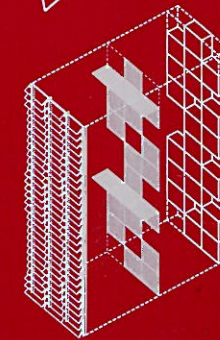
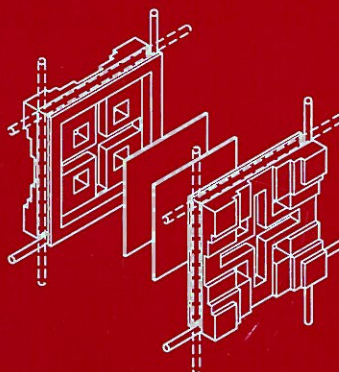
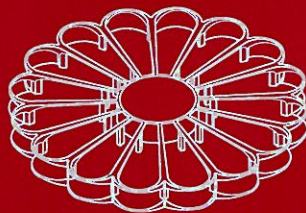
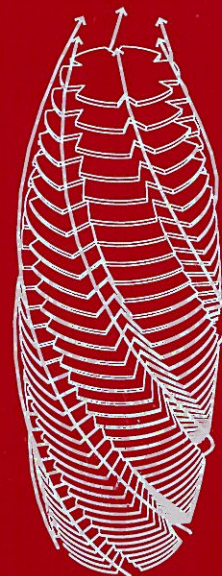
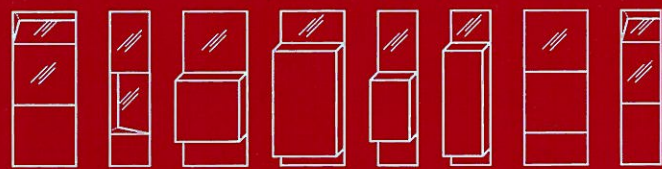


THE FUNCTION OF ORNAMENT

EDITED BY FARSHID MOUSSAVI
AND MICHAEL KUBO



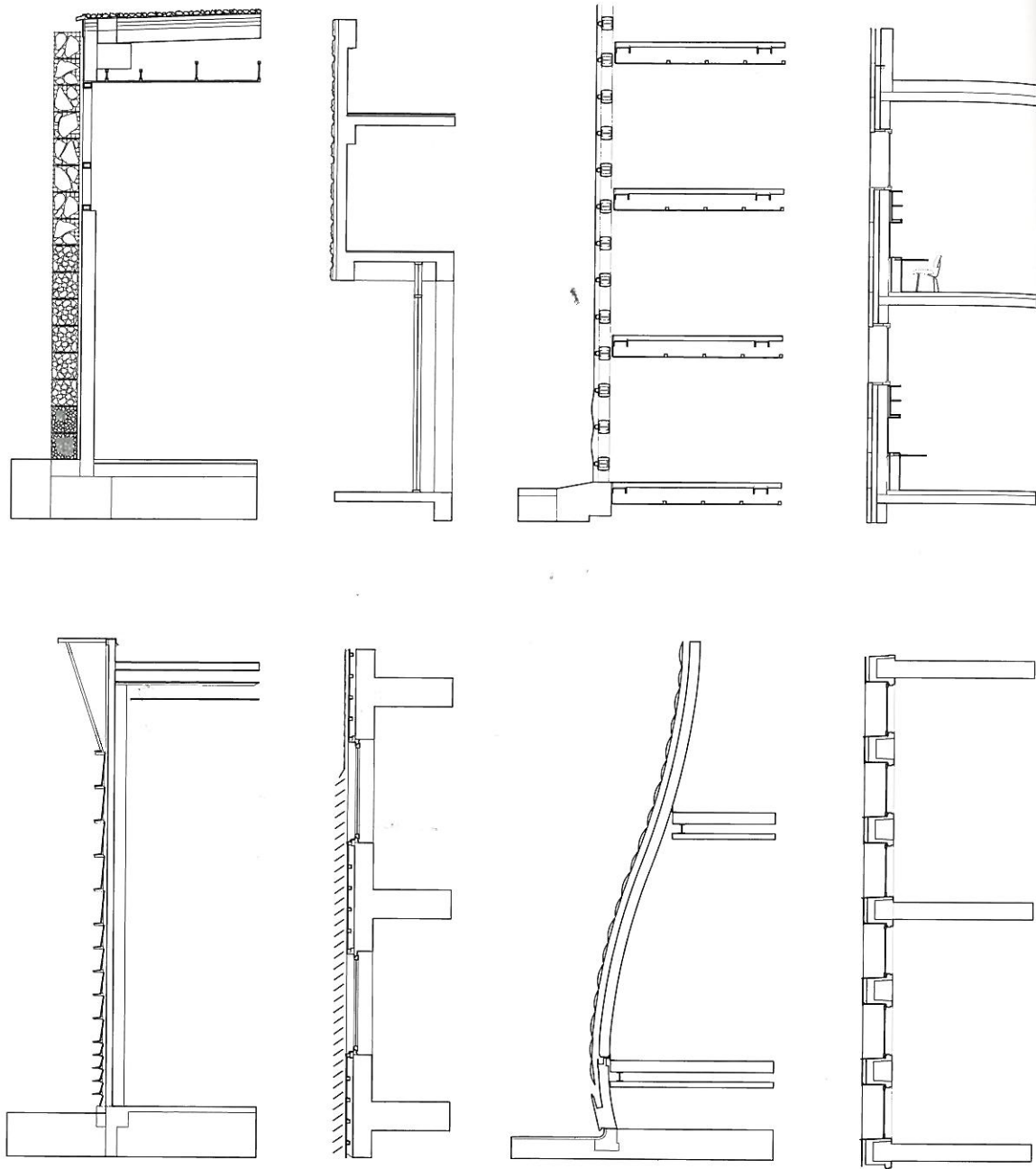
THE FUNCTION OF ORNAMENT

Edited by Farshid Moussavi and Michael Kubo

With drawings by J. Seth Hoffman, Joshua Dannenberg,
Raha Talebi and Fred Holt



Harvard University
Graduate School of Design



THE FUNCTION OF ORNAMENT

Farshid Moussavi

Architecture needs mechanisms that allow it to become connected to culture. It achieves this by continually capturing the forces that shape society as material to work with. Architecture's materiality is therefore a composite one, made up of visible as well as invisible forces. Progress in architecture occurs through new concepts by which it becomes connected with this material, and it manifests itself in new aesthetic compositions and affects. It is these new affects that allow us to constantly engage with the city in new ways.

