

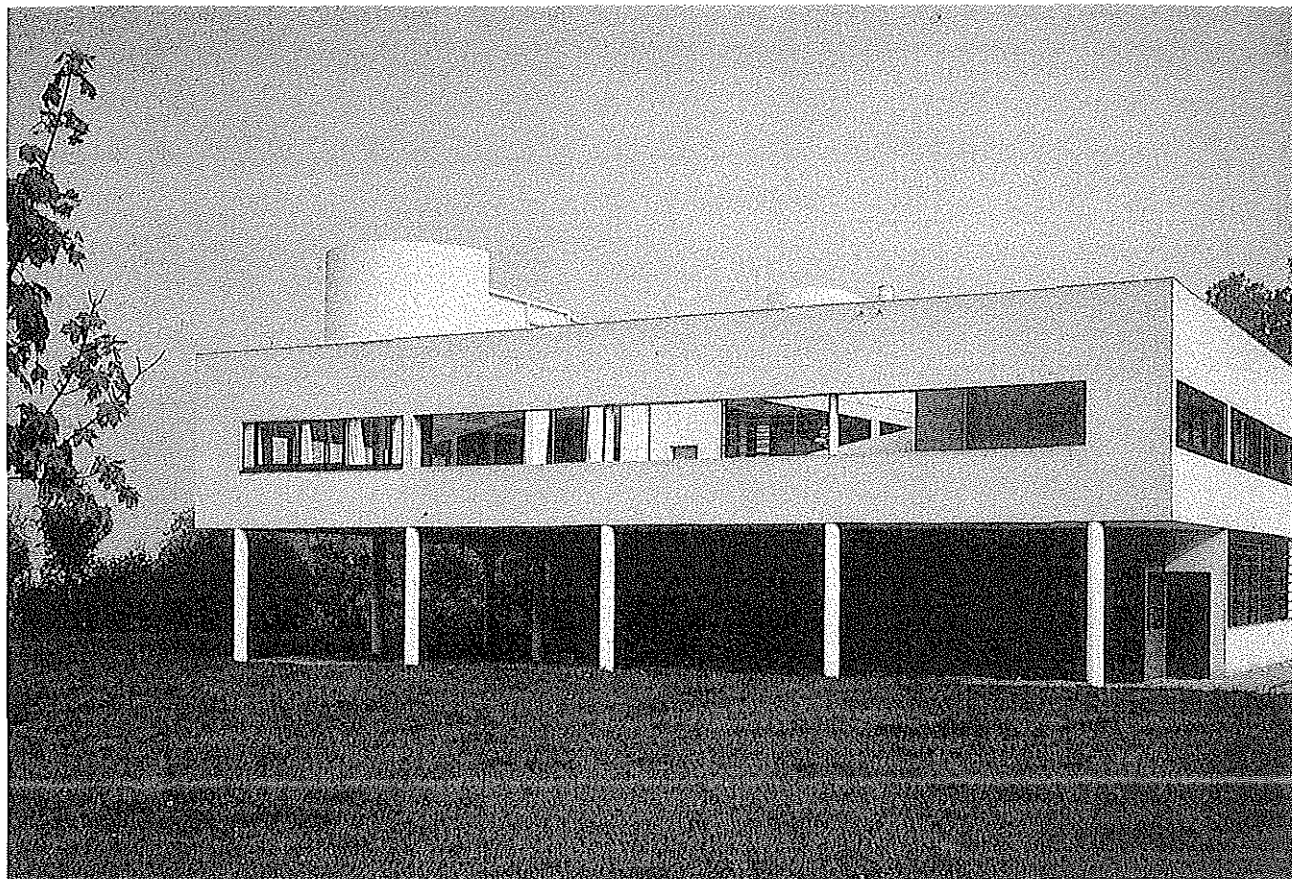
Finishing ends construction, weathering constructs finishes.

