with spatial continuity. In order to achieve interior and exterior continuity, the wall came to be described by that most transparent of all material, plate glass. Gropius described the window as "an opening between two structural supports." The dissolution of the wall necessitated the elaborations of the functions of the wall. These functions are structure (columns, slabs), light (glass), and sun protection (brise soleil). By ripping apart the wall, in the name



of continuity, the modernist vocabulary developed ornamental forms about function. This major concern with the continuity of interior and exterior space is an ideal and arcadian vision of architecture. This concern with open form inevitably makes the building "round," isolated in an arcadian setting.

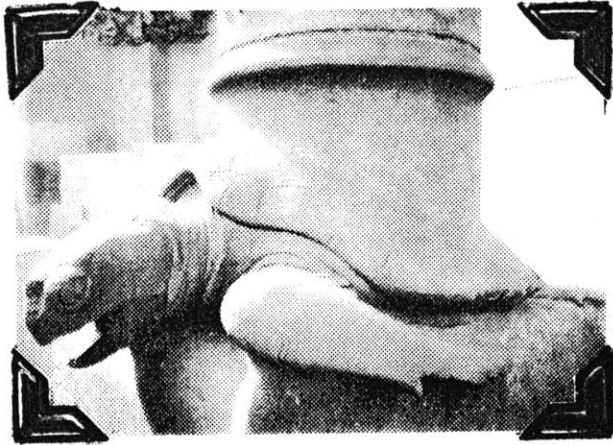
Wright developed his 'opened box' architecture largely through houses, in the suburbs of Chicago. His concerns with the continuity of inside and outside must be viewed in their relationship of "roundness" to a natural landscape. The implied continuity of space produced an architecture of related horizontal and vertical planes. The urban tradition of enclosed and contrasted interior space gave way to uninterrupted flows of space. Uninterrupted flows of space leave no room for elaborations of the wall, in fact, the wall has disappeared into a place of glass. However, with the recent reintroduction of urbanism and the wall into architecture, one must re-examine the elaborations of that wall and the transitions and inhabitation of the wall. Aldo Van Eyck has said:



Architecture should be conceived of as a configuration of intermediary places clearly defined. This does not imply continual transition or endless postponement with respect to place and occasions. On the contrary, it implies a break away from the contemporary concept (call it sickness) of spatial continuity and the tendency to erase every articulation between spaces i.e., between outside and inside, between one space and another, between one reality and another. Instead the transition must be articulated by means of defined in-between place which induce simultaneous awareness of what is significant on either side. An in-between space in this sense provides the common ground where conflicting polarities can again become twin phenomena.³

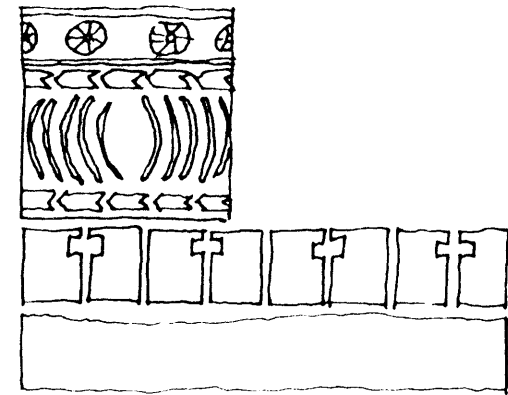
These in-between places, being a transition, become potentially elaborative. A transition as a building piece is something smaller than the whole building and larger than a constructional element. It becomes a thing within a thing, not unlike the Greek and Gothic elaborations of local and super-imposed orders. In this respect, it exists in the 'middle ground'.

In returning to the Victorian era, one can begin to understand the historical thread involved in the loss of many of the intermediary, elaborative transitions. Victorian technology mass-produced various building ele-



ments, ranging among nominally sized wood, cast iron, brackets, glazed tiles, terra cotta tiles, glass, and bricks. The emerging technology was one of component parts and the assemblage of those parts into a building. The crafting of those component parts came to be increasingly done in the component itself, with the building process being shifted further towards the assemblage of those crafted parts. Evidence of this process can be found in the proliferation of ornamental handbooks and pattern books in the late nineteenth century. The focus of these handbooks was on the ornamental forms of component parts and the geometrical basis that underlies ornamental form. In this way, ornament was taken out of its craft tradition in a building process. However, craft still survived in the shaping of the building's components.

The condition of the removal of ornament from the building process led to a viewpoint of ornament as an independent element of composition. Beaux-Arts and eclectic architects began to apply ornament to facades



Reflection

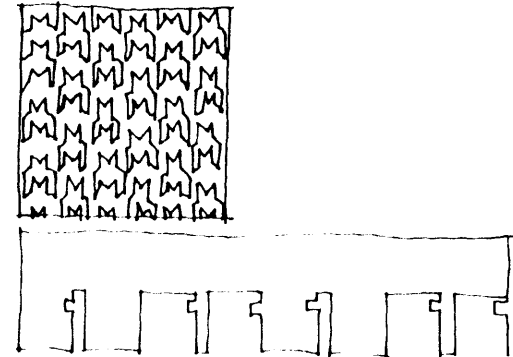
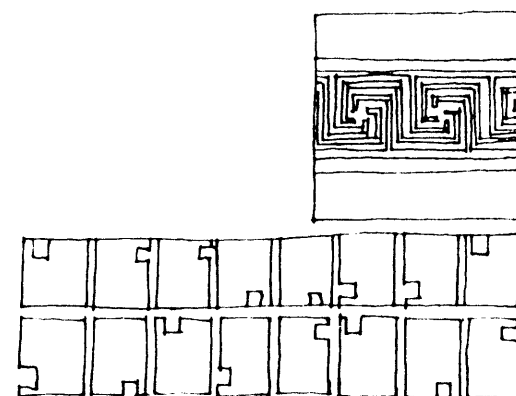
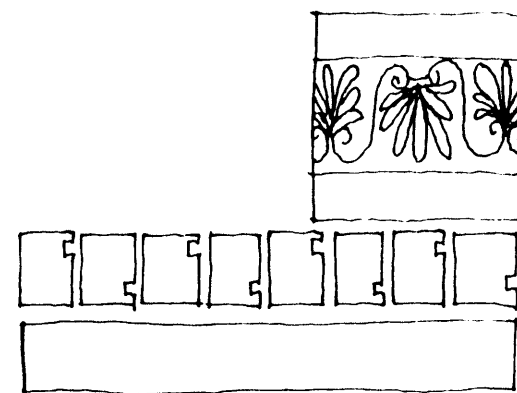