The aesthetic composition of buildings has been explored in various ways in history. In the twentieth century, Modernism used transparency to achieve a "direct" representation of architectural elements of space, structure and program. But recent history contributed to making the use of literal transparency obsolete, prompting a discussion on the expression of buildings. Postmodernism used décor, and Deconstructivism used the geometry of collage, as styles in place of transparency. But style cannot easily adjust to changes in culture.

Currently a number of conditions require us to reevaluate these previous tools for constructing building expressions. These include a growing number of building types that are "blank." Department stores, shopping malls, cineplexes, libraries, and museums do not require any relationship between inside and outside.

Contemporary technology and the need for sealed and controlled environments necessitate bigger service voids, plant rooms, storage spaces, and server rooms, increasing the size of these buildings. In addition, the architect's role is becoming increasingly specialized in the design of the outer shell, leaving the interior to other designers. This is particularly true of speculative developments where the tenants are not known at the outset of a project. New environmental regulations designed to achieve greater energy efficiency further contribute to this new

condition. Glass alone is unable to provide effective levels of environmental control, and needs to be enhanced through layering or by providing areas of opacity that increase its thermal performance. This alters the use of glass in buildings in such a way that pure transparency cannot produce the building expression.

In all these cases, architects must in effect give the building an expression that is independent from the interior yet contributes to the urban setting. The role of architects need no longer involve the entire fabric of buildings. It can now address in lesser or greater depth the synergy between the interior and the exterior, from the surface of the envelope through to the entire fabric.

This radically alters the expression of buildings. Liberated from representing the interior, the opportunity is to find tools through which architecture can engage with the urban setting. It is clear that in a multicultural and increasingly cosmopolitan society, symbolic communication is harder to enact as it is difficult to gain a consensus on symbols or icons. Representational tools are less coded and unable to produce convergence with culture.

Ornament as Contingent: Décor and Communication

Communication can be framed historically. The relationship between the interior and the exterior of buildings range from the *poché* space of the Romans to the theatrical effects of the Baroque, from Gottfried Semper's theory of ornament to Adolf Loos's opposition to it. For Semper, the functional and structural requirements of a building were subordinate to the semiotic and artistic goals of ornament. For Loos, on the other hand, ornamentation was a crime. In his view, ornament was used in traditional societies as a means of differentiation; modern society needed not to emphasize individuality, but on the contrary, to suppress it. Hence for Loos, ornamentation had lost its social function and had become unnecessary.¹

Modernism brought to architecture an obsession with transparency. Transparency was meant to make architecture more "sincere," in sharp contrast with the bourgeois practice of decoration. Architecture was no longer supposed to disguise functions, but to make them visible and to render the city and its buildings immediately readable. Such was the paradigm that dominated architecture and urban design well into the 1960's.

A critique of this approach was formulated in the decade that followed. In the first instance, Robert Venturi and Denise Scott Brown denounced the Modernist paradigm as cynical and dull, and proposed to replace transparency with décor.² For them, décor helped to integrate buildings within the urban realm and give them meaning in the eyes of the public. Their proposal endorsed a radical break between buildings as function and buildings as representation, accepting as a creative factor the contradiction between space, structure and program on the one hand, and representation on the other. Venturi and Scott Brown argued that architects, intent on generating expression out of the internal orders of buildings, ignored the "ready-made" cultural expressions that would enable architecture to communicate with a wider public.

However, Postmodernism fast became obsolete. In the absence of a common language or system of understanding, the kind of communication proposed by Postmodernism could not reach the wider public. Inherited symbols remain dependent on a particular cultural moment or context and cannot survive changing conditions. If architecture is to remain convergent with culture, it needs to build mechanisms by which culture can constantly produce new images and concepts rather than recycle existing ones.

Ornament as Necessary: Affect and Sensation

Many buildings of the twentieth century continue to effectively relate to culture by creating sensations and affects.³ Similar to Sigfried Kracauer's suggestion that ornamental mass movements in a stadium "bestow form to a given matter,"⁴ these buildings produce affects that seem to grow directly from matter itself. They build expressions out of an internal order that overcome the need to "communicate" through a common language, the terms of which may no longer be available. It is paradoxically in this way that building expressions remain resilient in time.

This book documents some of these experiments carried out by architects in constructing unique affects. These affects may start with found imagery or iconography as raw cultural material. However they do not remain as pure acts of consumption, but rather are disassembled and reassembled to produce new sensations that remain open to new forms of experience. It is in this way that they

are contemporary and committed to progress. Operating through direct sensations, they bypass the need for the codification of language and are able to shift across space and time. They may produce indirect analogies, but their primary purpose is to render the invisible forces in contemporary culture visible. For example, recent experiments with data, diagrams, and other non-representational methods are effective in exploring an unmediated process to visualize technology as a cultural force.

The cases studied in this book reveal an in-built sense of order, a consistency against which we can test our experience.⁵ Against the symbolic interpretation of culture by Postmodernism, the dynamic nature of culture requires that buildings each time define their own ground and develop an internal consistency. It is precisely through these internal orders that architecture gains an ability to perform relative to culture and to build its own system of evaluation. These orders are therefore not about "pure architectural expression," removed from culture, of the kind that was dismissed by Postmodernism. They are not about being pure, but about being consistent. They do not aim at being disconnected but, rather, contaminated with culture. Louis Sullivan proposed such a need for consistency and organicity in building expressions.⁶ In Sullivan's buildings, like all the cases documented here, this organicity leads to ornament that grows from the material organization and is inseparable from it.