This assertion would seem to defy one of the most ancient commonplaces of architecture: buildings persist in time. Yet they do not. No building stands forever, eventually every one falls under the influence of the elements, and this end is known from the beginning. How, then, can one say weathering “constructs” finishes when the action of the elements leads to the deterioration of the building? Weathering does not construct, it destroys.

Over time the natural environment acts upon the outer surface of a building in such a way that its underlying materials are broken down. This breakdown, when left to proceed uninterrupted, leads to the failure of materials and the final dissolution of the building itself—ruination—hardly an outcome desired by the architect, builder, or owner. In order to prevent this or retard its occurrence buildings must be maintained. Maintenance, in most general terms, aims at renewal and involves both conservation and replacement. So costly has this process become nowadays that buildings are designed to be maintenance-free, or to require as little repair as possible. Nevertheless, no matter how maintenance-free the construction, weathering still occurs. Perhaps, then, there is some truth

to Victor Hugo's famous argument that buildings are less durable than books, that the "dominant idea of each generation" will be embodied in the book of paper rather than the book of stone, the first being more enduring because ubiquitous, the second being less durable because unique and more costly.¹ Buildings are single substantial structures that can be demolished by men or nature or both in time. In architecture, the gradual destruction of buildings by nature in time is weathering.

In the mathematics of the environment weathering is a power of subtraction, a *minus*, under the sign of which newly finished corners, surfaces, and colors are "taken away" by rain, wind, and sun. But is weathering only subtraction, can it not also *add* and enhance? Deleterious consequences can be complemented by the potential value of sedimentation and the accumulation of detritus on a surface through the action of the weather. This process always marks, and these marks may be intended, even desired. This sense of weathering is often associated with a romantic appreciation of the appearance of buildings that have aged: their mellowed brickwork, moss-covered stone, and seasoned timber. A fascination with ruins was common throughout the late eighteenth and nineteenth centuries. This theme appears very frequently in painting, literature, aesthetics, and architecture. In ancient buildings marks of the environment are added, leaving residual deposits



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Villa Savoye (1928–1931), after restoration
Le Corbusier
Poissy-sur-Seine, France

that reveal through traces the coherence of ambient elements on a surface. In the process of subtracting the “finish” of a construction, weathering adds the “finish” of the environment. Subtraction leads to final ruination and intimates, therefore, the end of the building as it would the death of the figure. Aging, then, can be seen as either benign or tragic—or as both. This raises a question: beyond the general category of weathering as a romantic form of aging, are there other specific ways the unending process of deterioration can be understood, and then intended? Is it possible that weathering is not only a problem to be solved, or a fact to be neglected, but is an inevitable occurrence to be recognized and made use of in the uncertainties of its manifestation?

Our aim in the argument that follows is to revise the sense of the ending of an architectural project, not to see finishing as the final moment of construction but to see the unending deterioration of a finish that results from weathering, the continuous metamorphosis of the building itself, as part of its beginning(s) and its ever-changing “finish.”

The fact of weathering as deterioration has often been associated with modern architecture. The house as “machine for living,” Le Corbusier’s emblem of a new spirit of equality between the classes, was to be achieved through mass produc-

tion, and because of this was to be “healthy (and morally so too) and beautiful in the same way that the working tools and instruments that accompany our existence are beautiful.”² Mass production, and the ensuing changes in methods of assembly determined by this new aesthetic, were, nevertheless, to be the source of a great degree of unpredictability in the life of buildings after construction.

