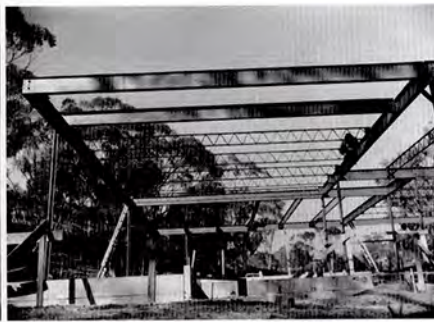
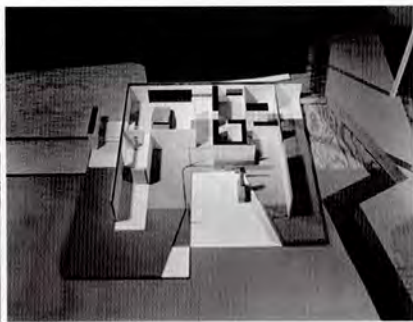
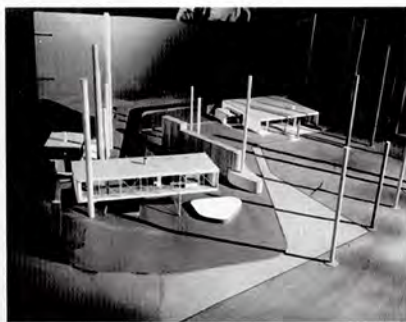


▼ **Site Model Photograph.** View of original Saarinen-Eames site model; initial design for CSH8 on left, Entenza/CSH9 to right rear. CHARLES & RAY EAMES COLLECTION, PRINTS & PHOTOGRAPHS DIVISION, LIBRARY OF CONGRESS.

▼ **Interior Model Photograph.** Interior view from Patio (foreground), illustrating various levels of interior spaces, and variety of floor surface materials. C. & R.E. COLLECTION.

▼ **Framing Photograph.** Structural Framing from Southwest corner of Entenza House; note pin-wheel configuration of bays around central vertical square structural core. C. & R.E. COLLECTION.

PETER C. PAPADEMETRIOU EERO SAARINEN: HETERODOX ARCHITECT



Of the leading architects of the 1950s, Eero Saarinen remains as perhaps one of the most enigmatic. His own autonomous career, long identified as beginning with the death of his famous father, teacher and partner Eliel Saarinen, is commonly seen as embracing the decade 1950–1961, a career cut short by his own sudden, tragic death from an undetected brain tumor. The most commonly known works are compelling for their diverse range of visual expression, a rapid, successive flow of production, and the strange irony of many of the most familiar works having been largely incomplete at the time of Saarinen's death.

These familiar icons of Modernism include those of virtually “mute” tectonic rendering of an industrial skin, such as the *General Motors Technical Center*, *International Business Machines (IBM) Manufacturing Plant*, *Thomas J. Watson (IBM) Research Center*, and *Development Center/Bell Telephone Laboratories*, as well as overt metaphorical allusions at the *University of Chicago Law School*, *Concordia Lutheran Senior College*, *Women's Dormitory (Hill House)/University of Pennsylvania*, and *Ezra Stiles and Samuel F.B. Morse Colleges/Yale*, and the *North Christian Church*, or neoclassicism in the *United States Embassy Chancery/London* and the *Vivian Beaumont Repertory Theater/Lincoln Center*. He also employed pure form, as in the *MIT Chapel*, *Stephens College Chapel*, *United States Embassy Chancery/Oslo*, and *Columbia Broadcasting System (CBS) Headquarters* (his only tall building), and structural ex-

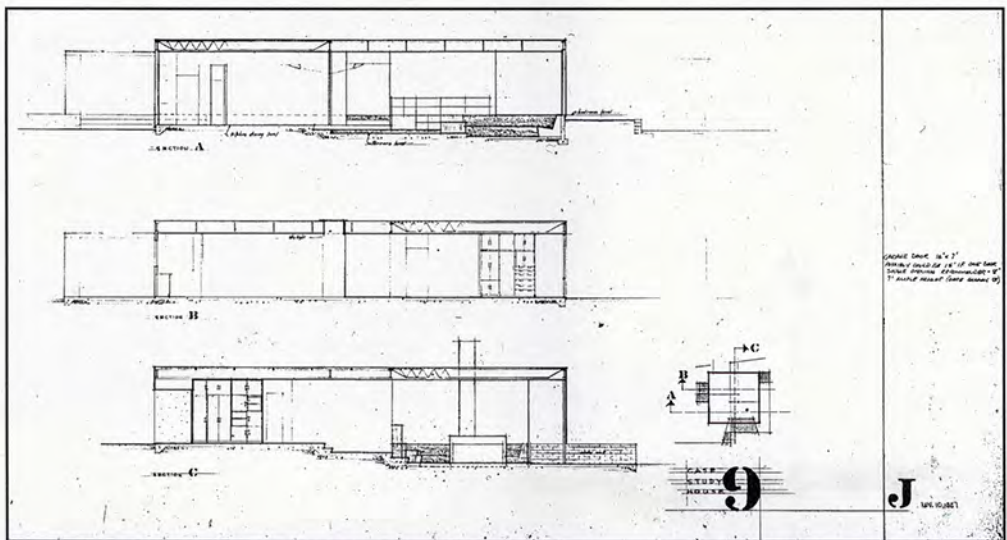
perimentation and dynamic “action” or “gestural” forms analogous to that occurring in painting, which suggested an esthetic of coherence through a single image, as in the *Kresge Auditorium/MIT*, *Milwaukee County War Memorial*, *Trans World Airlines Flight Center*, *David S. Ingalls Hockey Rink/Yale*, *Washington Dulles International Airport* and the *Jefferson National Expansion Memorial*, the so-called “St. Louis Arch.” Many of the works also include technological innovation, such as the *John Deere and Company Administrative Center* (the use of exposed Cor-Ten steel for its material sensuality and direct expression, high strength, and sculptural quality), which set a standard for the decades following.