Figure-Ground

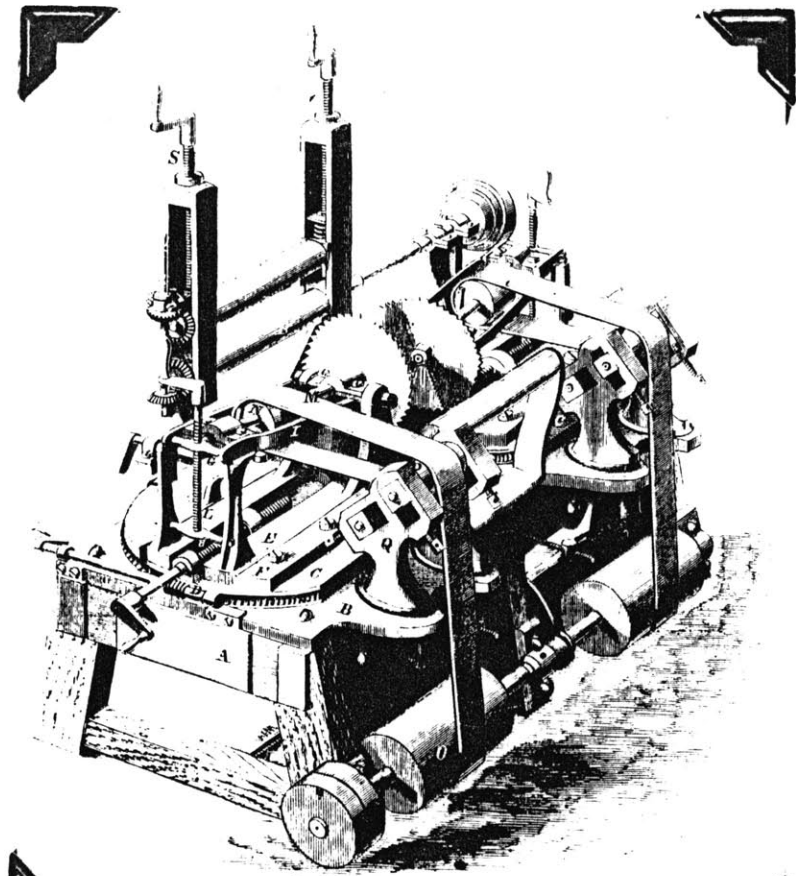
compositionally. Elaborate systems of ornamental program were developed for particular building types. For example, democratic institutions, like post offices or museums, were ornamented with Greek forms as an "expression" of democracy. The role of ornament was shifted from the elaboration of the building's parts to the rhetorical or iconographic elaboration of the building type. Greek Revival facades somehow said "public." These ornamental programs were used at the scale of the building as an iconographic or literary device. However, that iconography, that literature, was largely dead or non-existent in this country. In Renaissance architecture, ornamental programs were also contracted for a building. In those programs, the development of the iconographic content was pursued by poets. In this respect, the literature was still alive within them. It was an active shaping, putting a living mythology or narrative into form. The Beaux-Arts use of ornament in America appears to be the putting of "dead" mythology onto a new institution or building type.



Rotation



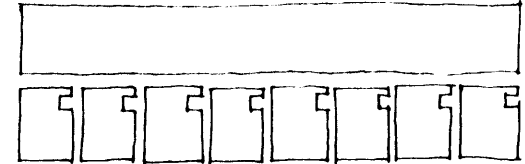
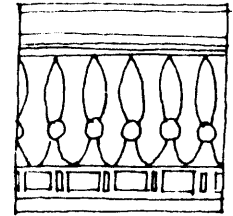
Inversion



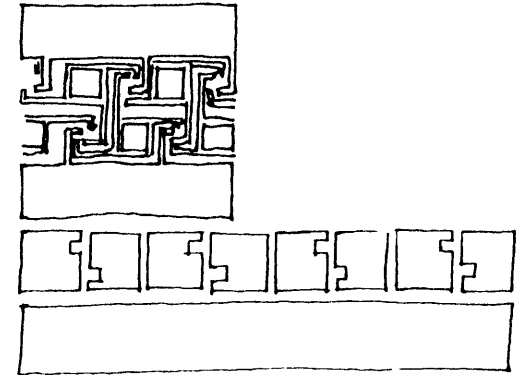
VANCE'S UNIVERSAL SAWING MACHINE.

The other direction of Victorian ornament, that of the crafted components, came to the fore as the Beaux-Arts system of ornament submerged into Cubist principles shaping Art Deco ornament. Beginning with Owen Jones's The Grammar of Ornament in 1865, ornament came to be described as an independent element of composition. Ornament was presented in the abstract, largely as continuous elaborations with a geometrical basis. Ornament's relation or location within a building process was largely neglected. As a consequence, ornament came to be conceived and produced in modular units. The elaborative pieces of the classical and Gothic form vocabulary as building scale ordering elaborations were replaced by a concentration on the unit of ornament, normally a component size.

In relation to this shift in focus concerning ornament, one might look to the work of Louis Sullivan. Sullivan's use of ornament tends to follow the classical principles of the spatial, continuous, and the "target" elaborations. Sullivan began to describe the skyscraper