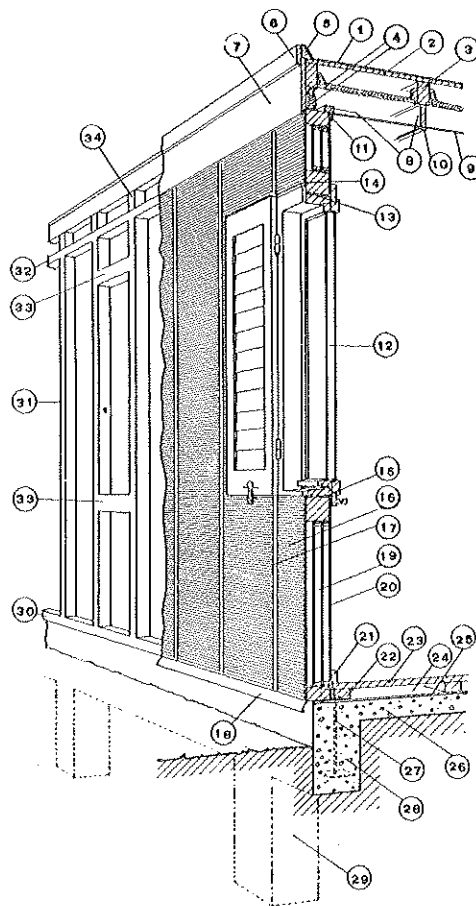
This unpredictability was a result not only of a lack of experience in new methods of assembly, but also of the use of both new and traditional materials in unprecedented and varying proportions.³ The use of these varying proportions was to challenge the traditional relationship between larger, more permanent elements and smaller, replaceable parts (frames, doors, windows, etc.). In many modern buildings the number of replaceable parts exceeded those of traditional buildings. This was especially true in larger buildings where the load-bearing structure was enveloped by either light or heavy cladding, analogous to the relationship between the corresponding parts of automobiles. Architectural parts, however, could not always be replaced easily, so were not; more common was the appearance of possible replacement. The increase in the number of parts went hand in hand with the increase in the number of joints, or points of connection between elements—joints by juxtaposition rather than synthesis. Connections of this sort were usually made weather-tight with sealants, which were

not always effective in allowing for structural movements. This resulted in an increased number of places in the building exposed to the influence of the elements.

The impact of mechanization, in relation to the building industry, necessitated the provision of a larger body of information by the architect to the builder, as these things could not be left to chance. The increasing utilization of both electricity and plumbing exemplifies the tendency toward specialization and the carrying out of building projects according to the manufacturer's specifications as well as previously established standards of production.⁴ These standards, instituted by official bodies, were seen as a way of safeguarding for the consumer the qualities of production and execution. New standards were complemented by new graphic documents executed by the architect. The supposed freedom to invent had the natural consequence of exposing the limitations of invention.

Architecture made out of a greater number of mass-produced parts also changed the relationship between the architect and the builder by largely reducing the role of the latter's knowledge of traditional ways of building and relying upon construction procedures almost entirely prescribed by the architect. Independent of the architect's instructions for assembly, construction could not proceed. Insufficient instructions by the architect, and poor workmanship by the builder,

The Growing House (exhibition, 1932), section
 Walter Gropius
 Berlin, Germany



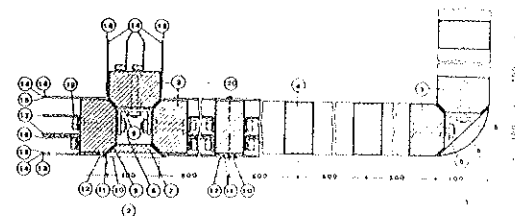
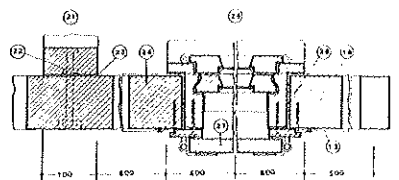
längsschnitt der kupferhaus-außenwand.

(die konstruktionen sind im inlande und auslande patentamtlich geschützt.)