Critic CRANSTON JONES characterized him in 1961 as, “In many ways the most interesting of the second generation of American architects (...) If modern architecture were an enshrined academy, it might well be that

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► **Sections.** Section A (top) taken West-East shows built-in sofa at right, and lower level of Living Room; Section B (middle) taken West-East through Garage (left), hallway in Bedroom area, with skylight in Garage which parallels and admits internal sunlight to the entry hall; Section C (bottom) taken North-South through Entry (left) to Patio (right) illustrates descending level changes.

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▲ **Interior Photograph from Fireplace- Living Room to Kitchen.** View from Entenza's Master Bedroom, overlooking expanse of Living Room, with view to Pacific Ocean at the left.

PHOTO: JULIUS SCHULMAN.

▼ **Interior Photograph: Kitchen to Living Room.** View from Breakfast Room (note four double-bi-fold doors against Kitchen wall) across expanse of lower Living Room, with built-in sofa behind free-standing fireplace; single steel column in center left of photograph.

PHOTO: JULIUS SCHULMAN.

Eero Saarinen would be considered a mannerist and eclectic (...) Fortunately, modern architecture is still a continuing state of evolution, and it seems to be Saarinen's secret that he, more than most of his contemporaries, recognizes that the valid approaches to modern architectural problems are vastly more varied than any single-minded approach would indicate." British architect and critic PETER CARTER observed, "Saarinen was aware of today's technology in its widest sense and he used its potential as a means of achieving a many-faceted architectural expression within the tradition of the modern masters. To advance the symbolic and environmental content of that tradition he explored special architectural vernaculars for each project (...) it precluded the possibility of a personal style, a fact which set him apart from any of his contemporaries."

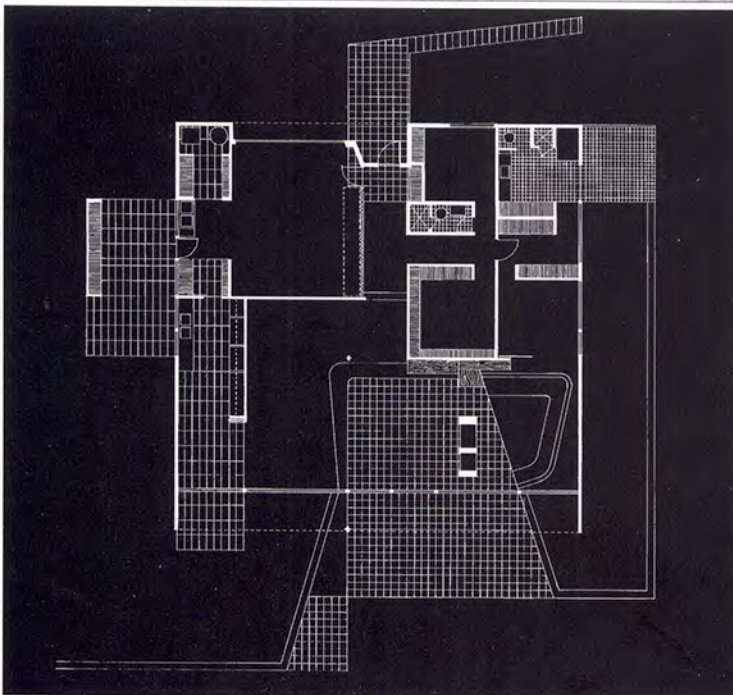
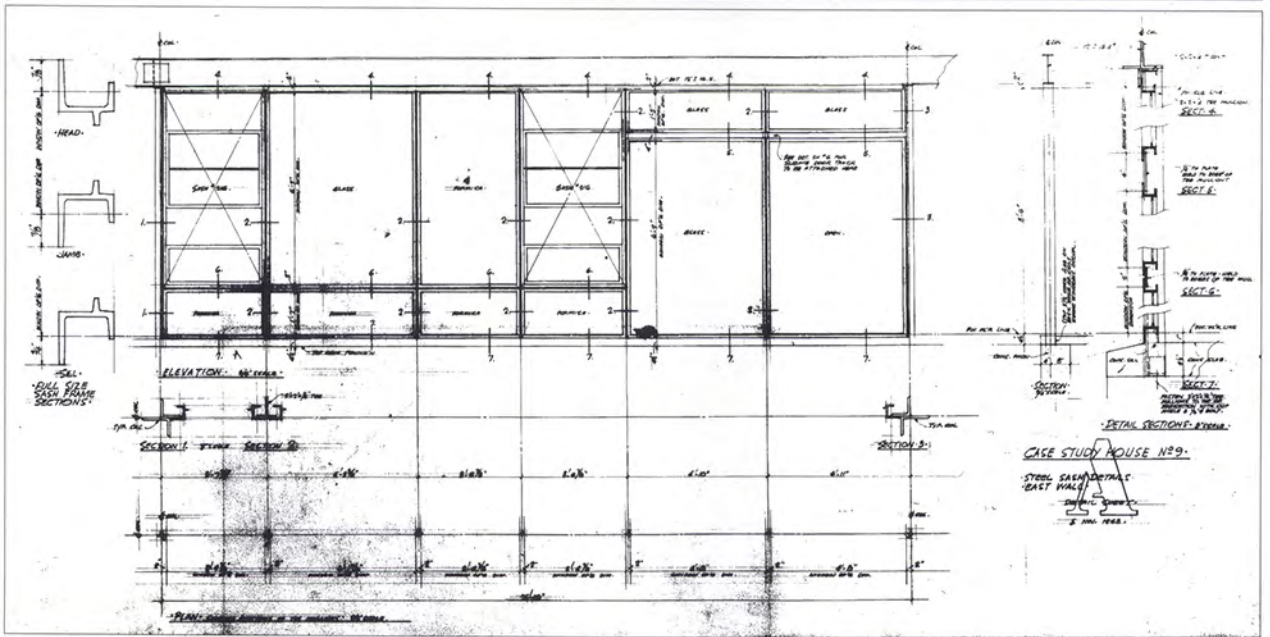
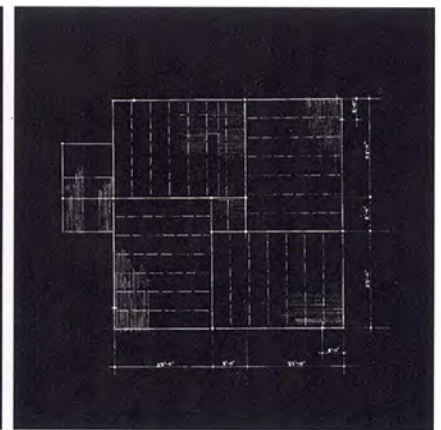
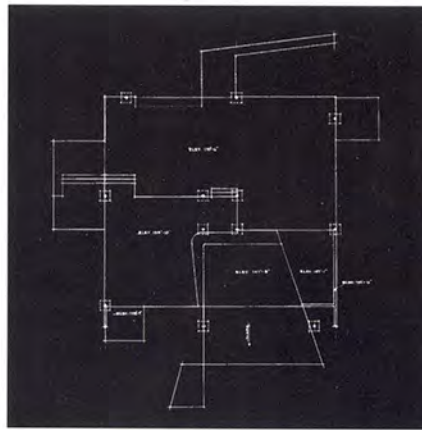
There is a deeper complexity to EERO SAARINEN's formal diversity: rather than viewing the process as a "progression" in the evolution of style, but rather as an unresolved dialectic between the modern experience and that which preceded it, Saarinen's work may be critically addressed as inherently a set of oppositions. Those conflicting features which made his work critically difficult in the 1960s would now suggest that only a multivalent theory which accommodates such apparently simultaneous formal contradictions may offer the prospect for an analysis of the discourse of our present history. Eero Saarinen, in other words, represents the prospect of a Modernism with a heterodox design approach, rather than an orthodox one.