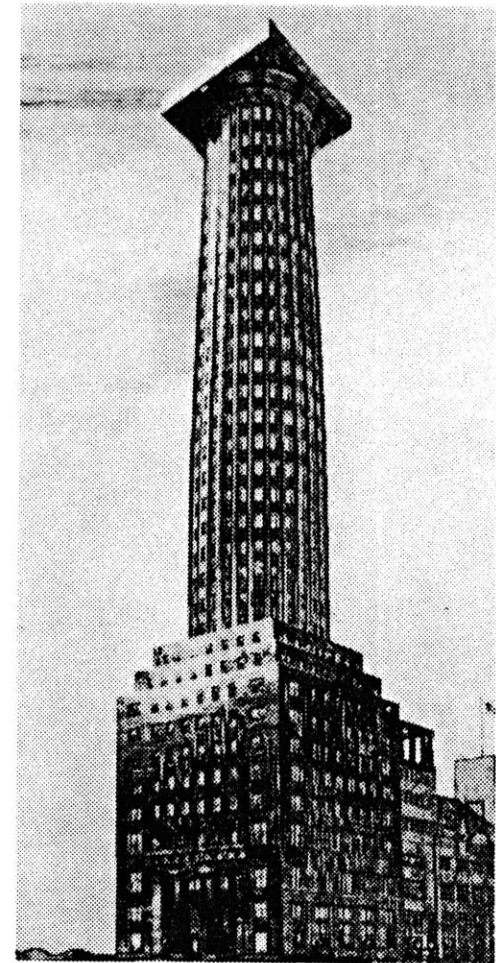
Translation

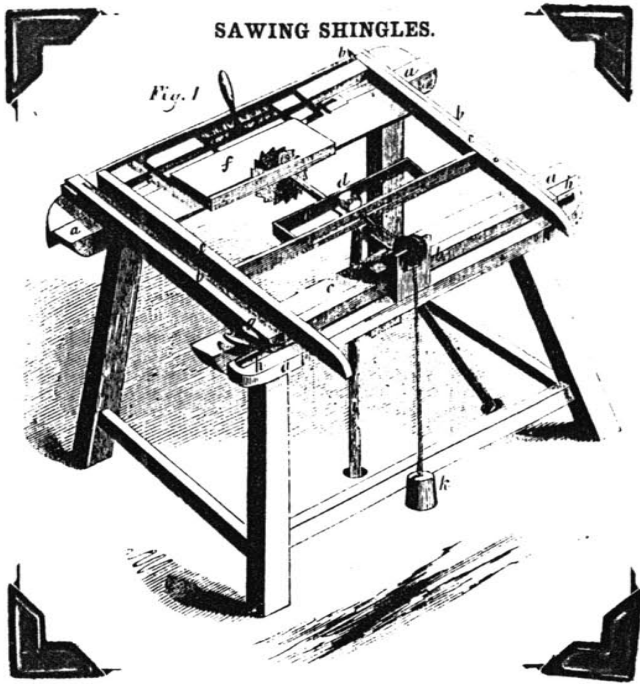


Translation and Reflective Inversion

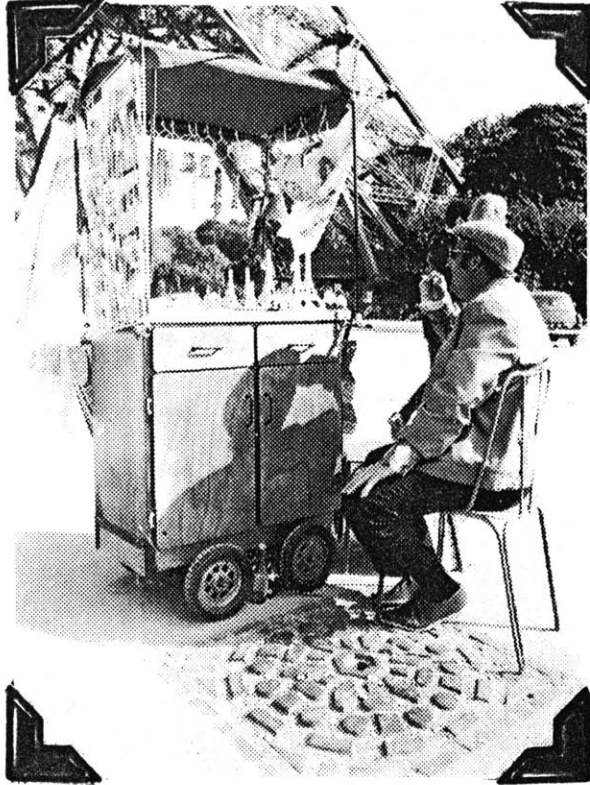
as a column, with a base, a shaft, and a top. Conceptually, Sullivan's skyscrapers are not unlike Adolf Loos's entry in the Chicago Tribune competition. The base and the top of the skyscrapers are elaborated as the building meets the street and the sky as a terminating form. The shaft is described by the structural frame. Sullivan's most characteristic material for ornament was terra cotta, which he shaped into fluid forms that were than pre-fabricated and applied to a structural frame or wall. The terra cotta tiles formed a continuous elaboration of the structural forms. They describe window frames, cornices, and floor lines. Sullivan also used "targets" as pictorial elaborations and foliated piers and brackets as sculpted ornament. The underlying elaborative principles of the classical vocabulary are evident in Sullivan's work.

Those classical principles of continuous elaboration become clear in Sullivan's treatise, A System of Architectural Ornament, published in 1924. His ornamental methodology is revealed in a series of drawings





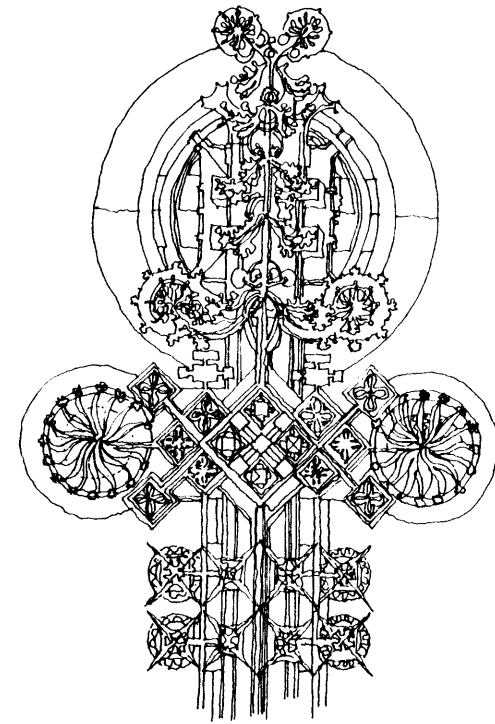
of ornamental units. The underlying geometrical construction of principle axes, secondary axes, and radial axes is similar to the constructions found in Owen Jones's The Grammar of Ornament. Similar to Jones, Sullivan makes no attempt to relate ornament to a building method or process. He deals primarily with the individual ornamental unit or units and does not concern himself with the assemblage of those units in a continuous elaborative field. The development of the ornamental units proceeds through the geometrical division, subdivision, and manipulation of simply polygonal forms in a mechanical fashion and is termed by Sullivan the "inorganic" phase. On this pure geometrical framework, organic forms "grow" along the "directrix of energy" (i.e., primary or secondary axes). At the end of the "organic" process, the original geometric construction vanishes into what Sullivan terms "a mobile medium." Through the drawings, one sees the mechanical construction of the "inorganic" phase and then in the "organic" phase, it is clearly Louis Sullivan doing ornament, with the only real basis



Embed the things of life in it as it is
studied, made and crafted.

being the axes or radial energies. One can see the geometrical framework as a 'producing structure' with its relational directions, and the "mobile medium" as the 'produced structure' shaped in a non-causal realm. The only geometric progression of ornamental units into a continuous elaborative band is a simple linear translation stressing the importance of parallel axes. This lack of a development of an extended elaborative field suggests the manner and production in which the ornament was used in Sullivan's work. Sullivan's ornament was designed to be used in a repetitive fashion and was executed in pre-fabricated terra cotta tiles for the most part. In this respect, a simple linear progression, either horizontally or vertically, of repetitive elements is the sole condition utilized in establishing the elaborative field. Conceptually, modularly coordinated construction components could well be rooted in ornament rather than in the necessary elements of construction.

Frank Lloyd Wright took Sullivan's ornamental methodology of geometrical subdivision, radial axes,