Ornament is the figure that emerges from the material substrate, the expression of embedded forces through processes of construction, assembly and growth. It is through ornament that material transmits affects. Ornament is therefore necessary and inseparable from the object. It is not a mask determined *a priori* to create specific meanings (as in Postmodernism), even though it does contribute to contingent or involuntary signification (a characteristic of all forms). It has no intention to decorate, and there is in it no hidden meaning. At the best of times, ornament becomes an "empty sign" capable of generating an unlimited number of resonances.

Whereas *décor* and representation promoted by Postmodernism correspond to a self-limiting movement from the possible to the real which cannot create anything new, ornament is in line with non-representational thought and the creative actualization of the virtual. Decoration is contingent and produces "communication" and resemblance. Ornament is necessary and produces affects and resonance.

Drawing Affects

The research in this book aims to show that ornaments are intrinsically tied to architectural affects. The Seagram headquarters carefully attaches I-beams to its cladding layer to build a vertical affect. The Ricola Laufen factory uses slats of different heights on its exterior cladding to build a weighted affect. The Prada Tokyo store uses a diagrid with carefully selected concave and convex glass panels to give a quilted affect to its exterior. The 30 St. Mary Axe office tower introduces a diagonal ventilation system, a diagrid, and two colors of glass to contribute a spiral affect to the form. None of these specific decisions are crucial to the operation of the building interior, but they are vital to the affects they trigger in the urban landscape. Frits, laser-cut sheets, glass tubes, pleated floor plates, perforated screens, complex tilings, and structural patterns are some examples of our contemporary ornaments.

Our initial phase of researching the cases included here revealed that they have conventionally been documented in two opposing ways. At one end of the spectrum, there are glossy architectural magazines with exquisite photographs, which display the affects created by these buildings without showing why they are produced. On the other hand, there are sophisticated magazines that document the construction of buildings in detail, but rarely with any explanation of the motives that led to the specific choice or the resulting affect. The graphic approach to this research aims to bridge this gap, discussing the construction of buildings and the production of affects as a seamless continuity, as two realms that are interconnected.

Each case is discussed over four pages on two double spreads. The first double spread is dedicated to the affect, while the second double spread is devoted to the material used to construct these affects. The "section perspective" is used to reveal the relationship between material and affect in each case.

We have ascribed examples to three main classifications:

The first classification is that of depth. It orders building components from the deepest to the thinnest: Form, Structure, Screen, and Surface. Ornament can relate to depth in a number of ways. It can work with the entire form, with the load-bearing structure, or exploit the sectional depth of the cladding. The Form category includes those buildings where the entire building organization is used

to produce the resulting expression. The Structure category includes those cases that use the load-bearing structure. The Screen category includes those cases that operate through layers inserted between the interior and exterior, maintaining some visibility of the interior. [The Surface category includes those cases that add an independent layer entirely detached from the building interior.]

The second classification is that of material, ordered from the most intrinsic to the interior content, like program, to the most extrinsic, like branding. This reveals that architecture's materiality includes visible as well as invisible forces. The manipulation of material in response to these forces structures the ornament.

The third classification is that of affect. The interplay between depth (form, structure, screen or surface) and a specific material (such as program, image, or color) produces the ornament (for example complex tilings, perforated screens, or structural patterns) which transmits unique affects in each case.

The research has revealed a number of tendencies:

Factories and retail typologies are mostly found in the Surface depth category. The IBM Training and Manufacturing Center, Usine Aplex, and Ricola Mulhouse are all factories which, due to the radical disconnection required between interior and exterior, exploit the micro-depth of their surfaces to produce unique affects.

Towers are mostly found in the Form and Structure depth categories. In the same way that Sullivan suggested that towers need intrinsic expressions⁷, Marina City is vertically fluted; the Capsule Hotel is aggregated; 30 St. Mary Axe is spiraling; Johnson Wax is banded; the Seagram headquarters is vertically decorated.

Same material can produce different affects depending on the ornament it creates. The Banque Lambert headquarters and the Beinecke Library, both of them designed by Gordon Bunshaft of SOM in the same period, have a similar "lattice" construction system on the exterior. The Banque Lambert prioritizes structure over enclosure, setting back the glass and exposing the cast structural members to produce a directional tapered grid as ornament which emphasizes a latticed affect. Beinecke Library clads the structural members in granite sheathing and marble panels to construct a translucent box as ornament which contributes to a textured affect. Two different affects are transmitted from two different ornaments that are generated from two different processes.

New systems of production have opened up possibilities for differentiation and customization. These are explored through investigations of patterns in the Structure, Screen and Surface chapters. These create different affects in each case. The Aichi Pavilion is modular and is based on the geometry of the tile. The John Lewis department store is based on the seamlessness of a pattern at the edges of a simple square patch (very much like Escher patterns). Federation Square is based on a regular 2D geometry that is confused and masked by a series of extrapolations in 3D. The Serpentine Pavilion is based on a regular algorithm that produces an irregular pattern that is then cropped.

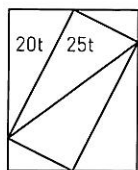
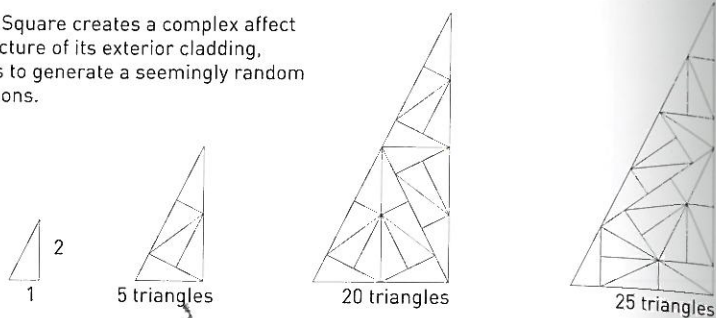
Differentiation is a contemporary affect repeatedly explored in many cases through different material. These materials include tiling, color, layering, pixelating an image pattern...