Eero Saarinen is not known as having been a "house designer," one whose career (such as that of FRANK LLOYD WRIGHT and

► **Foundation – Framing Plans.**

Foundation slabs illustrate variety of levels and column footing locations; roof framing shows 'pin-wheel' configuration, and cantilevered corner conditions.

C. & R. E. COLLECTION.



◀ **Plan.** Plan drawing of CSH9: Garage at upper left, Guest Bedroom & Bath at upper right, Entenza's Study and Bedroom Suite at right center, Kitchen at center left, Breakfast Room at lower left, Living Room occupies center and lower right, terminating in Patio across lower bottom.

CREDIT: PETERIS RATIS.

▲ **Wall Details.** Exterior wall details at East Elevation (refer to Exterior Photograph) for structural bay; double-angle columns appear at each end of elevation, interstitial wall panels combine metal, glass and plastic-laminate solid panels.

C. & R. E. COLLECTION.



many others) began through a series of residential commissions. The prestige of **ELIEL SAARINEN**, and the monumental opportunities afforded after his emigration to America by the various educational and arts facilities at "Cranbrook" for which he designed from the mid-1920s through the midst of the global *Great Depression*, have historically characterized their collaborative practice, which formally began in 1936, as being one of public, institutional, or even monumental scope.

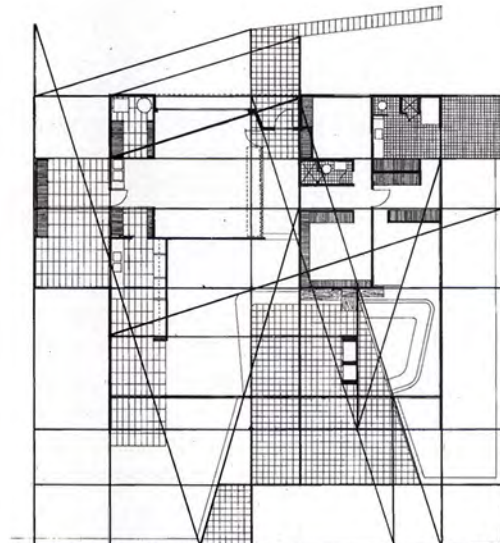
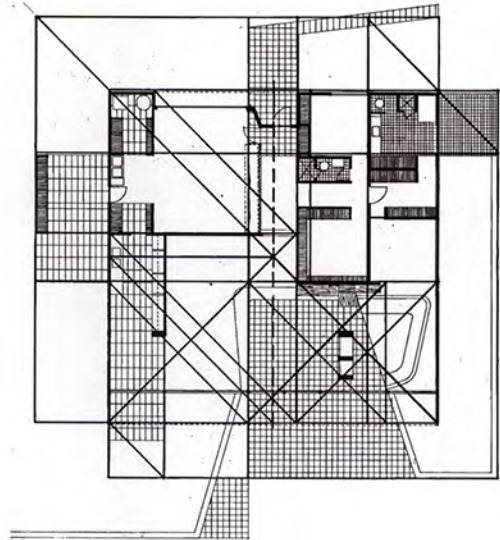
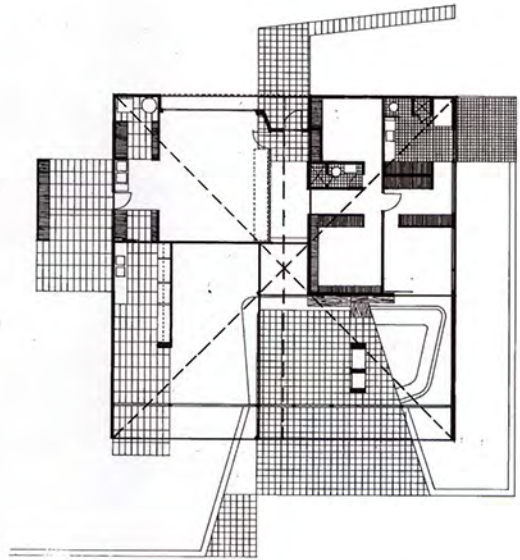
However, Eero Saarinen did a small series of residential designs in his lifetime, beginning with renovations and additions to the North Wing of the family home "*Hvitträsk*" at age 18 while he was in Birmingham High School and apprenticing with Eliel. Only seven houses were actually built to his designs, yet in a way they are benchmarks in his path as an architect. Two houses, in fact,

▲ **Exterior Photograph from Patio to Entry.** Oblique view from Exterior Patio into upper and lower Living Room, illustrating single exposed free-standing steel column.

PHOTO JULIUS SCHULMAN.