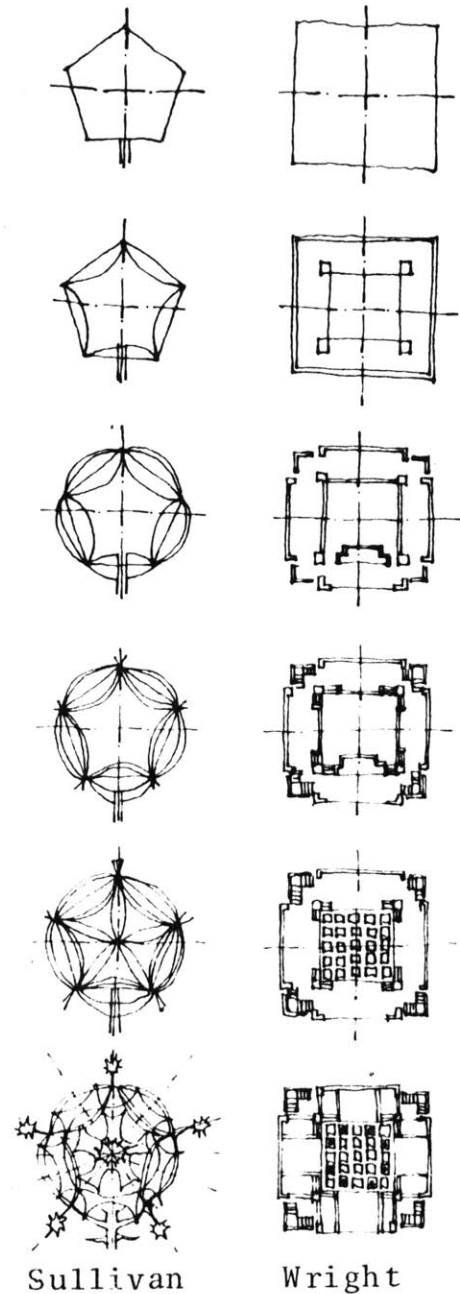


Sullivan

man made his *rounds*. 12. a single distribution, as of drinks, to each of the members of a group. 13. a single shot from each of a number of rifles, artillery pieces, etc. fired together, or from a single gun; cf. *salvo*. 14. ammunition for such a shot; cartridge, shell, etc. 15. a single outburst, as of applause, cheering, etc.; *salvo*. 16. [British], a slice (of bread). 17. in *archery*, a specified number of arrows shot at the target from a specified distance according to the rules. 18. in *games & sports*, a single period or division of action, usually one of a series: as, a *round* of poker; specifically, *a*) in *boxing*, any of the timed periods of a fight: a round is now generally limited to three minutes, and the interval between rounds to one minute. *b*) in *golf*, a number of holes or a period of play in a match. 19. in *music*, a short song to be repeated several times, the musical phrases of which are of equal length and harmonize with one another: one singer or group begins the song, and, when starting on the second phrase, is joined by another beginning the first phrase, etc. *v.t.* 1. to make round. 2. to pronounce with rounded lips; labialize. 3. to deprive of angularity or make plump. 4. to complete; finish; perfect. 5. to make a circuit of; pass around: as, we *rounded* the island. 6. to make a turn about: as, he *rounded* the corner. 7. to encircle; surround. 8. to cause to move in a circular course. *v.i.* 1. to make a complete or partial circuit; move in a curved or circular course. 2. to turn; reverse direction: as, the fleeing cat suddenly *rounded*. 3. to become round. 4. to lose angularity or become plump. 5. to develop (with *into*): as, the talk *rounded* into a plan. *adv.* 1. in a circle; along or throughout a circular course or circumference. 2. through a recurring period of time, or from beginning to end: as, the autumn came *round* once more, he worked the whole year *round*. 3. in or through a course or circuit, as from one person or place to another: as, the peddler went *round* with his goods. 4. for each of several; to include all in a group: as, not enough candy to go *round*. 5. so as to encircle, surround, or envelop, or be encircled, surrounded, or enveloped. 6. in circumference: as, his waist measures forty inches *round*. 7. on all sides; in every direction: as, the meadows extended *round*. 8. about; near: as, he visited all the people *round*. 9. by a circuitous course; in a roundabout way. 10. in various places; here and there: as, the child played *round*. 11. with a rotating or revolving movement: as, the wheel spun *round*. 12. in or to the opposite direction: as, he turned *round*; hence, 13. in or to an opposite belief, viewpoint, etc. *prep.* 1. so as to encircle, surround, or envelop; about: as, the rope was tied *round* the tree. 2. on the circumference, border, or outer part of. 3. on all sides of; in every direction from: as, the mob shrieked *round* him. 4. in the vicinity of; somewhat close to: as, farms *round* Cleveland. 5. to or through every part or various parts of; in a circuit or course through: as, we went *round* the museum. 6. from the beginning to the end of (a period of time); throughout: as, he worked *round* the day. 7. in various places in or on; here and there in; all about: as, the child played *round* the room. 8. *a*) so as to make a curve or partial circuit about, or turn to the other side of: as, the traffic flowed *round* the obstruction in the road. *b*) located at a point reached by making such a circuit about: as, a store *round* the corner. 9. so as to rotate or revolve about (a center or axis): as, the wheel goes *round* an axle. Abbreviated *rd.* *Round* (*adv.* & *prep.*) and *around* are used interchangeably in colloquial and informal usage; formal usage tends to prefer *round*.

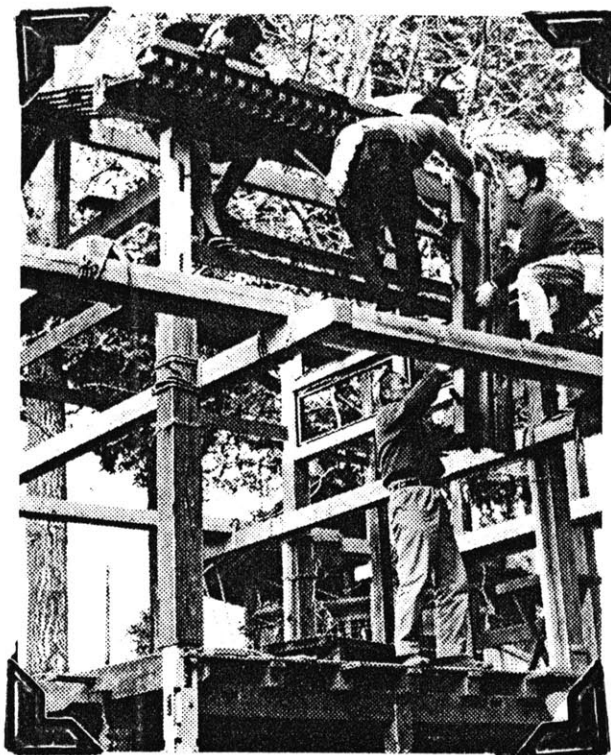
and related, and repetitive building components and began to utilize it to shape the physiognomy of his architecture. Wright often wrote about the development of ornament from the ground plan. He began to integrate Sullivan's geometrical scaffolding of ornament into the whole of the building. In this respect, the entirety of Wright's forms spring from his compulsion to integrate all aspects of the building (decoration, furniture, appliances, lighting) into this geometric structure. This relation of all building elements nested within his geometric structure led to a search for a building component on which to base the generation of that geometric structure. Like Sullivan, Wright began to use pre-fabricated, modular components as a geometrical basis. However, the difference between Sullivan and Wright that arises is the use that component was conceived to describe.

Sullivan's components were ornamental units shaped to be applied to a structural frame or wall. They had no structural or spatial characteristics, purely an or-



namental surface that made the wall more visible, fluid. Sullivan did use spatial ornament and did elaborate structural members, however, those forms were normally not of the "component" nature. Much of Sullivan's work was Chicago skyscrapers, and the elaboration of the steel-frame structure was done with terra cotta tiles.

In contrast, the majority of Wright's work included homes in the suburbs of Chicago and Southern California. Wright began to use the pre-fabricated components structurally as well as ornamentally. His working method differs from Sullivan's in that the component is primarily a structural piece that is ornamented, normally done by pressing geometric patterns in concrete blocks. His concern was with the general meshing of ornamental fields and structure. Through Wright's compulsion to relate all elements of the building to an overall geometry and his ideas about the integrity and nature of materials, he fused the elaborations into the structure. This fusion brought about an ornament of the surface, never on it. The elaborations of the structure were



designed and made prior to its erection, resulting in a reversal of the "historical" elaborative process of the crafting of the raw masses of the building. It was rather the crafting of a small structural piece outside of the building process. The establishment of a relational geometric basis of the ground plan and the design of the elaborated, structural components that generate that plan is Wright's 'producing structure'. The 'produced' structure is the assemblage of those components within the relational geometry of the ground plan. As a result, the 'produced' structure is controlled in its entirety by Wright.

This control of the entire building stems from Wright's conception of the integral nature of all the building parts as relating to the emergence of his architecture. Wright pushed Alberti's internal congruence of the building's physical parts to include everything in the building. A sampling from Wright's writing illustrates this integration most clearly:

'Appliances or fixtures as such are undesirable.

'I am not going to take the closed form versus the open form because I want both, and I'll make open forms that have closed forms in them and closed forms that are open.'

Robert Duncan.

Assimilate them together with all appurtenances into the design of the structure.

Pictures deface walls oftener than they decorate them. Pictures should be decorative and incorporated into the general scheme as decoration.