- Nr.
- 1 pappdachdeckung
 - 2 dachschalung 16 mm
 - 3 sparren 50,100 mm
 - 4 teilmatte-isolierung
 - 5 dreikantleiste
 - 6 stiftblech, gehobelt 20 mm
 - 7 bretterverschalung, gehobelt 20 mm
 - 8 hölzler zur befestigung der deckenplatten
 - 9 ossex-decken- u. isolierplatte angeschraubt 4 mm oder aluminiumblech 0,6 mm
 - 10 deckleiste
 - 11 abschlußleiste
 - 12 standard-verbund-doppelfenster mit klapppläden
 - 13 holzwolle-dichtung
 - 14 kupferblech-rinnenchen
 - 15 leerstück-dichtung
 - 16 kupferwandblech ... 0,5 mm mit wellenpressung
 - 17 kupferblech-schlebefalz
 - 18 kupferblech-froststreifen
 - 19 isolierung aus aluminiumfolie und asbest-bitumenpappe
 - 20 aluminium-wandblech
 - 21 scheuerleiste 60 . 25 mm
 - 22 lagerholz 60 . 40 mm
 - 23 dielen-fußböden 25 mm
 - 24 luftraum
 - 25 eine lage asphalt-isolierpappe
 - 26 magerbetonschicht
 - 27 betonsockel
 - 28 verankerung des wandelementes
 - 29 fundamenteiler auf frostfreie tiefe 2,0 m
 - 30 fußholz 56 . 96 des wandelementes
 - 31 stiel 36 . 96 des wandelementes
 - 32 kopfholz 56 . 96 des wandelementes
 - 33 fensterriegel 96 . 96
 - 34 füllerhölzer zum annageln der bretterverschalung

querschnitt der kupferhaus-außen- und innenwand.

- Nr.
- 1 eckwandstoß
 - 2 mittel-wandstoß
 - 3 standard-eckstiel 96 . 66
 - 4 standard-mittelstiel 96 . 56
 - 5 wandverbindung U- bzw. L-eisen, je 3 stück in der höhe einer wanddeckendeckeiste, aufgenagelt
 - 6 ockendeckeiste, aufgenagelt
 - 7 gerade deckleiste
 - 8 faserstoff-füllung
 - 9 hitzstreifen
 - 10 kupferblech-deckstreifen
 - 11 halter aufgenagelt
 - 12 umfaltung des außenwandbleches
 - 13 mit wellenformung versehenes kupfer-außen-wandblech 0,5 mm
 - 14 1 lage asbest-bitumenpappe
 - 15 1 lage aluminium-folie
 - 16 2 lagen aluminium-folie
 - 17 2 lagen asbest-bitumenpappe mit 1 lage aluminium-folie dazwischen
 - 18 mit wellenformung versehenes aluminium-innenblech
 - 19 holzleiste zum anfügen der isolierungen
 - 20 innenwandblechstoß
 - 21 stumpfer wandstoß
 - 22 wandverbindungs-eisen je 3 stück in der höhe einer wand
 - 23 hitzstreifen
 - 24 standard-fensterstiel 96 . 96
 - 25 standard-verbund-doppelfenster
 - 26 holzwolledichtung
 - 27 klapppläden



die konstruktionen sind im in- und auslande durch patente geschützt

were among the principal causes of material deterioration in buildings. This subordination of builder to architect in construction inverted their roles. Previously “gentlemen architects” had relied upon the builder’s knowledge when undertaking building projects.⁵ The elimination of the builder’s traditional role exacerbated the difficulty of assembly and of anticipating the life of the construction under the elements.