► **Pinwheel, Squares, Oblique.** Plan geometry 'Regulating Lines' illustrating composite of related geometrical systems.

CREDIT: PETERIS RATAS.





▲ **Exterior View from East.** View of CSH9 East Elevation, showing alternating pattern of ferroboard wall panels; compare with Wall Details.

PHOTO: JULIUS SCHULMAN.

▲ **Interior Photograph – Living Room & Kitchen.** Oblique interior view of upper and lower Living Room, Kitchen articulated as detached volume (left), steps ascend to Entry (upper right); twin skylights illuminate interior of upper Living Room (left center) and interior hall to Entry (upper right). Single steel column appears as rhetorical element.

PHOTO: JULIUS SCHULMAN.

designed and completed within five years of one another, while virtually unknown, quite possibly embody the essence of his heterodox methodology.

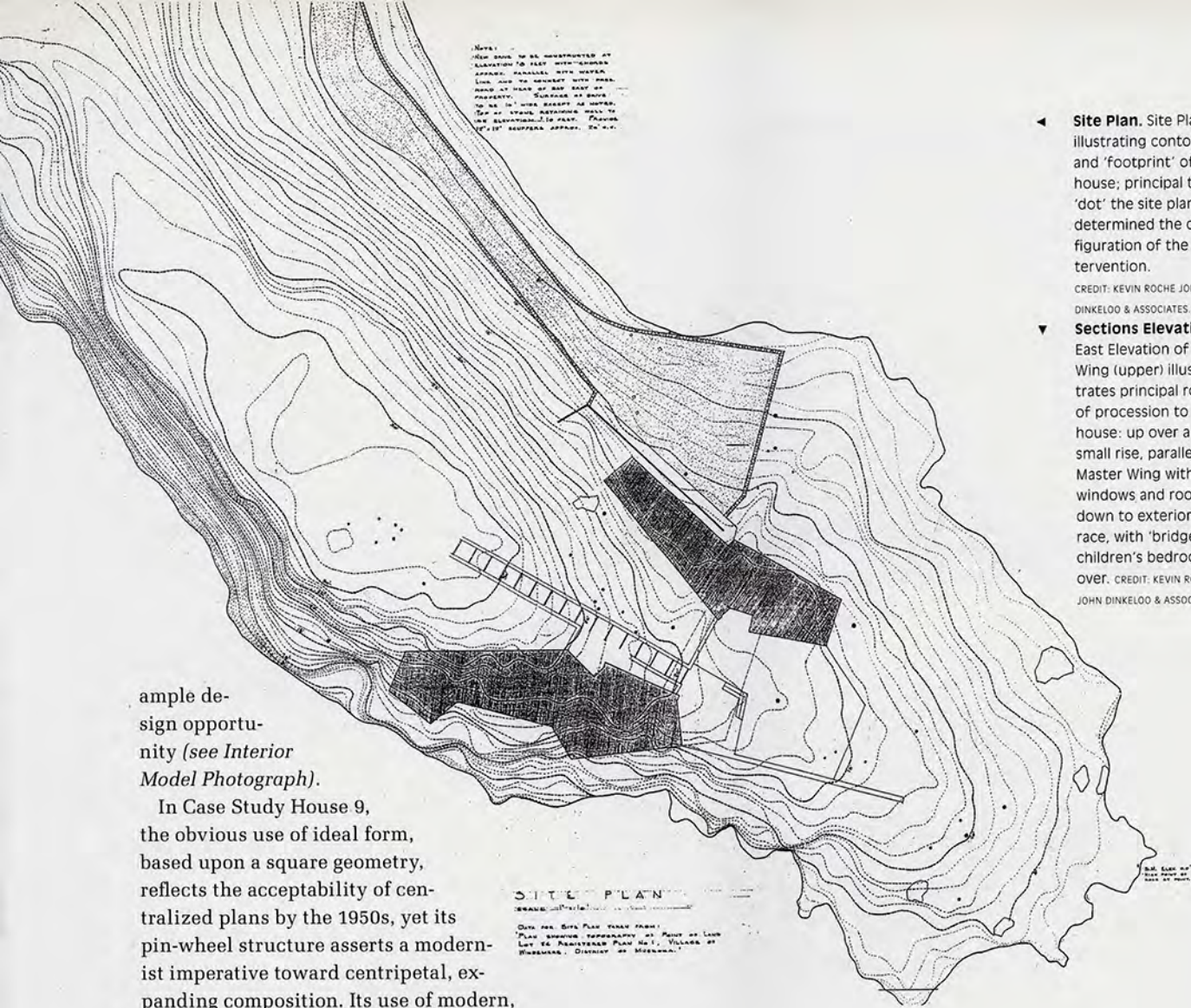
How could the same person have proposed two formal images that, at least initially, appear to be as far apart as these two projects? One is *Case Study House 9* of 1945–50, the home for JOHN ENTENZA, editor of the *California magazine Arts & Architecture*, the creator of the *Case Study program*, perhaps the most famous opportunity to bring modern design to the public, and particularly to the popular culture of Southern California. It was designed simultaneously with *Case Study House 8*, popularly known as the *Eames House*, the home and studio of CHARLES AND RAY EAMES. The other is a vacation house of 1950–52 in Canada for

J. IRWIN MILLER, a multi-project patron of Saarinen's. While the visual, material and formal differences seem acute, the underpinnings and logic which makes them so different is also that which makes them so akin. On one hand, a seemingly abstract, idealized and technologically resonant square form with a pristine purism, and on the other, a grounded, topologically if not topophilialy-derived composition, whose rustic evocativeness suggests a romantic embodiment of natural, not to say, 'organic' form at one with the land. Both houses, in fact, are driven by their sites, which in turn are both organized to capture a view, one to the Pacific Ocean, the other to Lake Rosseau, Ontario.