Examples in the four chapters of the book show a progression from historical to contemporary examples: 4 out of 6 cases in Form are pre-1990 (66%); 6 out of 9 in Structure (66%); 4 out of 16 in Screen (25%), and 3 out of 11 in Surface (27%). This reveals the specific emphasis in each period — on formal and structural expressions in Modernism, and on Screens (especially) and surfaces in contemporary examples. The screen category is larger than the others, perhaps because it lies closest to contemporary conditions, where architects are responsible for a smaller depth of the building. The Screen might be the most contemporary category through which building expressions currently emerge.

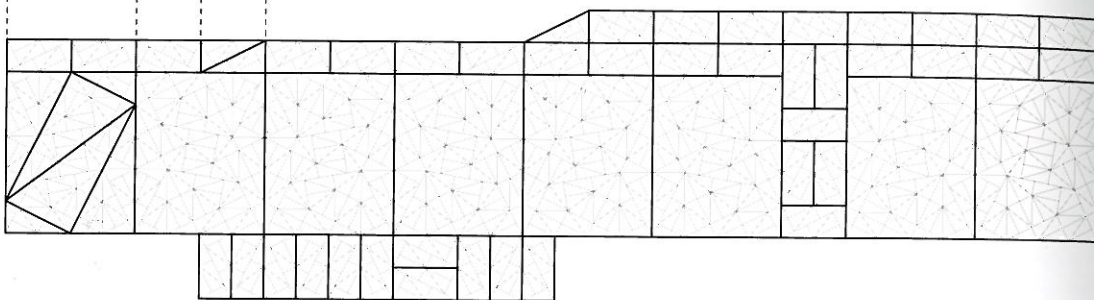
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- 1 See Gottfried Semper, "The Four Elements of Architecture: A Contribution to the Comparative Study of Architecture," in *The Four Elements of Architecture and Other Writings* [Cambridge: Cambridge University Press, 1989], and Adolf Loos, "Ornament and Crime," in *Ornament and Crime: Selected Essays* [California: Ariadne Press, 1997].
 - 2 See Robert Venturi, Denise Scott Brown, and Steven Izenour, *Learning from Las Vegas: The Forgotten Symbolism of Architectural Form* [Cambridge: MIT Press, 1972].
 - 3 For a definition of art as the creation of sensations and affects, see Gilles Deleuze and Félix Guattari, *What is Philosophy?* (New York: Columbia University Press, 1994), esp. Chapter 7, "Percept, Affect, and Concept," pp. 163-200; Gilles Deleuze, *Francis Bacon: The Logic of Sensation*, trans. Daniel W. Smith [Minneapolis: University of Minnesota Press, 2003], esp. Chapter 13, "Analogy," pp. 91-99.
 - 4 Sigfried Kracauer, "The Mass Ornament," in Kracauer, *The Mass Ornament: Weimar Essays*, trans. Thomas Y. Levin [Cambridge: Harvard University Press, 1995], p. 79. In this essay, Kracauer claims that "the position that an epoch occupies in the historical process can be determined more strikingly from an analysis of its inconspicuous surface-level expressions than from that epoch's judgments about itself."
 - 5 See E. H. Gombrich, *The Sense of Order: A Study in the Psychology of Decorative Art* (New York: Phaidon, 1984).
 - 6 See Louis H. Sullivan, "Ornament in Architecture," in *Kindergarten Chats and Other Writings* (New York: George Wittenborn & Co., 1947).
 - 7 Louis H. Sullivan, "The Tall Building Artistically Considered," in *Kindergarten Chats and Other Writings* (New York: George Wittenborn & Co., 1947).

The envelope of the Atrium at Federation Square creates a complex affect through a patterning provided by the structure of its exterior cladding, using a regular pattern in two dimensions to generate a seemingly random composition of elements in three dimensions.

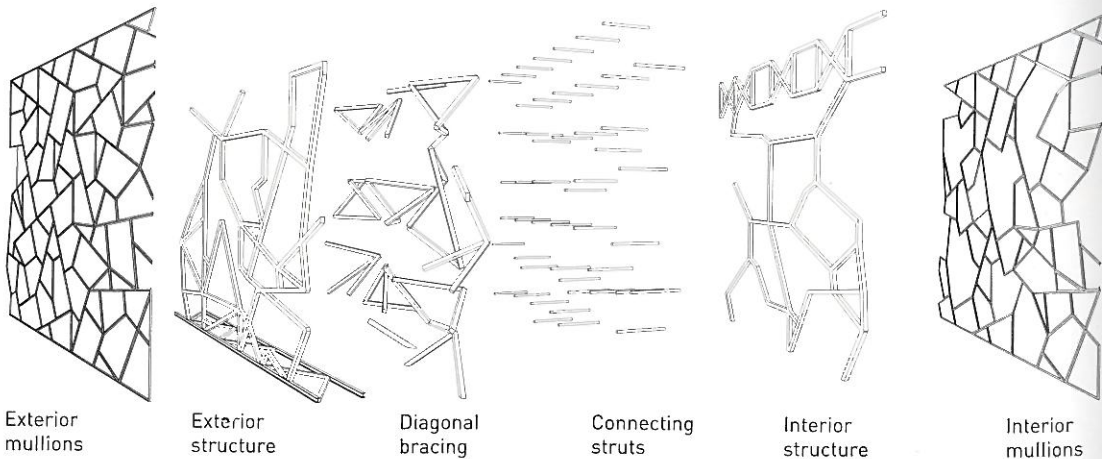
1 A triangle of proportions 2:1 is tiled in a regular pattern to generate a simple pinwheel geometry that can be nested in two dimensions.