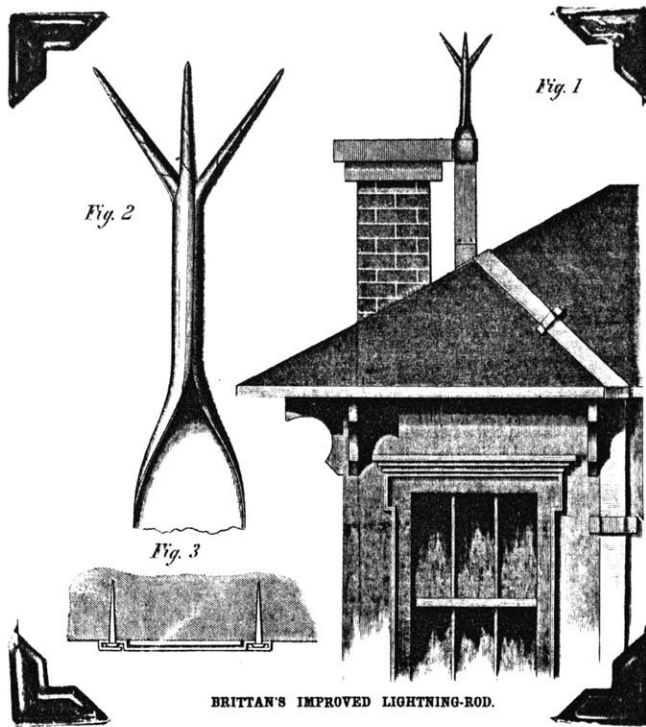
The most truly satisfactory apartments are those in which most of all of the furniture is built in as a part of the original scheme. The whole must always be considered as an integral unit!⁴

He goes on to write about ornament:

I wish to say, also, what is more to the point, that in a structure conceived in the organic sense, the ornamentation is conceived in the very ground plan, and is of the very constitution of the structure. What ornamentation may be found added purely as such in this structure is thus a makeshift or a confession of weakness or failure.⁵

But no sculpture, no painting was let in unless cooperating with the architect, although more often than not pictures were "hung." This made trouble. For no decoration, as such, was to have been anywhere. Sculpture and painting were to be likewise of the building itself.⁶

This compulsion to control the entirety of the building parts appears to be particularly peculiar in that the majority of Wright's architecture were private homes. Private homes seem to be the most personalizable of in-



BRITTAN'S IMPROVED LIGHTNING-ROD.

habited realms. and yet in Wright's work one finds a complete control of the forms. In this respect, in spite of Wright's employment of such concepts as spatial continuity, reciprocity of building and landscape, and the "organic" growth of the plan, the buildings are ultimately "round," concentrated upon and referential to themselves and the geometric generation of their structural parts. Although Wright's work recognizes the changes and asymmetries of the landscape in which it is located, the generative principles of all the forms concentrate upon their own internal logic. When Wright built in an urban landscape, his buildings again became "round," as a thing of discreteness. The Guggenheim Museum is literally round, and his Johnson Wax building is "round" in its clear demarcation of public and private. In Wright's urban architecture, the continuity of the urban landscape is largely lost and is self-referential by establishing a bold contrast of horizontal enclosure and vertical openness. A recognition of urban continuities would have led to a reunit-

ing of public and private realms through such traditional means as stairs, doors, arcades, and windows in the wall, thus making it inhabitable in the public realm. However, Wright's principles of ordering nature led to an attempt to order an urban life into a "unity" and to establish that unity through the control and separateness of the interior space.

One notable exception in Wright's work in the contrast of inside and outside, and the particular, private, and the general, public functions, as well as the recognition of an urban continuity is the Morris Store in San Francisco. This building is not round in relation to its context. It recognizes urban continuities through internal discontinuities, and the elaborations of the form differ in the enclosing wall and the interior ramps. The elaborations of the urban wall can be seen as akin to the Baroque 'loose wall'. It responds to an exterior context and the interior to internal needs. In this respect, the 'producing structure' is an urban continuity.

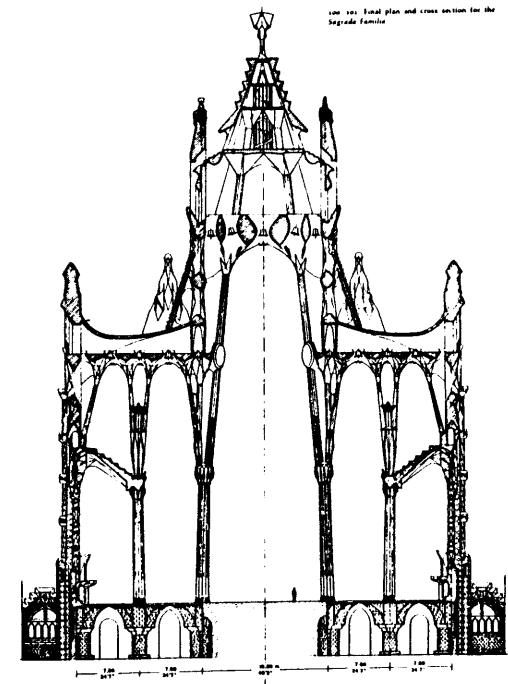
Another example of Wright's use of a "non-round"



building is the Winslow House. It similarly recognizes the asymmetries of front and back, street and backyard, and up and down. This was one of the first buildings by Wright and maintains this basic character of relational responses found in Sullivan's work. It presents an elaborated facade to the street, with windows and doors in walls and continuous ornamental frames describing them. Wright's later drive for the unity of the architectural form blurred the line that had separated ornament and structure. Wright's design process started with a spatial configuration, the structural void, and the massing of volumetric containers. After integrating the spatial and volumetric aspects, an appropriate construction method was determined to form the three-dimensional geometrical framework for all of the building parts. With this working device, the framework for construction and ornament was established with one stroke. This working method developed by Wright is most clearly "ornament structuralized."

This relationship between structure and ornament

can be seen to take another, differing course in the work of Antoni Gaudí (1852-1926). He was equally interested in the structural and constructed implications of architectural form and its relation to ornamental form. Gaudí's major breakthrough in ornament came by way of a realigning of structural thinking. Gaudí externalized the internal structural forces into a continuous spatial form, thereby resolving structural connections in the structural field without diverting them to the decorative field. In trebeated systems, the transition from the horizontal to the vertical is normally resolved by a detail, however, in Gaudí's equilibrated structure, the formal result is directly physiognomic. He, in effect, creates an animal. Ornament is used continuously as structure, in structure, and on structure. Freed from the bounding conventions of resolving vertical and horizontal elements in the structure, the surface and its protrusions take on a varied life. The structure and ornament, being plastic, can be opened, squeezed, stretched, and protruded.



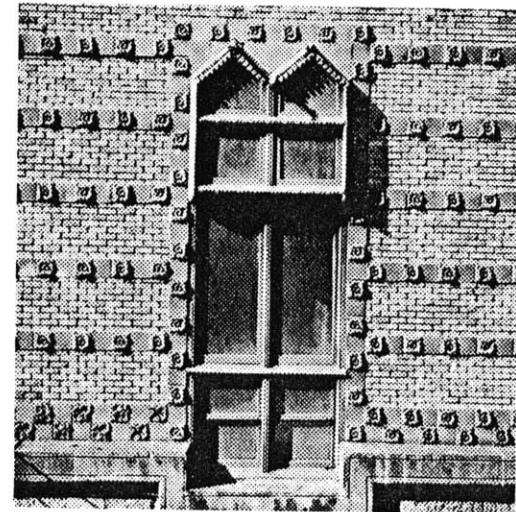
Gaudí's Sagrada Família

'If brass wakes up a trumpet, it is
not its fault.'