The original design for the Case Study pair, Houses 8 & 9, is clearly ascribed to both Charles Eames and Eero Saarinen. Yet in what was to become known as "*The Eames House*," Case Study House 8's original design has been compared with a truss-form bridge house attached to a hillside, designed in 1934 by MIES VAN DER ROHE, and exhibited in 1947 at an installation at the *Museum of Modern Art*, which Eames is known to have seen. Moreover, the first version also recalls Saarinen's 1941 project for SAMUEL BELL, which is also a cantilevered truss form, and "(...) the original Eames design may have been abandoned because the designs were too similar." (refer to Site Model Photograph) It was at this point that the historical attribution shifts, with CSH8 being the result of collaboration between Charles Eames and his wife, Ray, while CSH9 remained clearly ascribed to Eames and Eero Saarinen, yet historically eclipsed as a seemingly minor work.

In many ways, however, the *Entenza House/CSH9* deserves renewed critical consideration. In terms of the Eames-Saarinen collaboration, it is probably worth noting their very likely coequal, collaborative roles. CSH9 is intriguing for its uses of a variety of modern principles. One clear aspect is its manifestation as a "*transformable plan*," and in terms of modernist space, it exhibits a collage quality in the way walls define and imply spatial volume, and how volumes interact with a variety of floor plane surface materials, in addition to the modernist fascination with inside-outside relationships, for which the California climate provided

Notes:
 1. NEW BRIDGE TO BE CONSTRUCTED AT
 LOCATION TO BE DETERMINED BY
 ENGINEER TO BEYOND EXISTING
 BRIDGE. PARALLEL WITH WATER
 LINE AND TO INTERSECT WITH MAIN
 ROAD AT POINT OF MAXIMUM CLEAR-
 ANCE. SURFACE OF BRIDGE
 TO BE 10' WIDE EXCEPT AS NOTED.
 2. TOP OF EXISTING BRIDGE SHALL BE
 THE ELEVATION 110.00'. FINISH
 OF 10' BRIDGE APPROX. 110.00'.



ample de-
 sign opportu-
 nity (see Interior
 Model Photograph).

In Case Study House 9,
 the obvious use of ideal form,
 based upon a square geometry,
 reflects the acceptability of cen-
 tralized plans by the 1950s, yet its
 pin-wheel structure asserts a modern-
 ist imperative toward centripetal, ex-
 panding composition. Its use of modern,
 industrial products whose simple finishes
 became the material core of its decorative
 program, also reflects the degree to which
 such "anonymous" elements could actually
 generate particularized, contextual respons-
 es to edge conditions of the site.

The design comprises a 54-foot (16.5-me-
 ters) square volume, framed by 31-foot
 (9.5-meters) by 23-foot (7-meters) structural
 bays, which pinwheel around a central
 8-foot (2.44-meter) square bay (see
 Foundation - Framing Plan). This grid is
 framed by structural columns formed by
 a composite of two steel angles welded
 back-to-back into a 4-inch (10-centimeter)
 square shape, which in turn carry the prin-
 cipal beams, 4-inch (10-centimeter) wide by
 12-inches (30.5-centimeters) in depth. The
 twelve angle-columns are rotated, or "pin-
 wheeled", about their axis around the perim-
 eter, and around the central square bay, as
 a means of reconciling infill wall conditions,
 with the long axis of the larger angle being

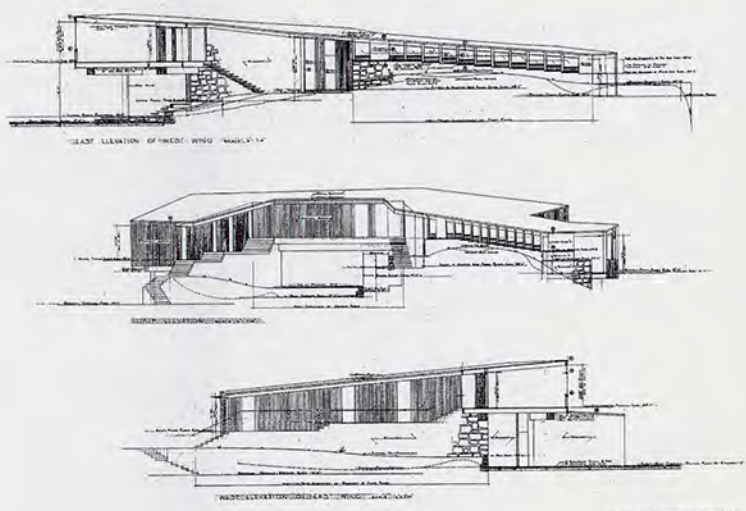
SITE PLAN
 DRAWN BY JOHN DINKELDOO
 DATE: MAY 1954
 PLAN SHOWING TOPOGRAPHY AS FOUND AT LAST
 SURVEY TO REGISTERED PLAN No. 1, VILLAGE OF
 HILLSBORO, DISTRICT OF MASSACHUSETTS.

◀ **Site Plan.** Site Plan illustrating contours and 'footprint' of house; principal trees 'dot' the site plan and determined the configuration of the intervention.

CREDIT: KEVIN ROCHE JOHN DINKELDOO & ASSOCIATES.

▼ **Sections Elevations.** East Elevation of West Wing (upper) illustrates principal route of procession to house: up over a small rise, parallel to Master Wing with low windows and roofline, down to exterior terrace, with 'bridge' of children's bedrooms over.

CREDIT: KEVIN ROCHE JOHN DINKELDOO & ASSOCIATES.



ELEVATIONS 2



▲ **Model Photo** from Northeast, illustrating concept of building 'embracing' outcropping, forming 'U' shape as intermediate entry space, with 'prow' projecting to view. CREDIT: KEVIN ROCHE
JOHN DINKELOO & ASSOCIATES

in line with the axis of the wall panels (*see Wall Details*).

The central cluster of four columns provides internal cross-bracing and continuity between the four pinwheel bays, thereby distributing the loads to the perimeter, reducing overall loads within the structure and permitting a relatively thin roof/ceiling plane. The pinwheel yields the shortest common span on the square (*see Framing Photograph*). The lone column of the central square bay, which stands at the landing of the middle level, may best be understood as being rhetorical and assertive, marking almost as a didactic declaration, the latent image of the structural frame (*see Plan*).