The frequency of material failure due to weathering in early modern buildings has led, in more recent times, to the construction of buildings that are more efficient and more resistant to deterioration through weathering. Efficient buildings are achieved in contemporary practice on the basis of a particular aspect of the construction process: architects who have designed in diagrams instruct construction supervisors in procedures to be implemented by builders. Influential in this restructuring has been another kind of efficiency, the economy of capital investment. Two results have followed: one, the reduction of the time of construction, shortening the interval between the project’s inception and its potential occupancy; two, the following of construction procedures that use mass-produced parts and techniques developed in the modern movement, independent of its social and political aspirations. These procedures, together with the expectation of speedy efficiency, have affected architectural production at each of its stages. At the design stage all necessary documents must be prepared

quickly, which often results in the repetitive use of details and specifications with as little modification as possible. This saves time and money, and reduces risk in construction on account of unfamiliarity. **But this is ironic: mass production, which promises greater choice, has come in current practice to favor formulaic solutions.** Still greater changes have resulted from the use of computers and more automated modes of production. Computers have unprecedented capacity for information storage, the advantage of which is ease of both repetition and modification of designs or details based upon this information; yet the ease of repetition seems to have increased instances of unmodified repetition and reduced reinvention.⁶

These changes, however, have been greater in some countries than in others. The Portuguese architect Alvaro Siza, writing about his doubts about using the same architectural materials throughout Europe, has observed the differences between selection and assembly in Portugal and Holland.⁷ In Holland choices are multiple, limited only by cost. So many choices exist that there is little chance for building up experience with any one of them, except through repetition. By contrast, fewer choices exist in Portugal because fewer materials are available; as a result, more experience with the materials can be gained. The abstract sense of materials built up in Holland is achieved through trade books, product literature, and computerized information. This has manifested itself, ac-

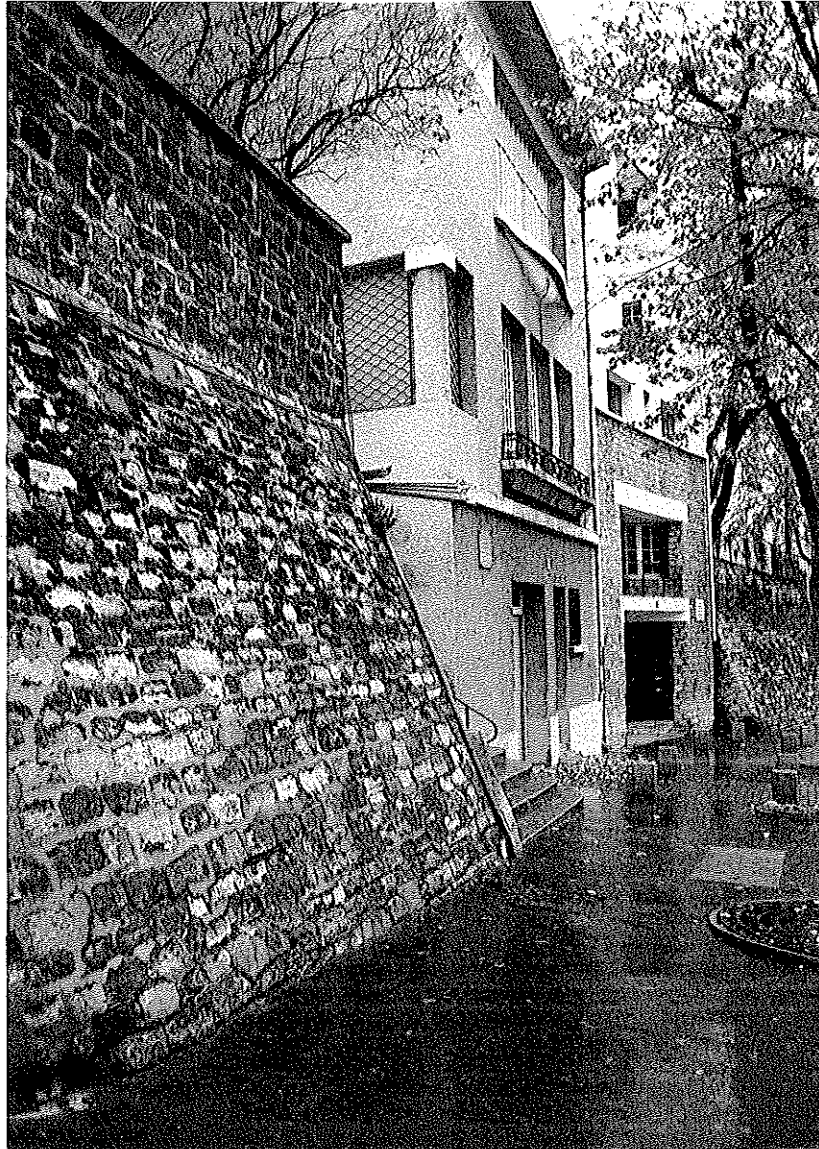
ording to Siza, in buildings being “glued together . . . until the first storms lay bare what could have been foreseen.”⁸ Material failure varies from place to place. The use of the same technologies throughout the world does not always take the uniqueness of places into account.