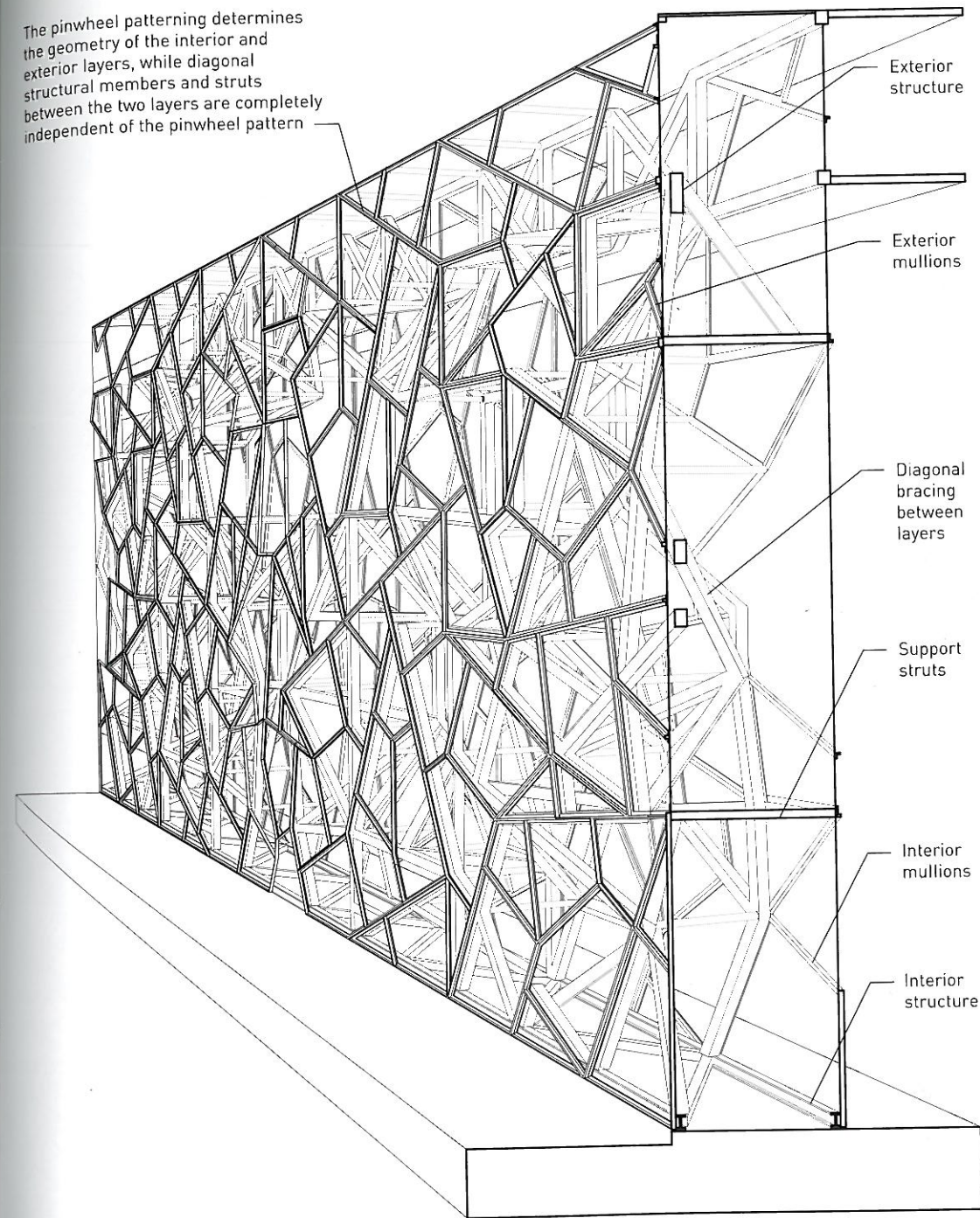
2 The pattern is tiled in regular rectangular patches that fill the rectilinear perimeter of the envelope. The local variation of the triangles within each patch camouflages the regularity of the overall tiling.



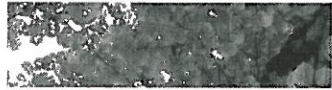
3 Extruding the pattern into two layers, assigning the members of the pattern randomly to either the inner or the outer layer, and adding independent diagonal bracing members enhances the appearance of complexity over the regularity of the pattern.



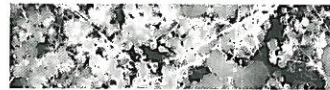
The pinwheel patterning determines the geometry of the interior and exterior layers, while diagonal structural members and struts between the two layers are completely independent of the pinwheel pattern



The embossed copper envelope of the De Young Museum uses an image of vegetation from the context as "material" to create a differentiated affect, translating it into a pixelated matrix which is then built as a three-dimensional series of embossings and perforations. The resulting pattern of gradients does not depend on the legibility of the image that generated it, but creates a differentiated series of holes that resonate with the surrounding landscape.