This basic grid outlines the blocks of interior spaces; the underlying pinwheel geometry results in a dynamic juxtaposition of these program areas, activating the interior volume. Complementing this is a gradual change in floor elevation over a total drop from the North (entry) side to the South (terrace) side of 2-feet, 10-inches (.86-meter). These changes in floor elevation are played off against the continuous roof plane, resulting in a further volumetric articulation of program, from an 8-foot, 6-inch (2.6-meter) ceiling at the garage and bedrooms, 9-foot 10-inches (3-meters) at the kitchen and dining, and 10-foot 10-inches (3.3-meters) at the lower living room and terrace (*see Sections*).

This spatial sequence from the entry, descending into the main body of the house at the point of the internal square bay, to a kind of platform, and thence down two ad-

ditional elongated step-seats leads to the living room, whose boundaries are somewhat ambiguous, culminating in a sliding glass opening onto the covered exterior terrace and the vista across the meadow to the ocean (*see Exterior Photograph from Patio to Entry*). Spatially, while most interior room dimensions are on the modest order of 10 feet (3 meters) in size, the width of the living room is nearly 36 feet (11 meters). Its East end is anchored by built-in seating, which "cups" the cross-axis, and forms a generous niche embracing the colorful free-standing fireplace (*see Interior Photograph from Fireplace - Living Room to Kitchen*). The West end of the room is a small dining extension of the kitchen, articulated both by the floor material and a set of double bi-fold doors, allowing for three spatial possibilities: completely open and folded against the kitchen wall; extended across the opening to the living room on the N-S axis, thereby combining it with the kitchen; or extended across the kitchen front, thereby defining the room as part of the living room. The doors pivot through a full 90° turn, function without a floor track, and may also be extended in a partially open position, adding two more spatial options, and multiplying the possible transformations of the plan (*see Interior Photograph: Kitchen to Living Room*).

In its final form, the rigor of the structural geometry is elaborated into a proportional strategy (*see Plan Overlays: Pinwheel, Squares, Obliques*). Two features are discernible: both a system of interlocking and overlapping squares are a fundamental referent in the fabrication of the plan geometry, and the oblique lines which are clearly part of the final design are not mere whimsy. In fact, a close analysis of the obliques imposed upon the plan reveals their inherent linkage to the square geometrical underpinnings. Both systems interact together in generating the placement of spatial divisions and begin to describe the position

of other objects, such as the ultimate location of the freestanding fireplace.

Modern, prefabricated, industrial grade materials are the palette for interior and exterior surfaces. A primary finish was 'ferroboard', used as roof decking, tack-welded to the structural joists, and as both an interior and exterior wall finish. The interior partitions alternate between gypsum board sheets and ferroboard finished in plaster, the roof fascia is ferroboard with a plaster finish, and all exterior walls are finished in vertical panels of 6-inch (15.2-centimeter) ferroboard; in the case of the East elevation (the master bedroom suite), the panels are painted alternating stripes of white and gray (see *Exterior View from East*). Color for the Entenza house was largely restricted to a palette of grays, black and white, or warm browns and tans, with a occasional accent of primary red and blue. Solid panels in the window systems were color "Formica" plastic laminate, an avant-garde material. Other details include the "bare-bones" use of exposed shelving, a series of prefabricated modular metal closets in the bedroom hallway, exposed plumbing fixtures, and a

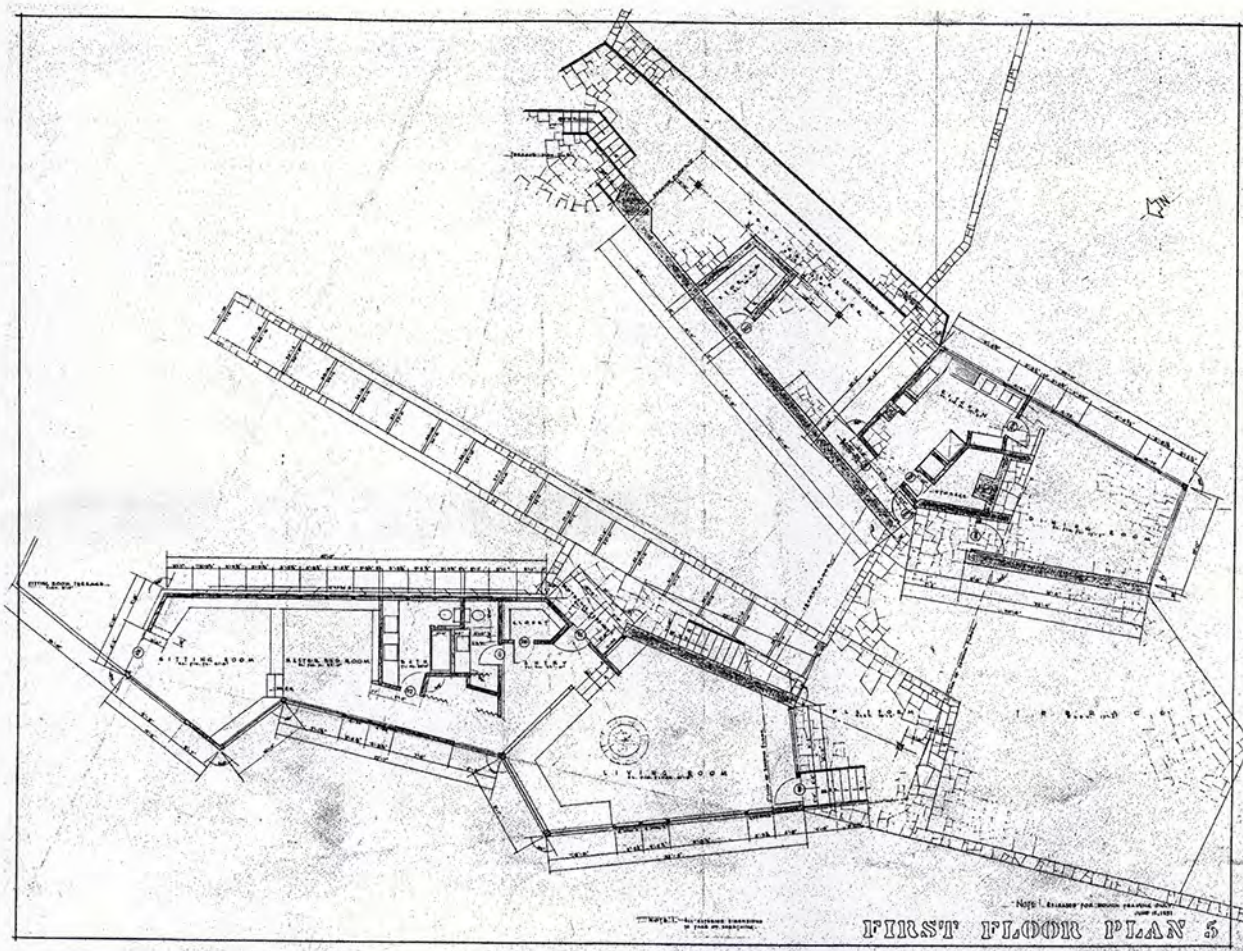
corrugated wire-glass wall between the entry hall and the garage, behind which were plants in the garage receiving light from the slot skylight above, and casting their shadows through the glass as a kind of naturalistic texture.