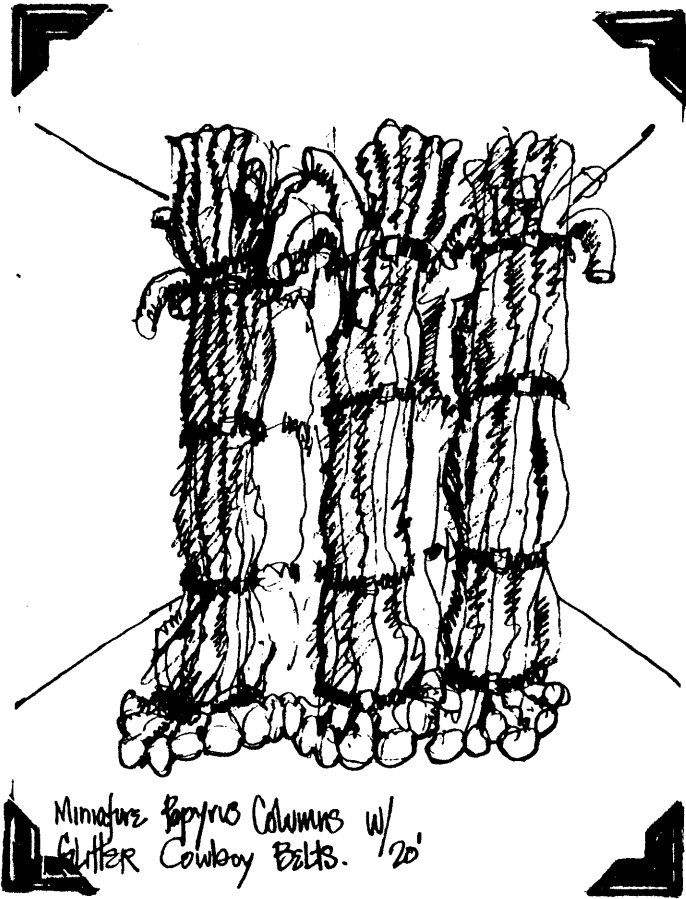
Lien Tzu.

Gaudí also used pre-fabricated ornamental materials in the form of glazed tiles. However, he did not use the geometrical component size to generate a continuous linear field. Instead, he broke tiles or used broken tiles to establish a mosaic field on and in the equilibrated structure. The "animal" was given life through a pontillistic mosaic field. This technique developed through a plastic elaboration of the continuous structure.

Gaudí's use of a mosaic field was developed as a condition of the equilibrated structure as evidenced by his use of an almost "classical" elaborative system in his house for the tile man. In that house, columns are not tilted, and the structural form is not equilibrated. Instead, one finds masonry piers, vaulting, and corbeling. Gaudí knew how to use bricks, and most of his work was in the Catalan tradition of masonry vaulting. In his non-equilibrated structure, the ornament tends to follow structural elaborations in the marking of leveling courses with glazed tile against the rough rubble



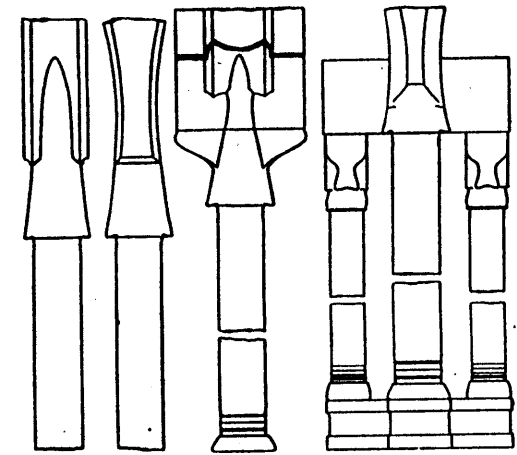
Gaudí



Mimicry Papyrus Columns w/
Glitter Cowboy Belts. 1/20'

infill. Columns and corbeling also received alternating polychrome tiles. The use of differing elaborative principles to differing structural forms illuminates Gaudí's conceptions of the relationship between structure and ornament. The equilibrated structure allows for the plastic flow and eruptions of Gaudí's forms. By working in an additive manner, Gaudí's work accumulates things as the building progresses. Tiles, stones, palm fronds, rocks, tree trunks are embedded. The building incorporates objects through a life process as it is built. Gaudí worked the architecture as it was built from a more general, structural ground, his major innovation being in the structural realm from which arose the multi-varied life of his ornament. Gaudí believed in the integrity of materials, but, unlike Wright, he would use any material available whether or not it established a geometrical ordering principle. He was also interested in geometrical, structural principles, however, those geometries were continuous, like the parabola or helix.

Gaudí's buildings come near the end of an archi-



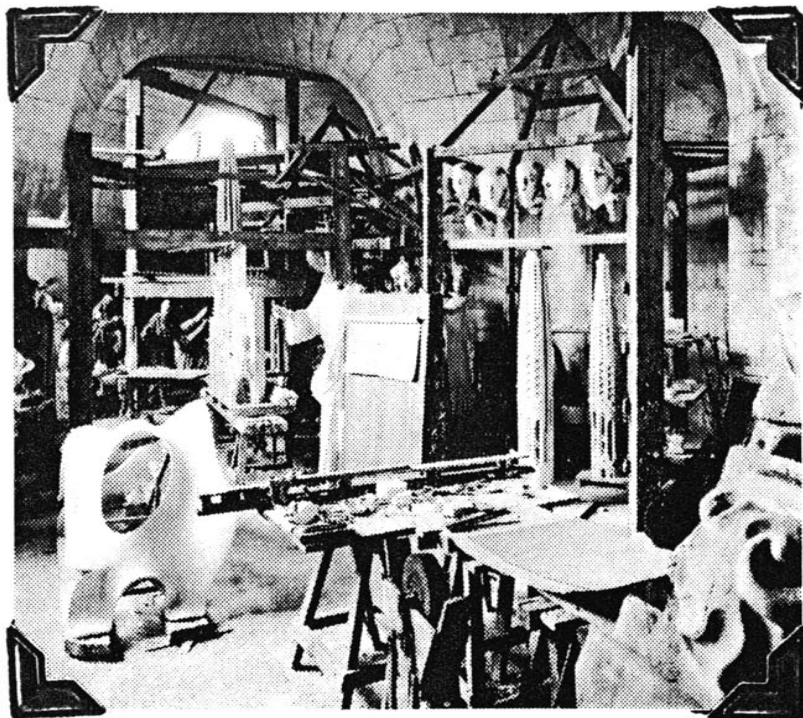
- Cleopatra were defeated by those of Octavian under Agrippa in a naval battle near Actium (31 B.C.).
- ac-ti-vate** (ak'ta-vāt'), *v.t.* [ACTIVATED (-id), ACTIVATING], 1. to make active; cause to engage in activity; hence, 2. to create or organize (a military unit, governmental bureau, etc.). 3. to make radioactive. 4. to make capable of reacting or of accelerating a chemical reaction. 5. to treat (sewage) with air so that aerobes will become active in it, thus purifying it.
- ac-ti-va-tion** (ak'ta-vā'shən), *n.* an activating or being activated.
- ac-ti-va-tor** (ak'ta-vā'tēr), *n.* 1. a thing or person that activates. 2. in *chemistry*, a catalyst.
- ac-tive** (ak'tiv), *adj.* [ME. & OFr. *actif*; L. *activus* < base *act-* as in *actus*, pp. of *agere*; see ACT], 1. acting; functioning; working; moving. 2. capable of acting, functioning, etc. 3. causing action, motion, or change. 4. characterized by much action or motion; lively; busy; agile; quick: as, an *active* mind. 5. necessitating action or work. 6. in *business*, producing profit or interest: as, *active* funds. 7. in *grammar*, a) indicating the voice or form of a verb whose subject is shown as performing the action of the verb: opposed to *passive*. b) in or of the active voice. c) showing action rather than state of being: said of verbs like *throw* and *walk*. *n.* 1. an active member of an organization. 2. in *grammar*, the active voice. Abbreviated *act.*, *a.*
- SYN.**—*active* implies a state of motion, operation, etc., ranging from cases of normal functioning to instances of quickened activity (he's still *active* at eighty, an *active* market); *energetic* suggests a concentrated exertion of energy or effort (an *energetic* workout); *vigorous* implies forcefulness, robustness, and strength as an inherent quality (a *vigorous* plant); *strenuous* is applied to things that make trying demands on one's strength, energy, etc. (a *strenuous* trip); *brisk* implies liveliness and vigor of motion (a *brisk* walk). See also *agile*.
- active immunity**, immunity (to a disease) due to the production of antibodies in the body tissues.
- active list**, a list of officers serving in or available for service in the armed forces.
- active service**, service on the active list or in the armed forces in wartime.
- ac-tiv-ism** (ak'tiv-iz'm), *n.* the doctrine or policy of being active or doing things with energy and decision.
- ac-tiv-i-ty** (ak'tiv'ə-ti), *n.* [*pl.* ACTIVITIES (-tiz)], 1. the quality or state of being active; action; motion; doing; use of energy. 2. normal power of mind or body; energetic action; liveliness; alertness. 3. an active force. 4. any specific action or pursuit: as, outside *activities*.
- ac-tiv-ize** (ak'ta-viz'), *v.t.* [ACTIVIZED (-vīzd'), ACTIVIZING], to make active; activate.
- act of God**, in *insurance & law*, a happening for which no one is liable, because no one could foresee or prevent it; accident due to natural causes.
- act of war**, an act of aggression by one nation, group of nations, etc. against another without declaring war.
- ac-tor** (ak'tēr), *n.* [L., a doer, advocate < base *act-*; see ACT], 1. a person who does a thing. 2. a person who acts in plays, moving pictures, etc.
- bad actor**, [Slang], 1. a person who misbehaves. 2. an unscrupulous or dangerous person; criminal.
- ac-tor-ac-tion construction** (ak'tēr-ak'shən), a sentence or clause containing both subject (actor) and predicate (action).
- ac-tress** (ak'tris), *n.* [*< actor + -ess*], a woman or girl who acts in plays, moving pictures, etc.
- Acts** (akts), *n.pl.* [construed as sing.], a book of the New Testament, ascribed to Luke, and describing the beginnings of the Christian church: full title, *Acts of the Apostles*.