Architecture made up of a “kit of parts” changed the relationship between a building and its potential site, allowing assembly and construction to take place on any site, to a great degree independent of its local environmental and climatic conditions—which paradoxically makes it siteless. The variations in the weather and hence in weathering, which can be anticipated in any location, cannot be reconciled with this manner of practice. Older architectures also composed elements shaped after preexisting forms; what is unique in modern practice is the increased proportion of elements of this kind, and the corresponding reduction of elements that allow pre-given forms to be reconciled with a given location. This practice, among other things, has motivated much criticism in recent years, an example of which is Aldo Rossi’s argument on the making of a site through the introduction of pre-given forms. This results, Rossi argues, in the *remaking* of the site, designated by the term *locus*.

Le Corbusier, however, intended a single building for all nations and climates. His ideal of “the well-tempered environment” was to be achieved through *respiration exacte* in all lo-

How is an architectural surface affected by the action of the ambient elements? Consider first the flat surfaces of early modern buildings. Flatness in these buildings was invariably achieved through the application of a thin surface material to a load-bearing structure, the adhesion between them being what determined the duration of the outer construction. By contrast, the use of brick and stone in buildings both modern and ancient increases the thickness of surfaces exposed to the elements. Greater thickness usually results in longer durability, the latter being proportioned to the former. Erosion of a surface through weathering exposes newer surfaces of the same material in its depth, at once the erasure of one surface and the revelation of another. Exposure also involves sedimentation and the gathering of residual deposits, the combination of which—subtraction and addition—is a testimony to the time of the building, “creating the present form of a past life, not according to the contents or remnants of a past life but according to its past as such.”²¹ In this sense, architectural duration implies a past that is caught up in the present and anticipates the future.

Paradoxically, weathering produces something already there by subtraction. This exchanges the roles of art and nature. In design, art is assumed to be the power or agency that *forms* nature; in the life or time of a construction, however, nature *re-forms* the “finished” art work. When this formative



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Maison Tzara (1925–1927)
Adolf Loos
Paris, France

process is allowed to continue uninterrupted the surface of the original can be covered so completely that it disappears altogether under a patina, a time-bound “growth of skin”²² that covers the new surface with an accumulation that represents the tension between a work of art and the conditions of its location. This differs from the imitation of organic forms in architecture, in art nouveau buildings for example, insofar as these buildings attempt to *look like* natural elements, whereas surface modification results from the *action of* these elements. In art nouveau buildings the accent is placed on *literal* imitation, neglecting the reflective distance that would allow for *mimesis*, as in earlier examples of arabesque and grotesque figuration.

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What is the value of this accumulated dirt, or this erosion of a finished edge? Is it not tragic? Alternatively, does it not show the rightful claim nature has on all works of art? Is not this return of matter to its source, as a coherent body, already implied in its constitution, insofar as every physical thing carries within its deepest layers a tendency toward its own destruction—death as a birthright? If tragic, this metamorphosis is just. The value, then, of works that suffer stains and abrasions is the revelation of the eventuality of this final justice. This is the actual assimilation of an art work *back* into its location, the place *from which* it was first taken. In the time after construction, buildings take on the qualities of the place wherein they are sited, their colors and surface textures being

modified by and in turn modifying those of the surrounding landscape.