What is curious is that the clear and rigorous design of the steel structure, was characterized by the consulting Engineer, EDGARDO CONTINI, "... to be anti-structural, to be as anonymous as possible." This is also true in the central square bay, yet two columns are revealed: the corner of the study wall on the living room side is a negative vertical slot resulting from the concave outer legs of two structural angles, but also resulting in a clean articulation of the living room wall plane as being separate from the entry hall plane, and the lone column (see *Interior Photograph - Living Room & Kitchen*) Eclipsed in the recent history of architecture by its companion, the near-iconic Eames House/CSH8, the Entenza House/CSH9 remains an enigma, while it

▼ **Patio Dining Photograph.** Exterior view of Dining Patio under 'bridge' salyport of children's bedroom above, looking toward entrance path; this nexus is the principal social activity for the family.

CREDIT: BALTHAZAR KORAB.





▲ **Plan.** Plan of main level: Master Bedroom suite at lower left, main public rooms in lower center, service wing and Kitchen at upper right, with exterior dining patio at center. Stair ascends to Children's Bedrooms at second floor 'bridge'.
CREDIT: KEVIN ROCHE JOHN
DINKELGO & ASSOCIATES.

evokes an awareness of the possibilities for industrial production and principles of abstract composition, to take their muteness and provide a responsive container of human activity which asserts, again, the design potential for a modernist sensibility.

The visual character of the J. Irwin Miller Residence in Canada, is a studied aformalism, an irregular geometry which literally accommodates the vagaries of terrain. The

lakeside site, a peninsula on a rocky point, would have inherently inspired Saarinen, for in fact nothing could more suggest the appearance of Finland than this landscape of rocks, trees and water. A survey plotted all trees four inches or larger in trunk diameter, and the approximately 3000 square feet of space needs were essentially inserted into the residual space (*see Site Plan*).

Its basic "U" form wraps around the high point of the peninsula, at the crest but not literally on top of it. This design decision brings the visitor into gradual contact with the house, because as one approaches it the sense of arrival is first to the crest of the rise, before one descends to a lower level where a modest entry connects off a breezeway framing the panoramic view beyond. The first sense of the house itself is the copper roof which nearly touches the ground, separated by a narrow band of windows. This hovering roof is a unifying element, for its continuous slope contrasts with the variety of levels contained within the interior. One realizes

then that they have entered a modest garden court, a sheltered spot with flowers whose manicured scale contrasts with the natural landscape within which it is set (see *Sections – Elevations*).

The actual core of the house is a negative void, the breezeway formed by Saarinen's clever move of retaining the spirit of an original idea of functional area "clusters", while bringing the parts together through a separation of functions on the lower level and roofing over the covered area with a "bridge" of children's rooms and related spaces on the second floor (see *Model Photo*). This space, nestled against the rock, is the true social core because to get anywhere else you pass by or go through it. Its built-in outdoor table serves for most meals and acts as a place to gather (see *Patio Dining Photograph*).

Spreading out from the breezeway is a series of flagstone patio terraces (several added since Saarinen's original) which both look over the lake and benefit from the cooling effect of winds over the water. The interiors are angled to capture a variety of views over the lakeside site; a short wing containing a service yard, kitchen and interior eating area benefit from morning light, while the flanking wing with the main living room and master suite enjoy western light and sunset (see *Exterior Terrace Photograph*). Since the prow of the "U" form faces south, the children's rooms and all communal spaces receive continuous sunlight. As the house levels rise or fall with site contours, a sense of separation exists concurrent with their being sheltered under the continuous ceiling plane; this provides the simultaneous sense of two scales of occupation (see *Plan*). One unique architectural detail: to achieve a constant ceiling depth while structural spans varied widely because of the somewhat "biomorphic" irregular plan, Saarinen optimized a standard beam depth