ecture of handcrafted and architect-crafted building materials. The Victorian technology of component parts came to predominate the field of ornament. As such, the craft traditions of ornament as a worked-up surface, an additive surface, were submerged. The hand-working of architectural surfaces gave way to the crafting of ornamental pieces by machines. The craftsman had become the designer, and the ornamental forms had become operative. The result of the crafting of building parts outside of the building process led to little or no pause between construction and ornamentation. This rather indirect relation between designer and product led to the abstract development of ornamental form and eventually to the direction of machine-made building components being shaped in the machine's own abstract terms. The question then concerning ornament in twentieth-century architecture is not whether the machine can be harnessed to produce more ornament to be consumed (it can), but instead, what the existence of machine production implies about ornament.

Uselessness .

212

The implication of this question concerns itself with the design method employed by architects and the building process. The manner in which the system of component parts is utilized becomes crucial. Sullivan shaped an ornamental system in his own hand through pre-fabricated terra cotta tiles. Victorian rowhouses in San Francisco were built and decorated with catalog wood details, and the majority of American suburban tract homes are handcrafted buildings. Nominally sized wood, steel I-beams, standard bricks are useful items to have produced, and yet one must "warp" those materials into an architectural vocabulary. The modernist "integrity of materials" is nothing more than dogma. Warp, cut, chip, paint, sculpt, crack, chisel, glue, and mold the materials! Embed life processes into the form, the only manner in which an actual, metaphorical, and mythological life can emerge--it can't be manufactured. De-psychoanalyze, de-justify the forms of architecture. Act in the material, the craft, the building process. Gaudí shaped his architecture with craftsmen after much



study. The ground is essential, establish it and then act in it. Embed things in it, here, a gutter gargoyle, an intruder object. Build around it, to it.

In the last analysis, if architecture is to have an immediacy of emotional and associational content, that immediacy must arise from craft conditions, whether manual, industrial, or intellectual, for it is the basis of any culture. "Give away" appropriate parts of the work, and violate the dogma of structural and material integrity. Embed the things of life in it as it is studied, made, and changed. Architecture is continuous. Change it, use it, don't atomize it. Too much reflection!

NOTES

INTRODUCTION

1. Ludwig Wittgenstein, Lectures and Conversations on Aesthetics, Psychology and Religious Belief, Cyril Barrett (ed.) Los Angeles, 1967.

ORNAMENT AS A HISTORICAL PROBLEM

1. Leone Batista Alberti, Ten Books on Architecture, English translation James Leoni, J. Rykwert (ed.) London, 1955.
2. As quoted by Peter Collins, "Aspects of Ornament", Architectural Review 129, (June 1961); p. 375-76.

ORNAMENT AND NECESSITY

CONCEPTUAL FRAMEWORKS: 'MULTI-DIMENSIONAL OBJECTS'

1. Alexander Tzonis, Systemes Conceptuels de L'Architecture en France de 1650 a 1800, Cambridge, Mass., 1975.
2. Gottfried Semper, Die Vier Elemente der Bankunst, Brunswick Germany, 1851, p. 58.
3. John Ruskin, The Stories of Venice, 3 Vols. New York: John Wiley and Sons, 1891, I:48.
4. Ibid, p. 54.

NON-CASUAL IMAGINATION AND THE CRAFT OF ORNAMENT

1. Claude Levi-Strauss, The Savage Mind, Chicago, 1966, p. 58.

THE STRUCTURE OF ORNAMENT

2. Antoni Gaudí, "Ornamentation", Structures Implicit and Explicit, University of Pennsylvania Graduate School of Design, Philadelphia, 1973, p. 20.
3. Aldo Van Eyck, Architectural Design 12, Vol. XXXII, December 1962, p. 602.
4. Frank Lloyd Wright, Frank Lloyd Wright on Architecture, New York, 1941, p. 33.
5. Ibid, pp. 71-72.
6. Ibid, p. 188.

PICTORIAL SOURCES

PAGE

- 2 Boeck, Urs, Sculpture on Building, pg. 172. Berlin, Former Arsenal 1692.
- 6 Bennett, Ian, American Painting, pg. 122, fig. 119, Sioux
- 8 Braithwaite, David, Fairground Architecture, pg. 98
- 15 Fitch, James Marston, American Building, pg. 136, fig. 109. The Yacht 'America'
- 17 Jones, Barbara, Design for Death, pg. 104. Hearse; carved and gilded late 19th century.
- 18 Casanelles, E., Antonio Guadi, plate LXXIX, VENTILATORS.
- 20 Casanelles, E., Antonio Guadi, plate LXXXVII, Funicular model.
- 24 Braithwaite, David, Fairground Architecture, pg. 89. Peters Living Van.
- 26 Scully, Vincent, American Architecture and Urbanism, pg. 39, fig. 54.
Robert Feke: Isaac Royal and Family
- 29 LeCorbusier, The Modulor, pg. 51, fig. 60. Two Corbels to support a piece of sculpture.
- 33 LeCorbusier, The Modulor, pg. 211. A Pharaoh.
- 47 Laugler, Essai sur L'architecture. Frontispiece
- 48 Scientific American Journal, August 1855, pg. 393, Circular Self-Acting Gate
- 49 Boullée.Ledoux.Lequeu, Revolutionsarchitektur, pg. 248, fig. 141.