1 Black and white: images of the vegetation on the site

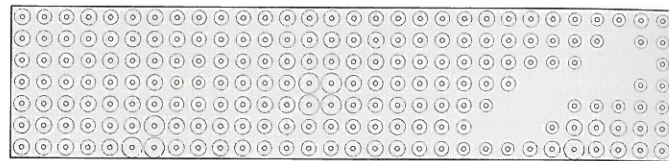


2 Invert: blacks become white and whites become blacks

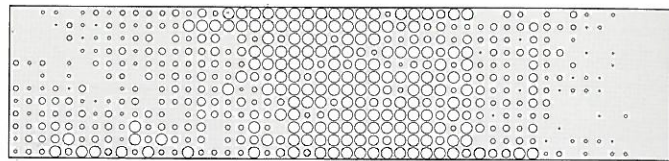


3 Pixelate: tone is converted into a dot matrix

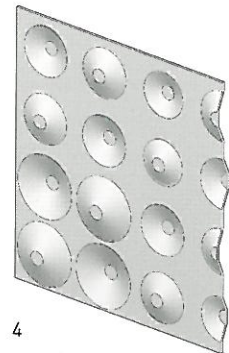
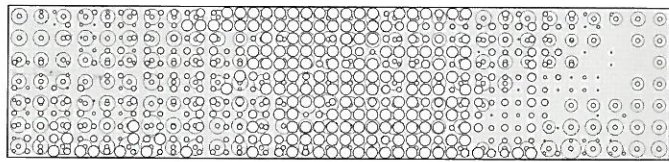
4 The pixel pattern is translated into an alternating grid of protruding and depressed embossings, stamped to four depths — greater depths corresponding to darker areas in the image. Each copper panel contains a seven by thirty field of embossings.



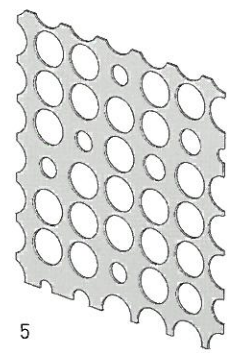
5 Six different diameters of perforation are projected onto the panels in response to ventilation and lighting requirements. These follow a twelve by fifty grid on each panel.



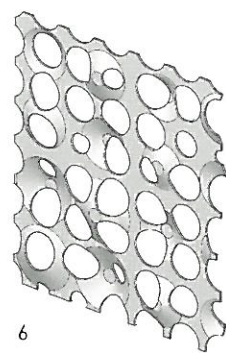
6 The two patterns are superimposed. Due to the misalignment of the two patterns, the perforations do not cancel out the embossings.



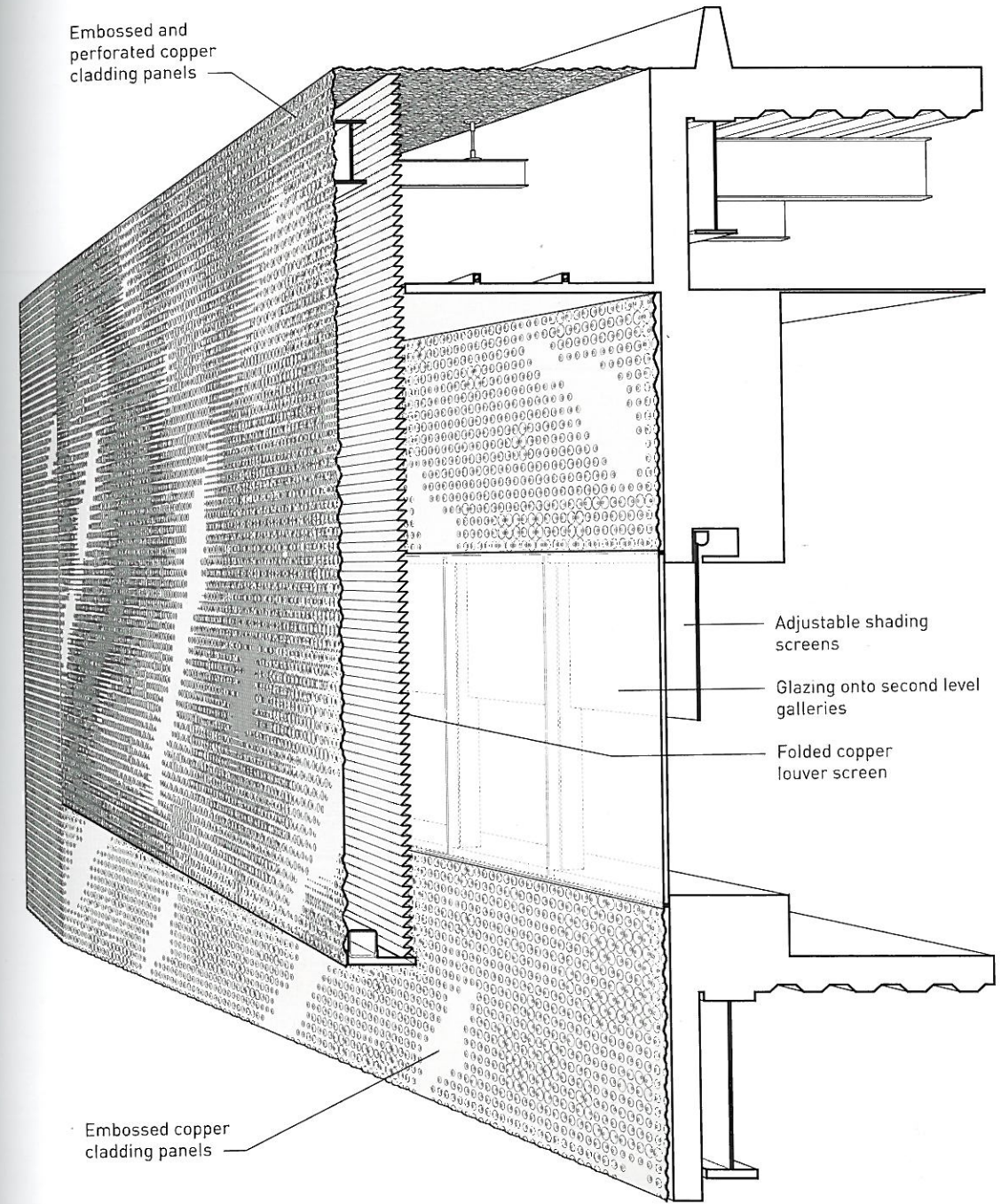
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5