Dirt and staining: can they be anticipated? Certainly they are inevitable, but can they be projected, or envisaged as a likely future occurrence; still further, can they be incorporated into a design project? Staining is often the result of the juxtaposition of two materials, stone and metal for example, as in many nineteenth-century industrial buildings. When copper oxidizes and is washed by rain, a green stain is formed on the surface of the stone directly below. Stains seep into the porous stone, altering and deforming the original surface with these permanent markings. This may seem to be a deviation from the original intention for the surface color and texture, and it may be construed to have resulted from a *fault* in the design; but to the degree that stains show a new encounter between previously unrelated materials in one building sited in a particular place, they might also allow for a discussion of its harmony.

Staining, erosion, and surface faults seem to be antithetical to the modern movement's ideal of "whiteness." Le Corbusier, in "The Law of Ripolin: A Coat of Whitewash," faults the miser in us, exemplified by the character of Harpagon in Molière's *L'Avare*, the collector of material possessions.²³ This law was put forth as a critique of the house as a museum or temple "filled with votive offerings turning [the mind] into

a concierge or custodian.” White Ripolin walls would resist the accumulation and accretion of “dead things” on their surfaces, as these would leave “marks,” whereas on decorated walls, covered with damask or patterned wallpaper, these marks would be invisible. Observing that accretions do mark and preserve events from the past, Le Corbusier nevertheless recommended as more lively and accurate pure memory, which he understood to be recollection without the hindrance of intermediary dead objects: “The law of Ripolin would bring the joy of life, the joy of action. Solon, give us the law of Ripolin.” This would represent the preservation of a balanced, harmonious structure, as existed in the cities Le Corbusier had visited on his travels. He lamented the likely disappearance of this traditional surface as a consequence of the westernization of older eastern cities and the industrial production of decorative elements—“dead things.” Traditionally stones had been burnt, crushed, and thinned with water and applied to surfaces, making an “extraordinarily beautiful white.” Le Corbusier made this “traditional” white the characteristic of the “modern,” through the sacrifice of the stone to yield light (white).
The aim was not to make the modern look like the traditional, but to make it an architecture of social justice and equality, transcending class barriers, an emblem of liberation within architecture.

The surfaces of the new buildings were to be not only “white” but also unified, planar, smooth, and “flat,” masking the internal load-bearing structure but also revealing by contrast the outline of things, their volume and color, as absolute, without the possibility of mistake. Whiteness was taken to signify honesty and dependability. The morality of white-wash—an X ray of beauty—thus assumes a liberating force. Whiteness, the wealth of the rich and the poor, unites all classes, like bread and water; it is what all men need and what they enjoy. Anything “put on it” that was dishonest would “hit you” in the eye. Objects “stand forth” from white surfaces; lacking this ground no distinct figures can emerge. **The white surface was thought to be the basis of objectivity and of “truth”; it is “the eye of truth.”** Le Corbusier observed this principle in his own work and found it in that of other architects. In praise of the architecture of Adolf Loos, Le Corbusier wrote that he “swept right beneath our feet, and it was a Homeric cleaning—precise, philosophical, and logical. In this, Loos has had a decisive influence on the destiny of architecture.”²⁴ The precision being alluded to here parallels the X ray of white beauty in the law of Ripolin.

Loos, however, thought about whiteness differently; in his explanation of the white stucco surface of the Michaelerhaus in Vienna he argued that the architecture of every city has its own special character, Vienna’s being lime wash.²⁵

Whiteness in this case was a result of local culture and regional construction, not, as it was for Le Corbusier, a beautiful and objective architectural finish for all locations. The difference amounts to a distinction between a background against which objects are revealed and a mask through which objects are partially disclosed.