PAGE

- 52 Scientific American Journal, 1864, Clothes Drying Machine.
- 56 Hodgkiss, Maps for Books and Theses, pg. 66, Stencilled Lettering
- 57 Boeck, Urs, Sculpture on Buildings, pg. 30, Constantinople. Hagia Sophia
532 to 537.
- 72 Jencks, Charles, Adhocism, pg. 190. Mount Rushmore.
- 77 Pane, Roberto, Antoni Guadi, pg. 89. Tav. ii. Comillas - Villa El Capricho.
- 78 Scientific American Journal, June 1898, pg. 363, Moores Vacuum Tube.
- 86 Al-izz, Abu, Landforms of Egypt, pg. 91, fig. 19. Cross Sections of the Nile
Valley Flood Plain.
- 88 Boeck, Urs, Sculpture on Buildings, pg. 79, Reims. Cathedral Second Quarter
of the 13th century.
- 99 Jencks, Charles, Adhocism, pg. 112, fig. 112.
- 100 Boeck, Urs, Sculpture on Buildings, pg. 1. Mycenae, Gate of the Citadel Second
half of the 14th century, B.C.
- 108 Boeck, Urs, Sculpture on Buildings, pg. 11. Athens Erechtheum, 421 to 405 B.C.
- 111 Bennett, Ian, American Painting, pg. 191. American Gothic 1892-1942.
- 112 University of Pennsylvania. Structures Implicit and Explicit, pg. 47.
Pseudo-arch at Segni
Pseudo-arch at Cerveteri

PAGE

- 114 University of Pennsylvania. Structures Implicit and Explicit, pg. 54.
Frieze from the Mansoleum, Halicarnossus, Michelangelo's Moses.
- 116 Braithwaite, David, Fairground Architecture, pg. 46, fig. 3 'Lead Horse'.
- 120 Braithwaite, David, Fairground Architecture, pg. 49, fig. 4 'Gallopig Horses'.
- 124 Kyriazi, Gary, The Great American Amusement Park, pg. 47. The Original Ferris
Wheel, 1893 Worlds Columbian Exhibition.
- 132 Haga, Hideo, Japanese Folk Festival Illustrated, pg. 198, Dragons.
- 137 Architectural Design, July 10, 1978, pg. 220.
- 138 Boeck, Urs, Sculpture on Buildings, pg. 97. Strassburg, Munster, c. 1225.
- 142 Haga, Hideo, Japanese Folk Festival, and Urbanism, pg. 91.
- 146 Scientific American Journal, January 2, 1864, Heaton's System for Armored Ship's.
- 156 Levitine, George, The Dawn of Bohemianism, plate 31, Antoine Maxime Monsaldy,
View of the Salon 1801.
- 160 Evans, M. W., Medeival Drawings, plate 36.
- 163 Casanelles, E., Antonio Gaudi: A Repraisal, plate VII
- 164 Boeck, Urs., Sculpture on Buildings, pg. 75. Charles Cathedral. Second quarter
of the 12th century.

PAGE

- 167 Boeck, Urs, Sculpture on Buildings, pg. 79. Reims Cathedral. Second quarter of the 13th century.
- 168 Casanelles, E., Antonio Gaudi: A Repraisal, plate LXXVIII.
- 174 Sweeney, James J. and Sert, Josep Ulois, Antonio Gaudi, fig. 41, Oil Jars.
- 176 Pane, Roberto, Antoni Gaudi, Frontispiece.
- 178 Pane, Roberto, Antoni Gaudi, plate 362, Tartaguga Marina.
- 182 Scientific American Journal, April 1864, pg. 228, Vance's Universal Sawing Machine.
- 185 Scully, Vincent, American Architecture and Urbanism, 19301 Chicago Tribune Building Competition Entry, 1922, Adolf Loos.
- 186 Scientific American Journal, April 1864, fig. 1, Sawing Machine.
- 188 University of Pennsylvania. Structures Implicit and Explicit, pg. 184. A Parisian Vendor.
- 194 Haga, Hideo, Japanese Folk Festival Illustrated, Plate 139, Six Pillars are Fixed and Tied...
- 198 Scientific American Journal, March 26, 1864, pg. 208. Britain Improved Lightning Rod.
- 202 Trucchi, Lorenza, Francis Bacon, Frontispiece. Bacon in his studio. **227**
- 214 University of Pennsylvania. Structures Implicit and Explicit, pg. 18 Gaudi's Studio.

Drawings on pages 179, 181, 183, 189 are excerpted from "The Grammar of Ornament/
Ornament as Grammar" by Thomas H. Beeby, University of Pennsylvania Graduate School
of Design.

BIBLIOGRAPHY

- Bachelard, Gaston. The Poetics of Space. Boston: Beacon Press, 1969.
- Cooper, Claire C. The House as Symbol of Self: Working Paper #120. Berkeley: University of California Institute of Urban and Regional Development, 1971
- Drexler, Arthur, ed. The Architecture of the Ecole Des Beaux Arts. Cambridge: M.I.T. Press, 1977.
- Dueker, Taylor True. "Decoration/Intensification/Collage as Definition/Form in Building . . . A Built Form Exploration." M. Arch. Thesis, Massachusetts Institute of Technology, September 1977.
- Eagleton, Terry. Criticism & Ideology. London: Verso Edition, 1978.
- Foucault, Michel. The Order of Things. New York: Pantheon Books, 1971.
- Gaudí, Antoni. Ornamentation. In Structures Implicit and Explicit, pp. 19-25. University of Pennsylvania Graduate School of Design. Philadelphia: Falcon Press, 1973.
- Jones, Owen. The Grammar of Ornament. London: Day and Sons, 1856.
- Martinell y Brunet, Cesar. Gaudí: His Life, His Theories, His Work. Cambridge: M.I.T. Press, 1975.
- Olson, Charles. Selected Writings. New York: Poetry New York, 1950.
- Rose, Barbara. Claes Oldenburg. New York: Museum of Modern Art, 1970.
- Said, Edward W. Beginnings. Baltimore: The Johns Hopkins University Press, 1975.

- Sennett, Richard. The Fall of Public Man. New York: Alfred F. Knopf, 1977.
- Sullivan, Louis H. A System of Architectural Ornament. New York: Press of American Institute of Architects, Inc., 1924.
- Tzonis, Alexander. Towards a Non-Oppressive Environment. Boston: i press incorp., 1972.
- University of Pennsylvania Graduate School of Fine Arts. Ornament. Philadelphia: Falcon Press, 1977.
- Venturi, Robert. Complexity and Contradiction in Architecture. New York: Museum of Modern Art, 1966.
- Wharton, Edith and Codman, Ogden, Jr. The Decoration of Houses. New York: W.W. Norton & Company, Inc., 1978.
- Whitehead, Alfred North. Process and Reality. New York: Evelyn Whitehead, 1957.
- Wittkower, Rudolf. Architectural Principles in the Age of Humanism. New York: W.W. Norton Co., 1971.
- Wright, Frank Lloyd. Selected Writings 1894-1940. New York: Duell, Sloan and Pearce, 1941.