6



Embossed and perforated copper cladding panels

Adjustable shading screens

Glazing onto second level galleries

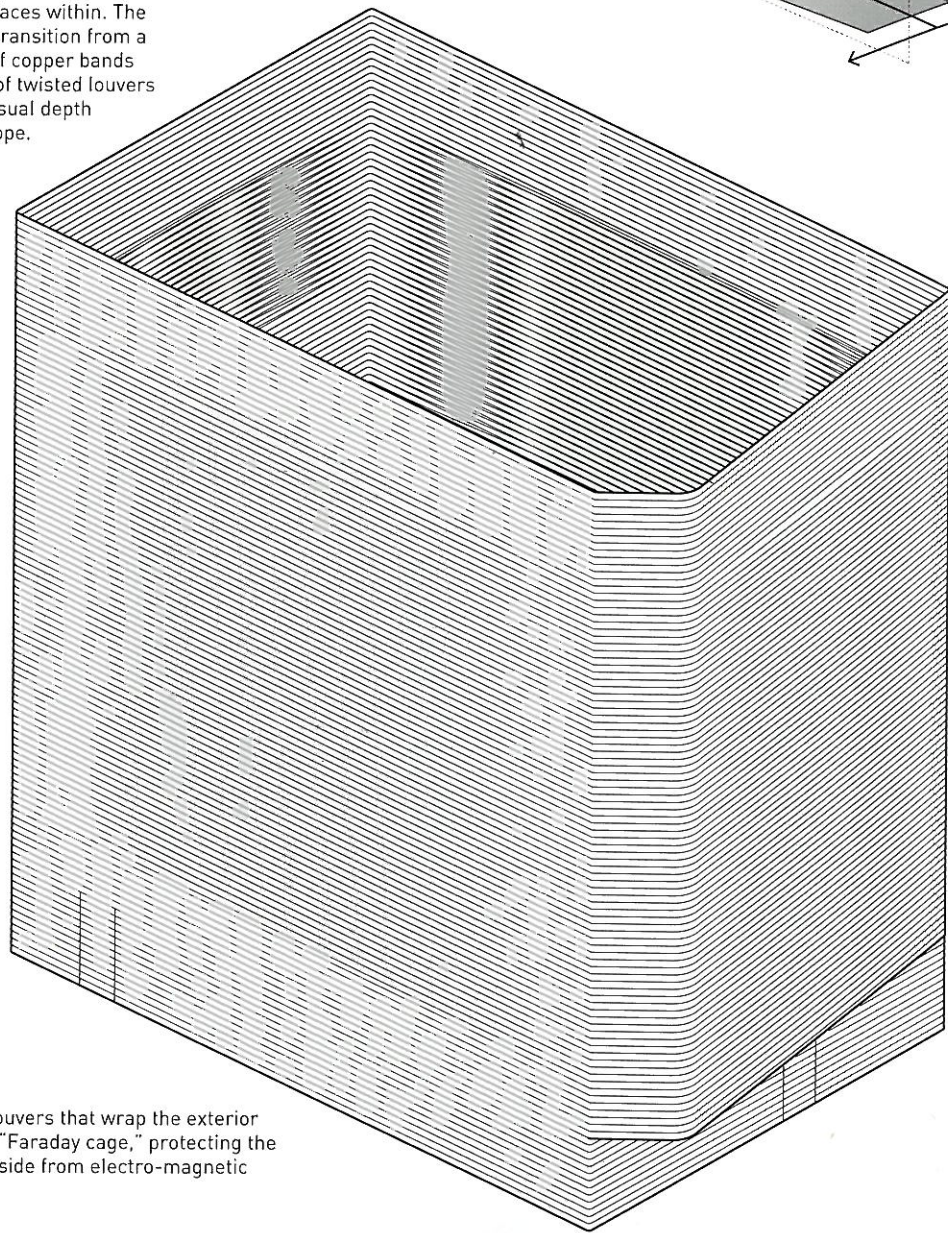
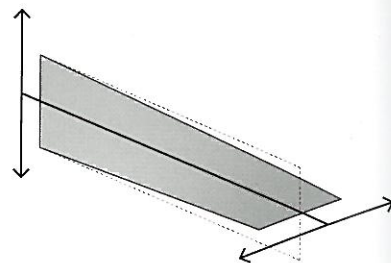
Folded copper louver screen

Embossed copper cladding panels



The Signal Box creates an affect of variable depth by cladding the ordinary volume of an electrical signal box in thin horizontal copper bands that are twisted at strategic locations to provide light to the inhabited spaces within. The continuous transition from a flat façade of copper bands to a screen of twisted louvers varies the visual depth of the envelope.

A distortion of depth is achieved by a simple 90-degree twist of the louvers, revealing the structural wall and windows behind.