This is particularly evident in consideration of the interiors of Le Corbusier and Loos. The interiors of Le Corbusier's buildings of the 1920s and 1930s—villas Stein and Savoye for example—present the same white on the interior as on the exterior, thus continuing the role of white as an “objective architectural finish.” Continuous white also sustained the ideal of continuous space “flowing” inside and out. Within this space, standardized “household equipment” was to find its place. In *Precisions* Le Corbusier urged that the “equipment of the modern dwelling” replace traditional furniture, that “cabinets” and “containers” be mass-produced and made available to both architects and clients. While mass production would eliminate the dominance of cabinetmaker's furniture, it would also result in the lamentable loss of good craftsmen; yet for Le Corbusier this was inevitable if architects were to adapt themselves to “modern” times. Cabinets were to be placed within or alongside walls, thus leaving the space of the interior open by effectively emptying the house of its furniture. Equipment, so conceived, was intended for normal, typical, generalized

ments and concepts of the Millowners' building, suited to the climate of Ahmedabad, in the form of the Carpenter Center for the Visual Arts, sited in Cambridge, Massachusetts. Le Corbusier is reported to have said that the concrete work of the Carpenter Center was too finely finished.

Weathering marks the passage of time. This time is not the moment of a pre-occupancy photograph; time's passage in architecture includes a building's inception, construction, and inhabitation. The project, too, endures *through* these phases. In construing an architectural project the introduction and consideration of the time of weathering brings the project closer to a condition of actuality based on its potential transformations through time. This condition of actuality and potential for staining and fault complements the ideality of the project, making it both independent of the passage of time and caught up within it. Thought of in this way, weathering brings the virtual future of a building into dialogue with its actual present, as both are entangled in its past.

This temporal structure of building can be compared to a person's experience of time. At every moment in one's life earlier times of infancy, childhood, youth, and all other stages up to now are still present, increasing in number yet unchanged and familiar, and subject to redefinition and appropriation. Never is one's past not present, nor is the individual's past ever cut off from the tradition of one's culture and the time of

the natural world. Duration invokes recollection in each of its advancing moments. The differentiation of the present (as something in itself) presumes the reality of the past as the context from which it has emerged. Every act preserves the coherence of temporal continuity against its theoretical disintegration into separate parts: past, present, and future. Yet one's sense of the past or of the future involves a reach out of the present into some time when it (one's present) was not yet, or some time when it will be no longer. Events in the past—at least our feelings, thoughts, tastes, and so on about them—“mark” the memory, like a signet on a “good thick slab of wax” said Socrates in *Theaetetus*. What remains from the past is a trace or impression of an event, not the thing itself as it existed when present. Likewise, mnemonic experience in architecture is not of the present but of the past. The past in this sense is not a specific and limited period or time over and done with, rather it can be seen as “what has come to be.”³⁵

The fact of weathering inheres in all construction. No architect can avoid this fact; it was never escaped in the past, nor can it be in the present. Weathering reminds one that the surface of a building is ever-changing. While a potential nuisance, the transformation of a building's surface can also be positive in that it can allow one to recognize the necessity of change, and to resist the desire to overcome fate—an aspiration

that dominated much of modernist architectural thought through its resistance to time. The preoccupation with the image or appearance of the building in current practice is in part symptomatic of this desire. Images are media of representation that communicate a building's style, character, and identity and are often thought to do so without change, like the printed word. This ironically vindicates Hugo: buildings have become like books because their images have attained the status of text, whether the text-image simulates historical buildings or not. What makes this ironic is that books themselves are "artifacts" that sustain multiple readings—as buildings always do.

The ideas of a project, hypothesized in sketches, drawings, and models, are its past, which will be soiled by the marks of weathering after construction. The effects of these marks can be retarded through inventive solutions. These solutions could be elements that direct or prevent the flow of water, or they could respond to the effects of the weather by creating situations that both recognize and utilize the ever-changing characteristics of materials as a way of renewing beginnings by allowing refinishing.