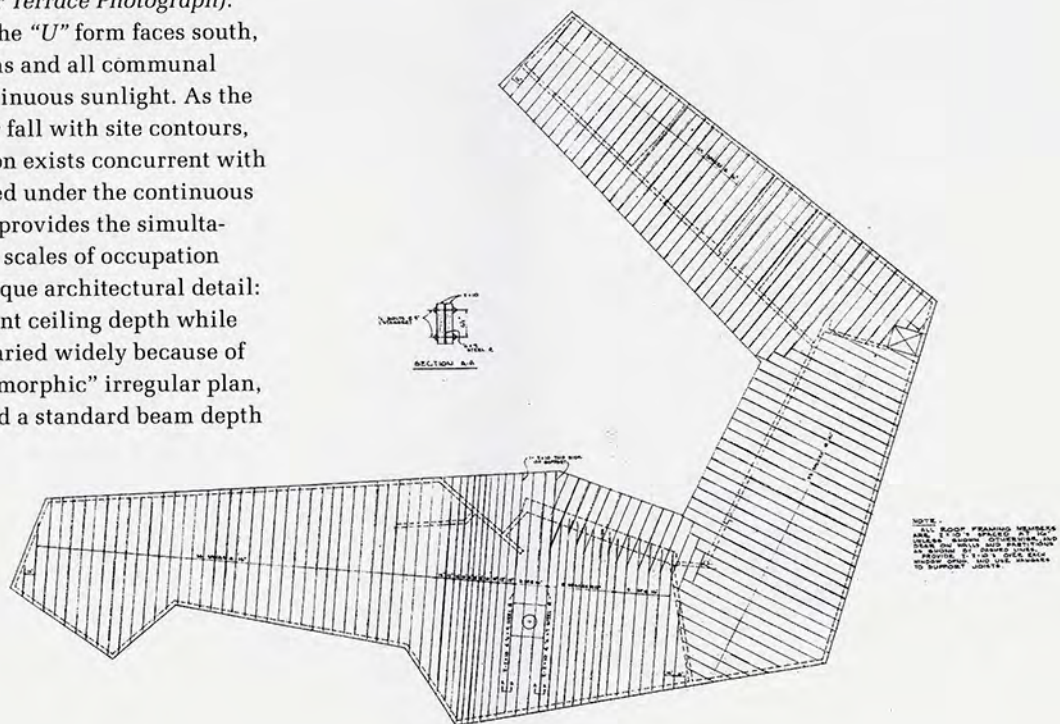


▲ **Exterior Terrace Photograph.** Oblique view of principal exterior terraces overlooking Lake Rosseau.

CREDIT: BALTHAZAR KORAB

▼ **Framing Plan.** Principal roof framing, illustrating the systematic clustering of varied spacing between roof joists according to distance of span, resulting in a constant beam depth, consistent interior exposed ceiling, and modulated rhythm.

CREDIT: KEVIN ROCHE JOHN DINKELOO & ASSOCIATES





by simply varying the spacing between roof joists. Consistently 2 x 12s, the spacings vary at 16" (40 cm), 12" (30.5 cm), 10" (25 cm) and 8" (20 cm) on center (see *Framing Plan*). This also renders a rhythmic modulated pattern in the ceiling (see *Living Room Interior*). However, such a move rubs against the grain of true modern orthodoxy (which would have opted for a more modular struc-

- ▲ **Living Room Interior.** Interior view of main Living Room, looking Northwest to Master suite, up stairs to rear of view.

CREDIT: BALHAZAR KORAB.

- ▶ **Building Exterior.** View up to terraces and Service Wing, Children's Bedrooms at Second Floor; elevation faces South-east.

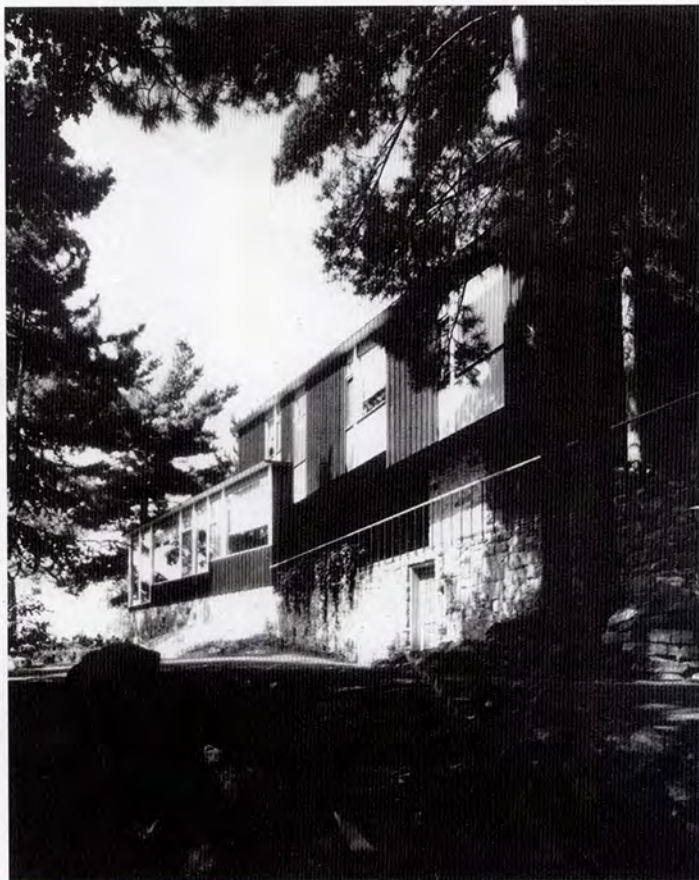
CREDIT: BALHAZAR KORAB.

ture) and suggests that the Canadian house represents a different esthetic agenda.

The "organic" forms of the house do not contradict the uses of technology in its widest sense. Overhangs and cantilevers, lightweight structure, repetitive modules, large areas of glass and continuous strips of windows mark this as a modern building (see *Building Exterior*). The "natural" materials, such as fieldstone and vertical wood siding, do not stand in opposition to a multi-faceted expression derived from the logic of contemporary construction, and the "rustic" appearance is achieved with abstract precision. The hand-hewn craft and industrial product simultaneously coexist. The ornamental program derives from the indigenous materials used in a straight-forward manner, in combination as a limited and restrained palette. For here is a cabin whose surfaces are both a vernacular of board and batten vertical wood siding, as well as a kind of Mondrian-like Modernist composition of planes and lines, an assemblage of pieces and a singular unity. Saarinen was able to humanize the message of modernism, whose universal expression is transformed into a contextual regionalism.

So there it is, that which has perplexed critics about Eero Saarinen: a seemingly inconsistent approach if measured in what might be now seen as the simplism within the critique of the past decades, but perhaps rather being an elusive complexity cited by critic Cranston Jones as "*Unity within Diversity*." As HENRY-RUSSELL HITCHCOCK noted in a 1962 memorial to Saarinen, "*Certainly it is true, however, that the extreme insistence on a sort of modernism in architecture that should be in its every aspect as different as possible from earlier architecture has diminished. Architects today are less afraid of continuity and partial identity in theory, in materials, and in emotional content with buildings of the past than in the twenties. But it chiefly creates confusion, I believe, to call these tendencies 'post-modern', 'anti-modern', or 'neo-traditional', however badly some generic name for them has evidently come to be needed.*"

PETER C. PAPADEMETRIOU



This article derives from a portion of a lecture presented November 21, 2002 under the auspices of the Alvar Aalto Academy in The Ateneum/National Gallery of Art, Helsinki.