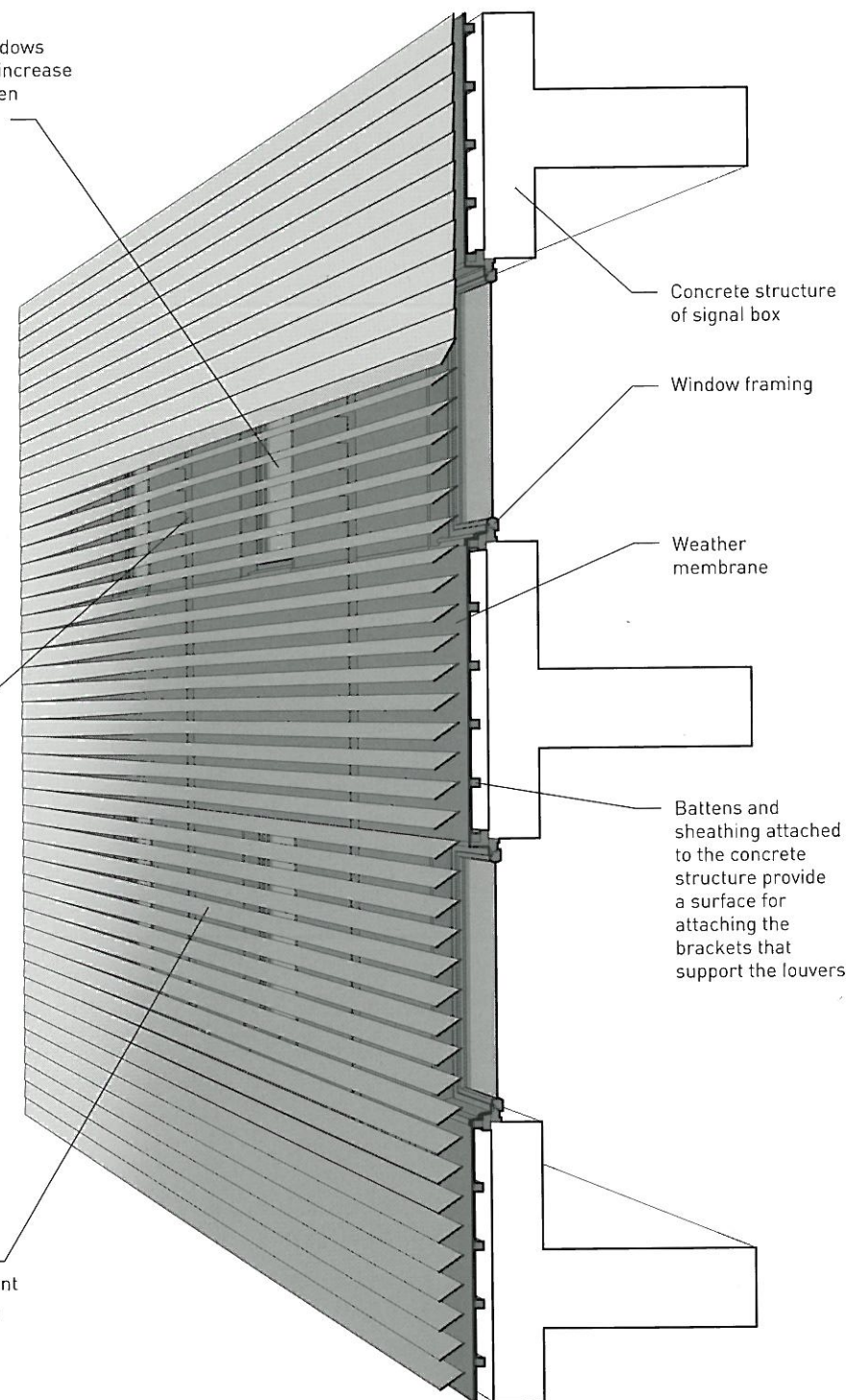


The copper louvers that wrap the exterior also act as a "Faraday cage," protecting the machinery inside from electro-magnetic interference.

Partially visible windows behind the louvers increase the variation between thinness and depth

Vertical rows of brackets used to maintain the twist in the louvers

Areas of twisted louvers appear opaque or transparent depending on the viewpoint, alternately permitting or concealing the box behind



Concrete structure of signal box

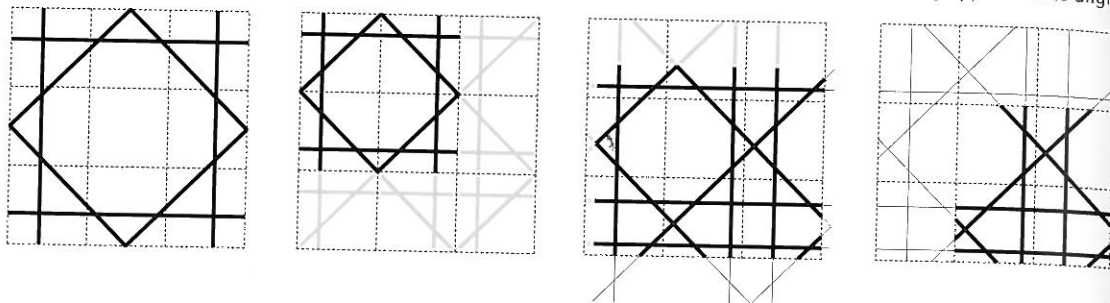
Window framing

Weather membrane

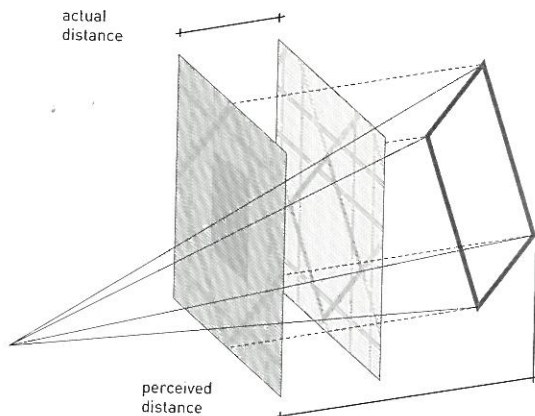
Battens and sheathing attached to the concrete structure provide a surface for attaching the brackets that support the louvers

The envelope of the Christian Dior Ginza store creates a tartan affect through an offset pattern of dots on two layers, one perforated and one silkscreened. The resulting combination produces a flickering view through an envelope whose scale in depth is difficult to judge.

- 1 Perforations in the outer skin create a striped pattern inscribed within nine metal panels.
- 2 Inner panels are silk-screened with an identical pattern of different sized dots, one third smaller.
- 3 Inner and outer panels align, but the smaller pattern is shifted relative to the grid.
- 4 The smaller pattern repeats every two panels and the larger every three, so they appear not to align.



The repeated dot pattern implies that the inner and outer patterns should align. Because the inner pattern is a scaled-down version of the outer pattern, the resulting perspectival distortion makes it appear farther away than it actually is.



The cavity between the outer and inner layers is illuminated with fiber optics, combining with the shifting visual alignment of the two patterns to occlude or illuminate the perforations as the viewing angle changes and create a flickering tartan affect.

