

Enclosed by images. Insights, relationships, and information

Envueltos por imágenes. Miradas, relaciones e informaciones

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Abstract: Although we have always lived among images and information, firstly, the cinema and the development of new information and communication technologies, secondly are producing changes in the perception of space and time that affect both architecture and the arts in general. Throughout the 20th century, modifications of our perceptual apparatus have been reflected in artistic practices in general, and architectural practices in particular, where multimedia supports and moving images are the substance and material of architecture. These supports are the substance with which some of the most recent architectural forms and volumes have been constructed or projected, and they are also the creators of new urban landscapes. By analyzing some formal codifications in the visual strategy of a limited number of film proposals, it is possible to identify key relationships between art, video art, and prominent examples of advanced architecture since the mid-20th century, whose corollary extends to more recent decades. This research allows us to outline an initial genealogy of artistic practices and experiences that span the last century, where the idea of experiencing architecture among images has become a central theme.

Keywords: architectural active gazes; real and virtual; multimedia systems; inclusive insight; informational space.

Resumen: Si bien siempre hemos vivido entre imágenes e información, el cine, en primer lugar, y el desarrollo de las nuevas tecnologías de la información y la comunicación, en segundo, están produciendo cambios en la percepción del espacio y del tiempo que afectan tanto a la arquitectura como a las artes en general. A lo largo del siglo XX, las modificaciones de nuestro aparato perceptivo han sido recogidas por las prácticas artísticas en general, y las arquitectónicas en particular, donde los soportes multimedia y la imagen en movimiento son materia y material de la arquitectura. Dichos soportes son la sustancia con la que se han construido o proyectado algunas de las formas y volúmenes arquitectónicos más recientes, y son también los creadores de nuevos paisajes urbanos. A partir del análisis de algunas codificaciones formales en la estrategia visual de un número acotado de propuestas cinematográficas, es posible identificar relaciones claves entre el arte, el vídeo arte y destacados ejemplos de arquitecturas avanzadas desde mediados del siglo XX, cuyo correlato se extiende a las décadas más recientes. La presente investigación permite esbozar una primera genealogía de prácticas y experiencias artísticas que abarcan el último siglo, donde la idea de vivir la arquitectura entre imágenes se ha convertido en un tema central.

Palabras clave: miradas activas arquitectónicas; realidad y ficción; sistemas multimedia; mirada inclusiva; espacio informacional.

INTRODUCTION

This study focuses on the opportunities that cinema, moving images, and, by extension, new multimedia technologies offer in the construction of contemporary space. It examines the influence that these technologies have on recent architectural and artistic practices, as well as their relationship with pioneering modernist research in this same field. The potential of new image technologies, including cinema, digital media, and video art, is recognized, along with their contemporary status as both “matter” and “material” of architecture. The work analyses experiences from recent decades and reflections that date back to the Bauhaus and have traversed the entire twentieth century. The presence of multimedia supports in new architecture is contributing to a redefinition of the architectural and urban experience.

The act of perception is not a neutral process, as it is significantly influenced by the gaze. The gaze is a complex construct that involves intellectual, social, and political intentions regarding what is shown, taught, or concealed. The presence and condition of the gaze accompany the formal strategy that each discipline, be it art, film, or architecture, uses to articulate its critical discourse. When we look, we direct our gaze towards something or someone, we fix our attention in a specific direction, we frame the object of our vision. Beyond its elemental function as a mechanism for observation, capturing the landscape or focusing on a scene, the gaze acts as an interface that establishes spatial and temporal relationships, highlighting or dismantling social and spatial hierarchies, and transferring information beyond our own physical bodies. Thus, the gaze is a formative, creative, and image-constructing act.¹

Le Corbusier’s metaphor of the window framing the landscape has clear cinematic influences and represents a stance towards the act of looking. Cinema has emphasized some of these memorable moments of observation that underline the cinematic discourse. The window as a privileged observatory of those who hold power over the city is present in *Blade Runner*,²

specifically in Tyrell’s apartment, from which the dystopian city of Los Angeles in 2019 can be seen. The presence of the window and the characters accompanying it are resources of depth of field that help to emphasize the depth of the story, its protagonists, and their relation to the events at stage. In *Algo!* the window shows a painted simulation of the city,³ while in *The Fountainhead* the city and its skyscrapers appear behind the window while proposals for the new building are reviewed.⁴ In *Play Time* transparencies direct from the exterior to the interior, inverting the direction of depth of field.⁵ These transparencies in *Play Time* multiply and offer the possibility of simultaneously contemplating several views or windows at once.⁶ In *Rear Window* the photographer observes his neighbours’ windows as multiple screens that allow him to reconstruct the story;⁷ “to construct the history of a film is also to draw a physical map.”⁸ The circumstance of the photographer, anchored to a wheelchair due to an accident, is the object of our empathy; sitting in our seats, we identify with his gaze and feel involved in his investigations and observations: “*Rear Window* gains access to the mental image, not only because he is a photographer but because he is in a state of motor impotence: in a certain way, he is reduced to a pure optical situation.”⁹ In both cases, we perceive several rooms simultaneously, like a multiple-screen view, in *Play Time* from the exterior, where the camera is located, and in *Rear Window* from the interior of the room.

FORMAL STRATEGIES OF GAZE. INTERWEAVING SPACE AND TIME

The seventh art has played a fundamental role in shaping our perception, educating, and moulding our worldview in accordance with the adaptive needs of contemporary life.¹⁰ The atmosphere of a cinematic, pictorial, or architectural work situates us emotionally. As Peter Zumthor states: “The atmosphere speaks to an emotional sensitivity, a perception that functions at incredible speed and that humans have to survive.”¹¹ For example, the

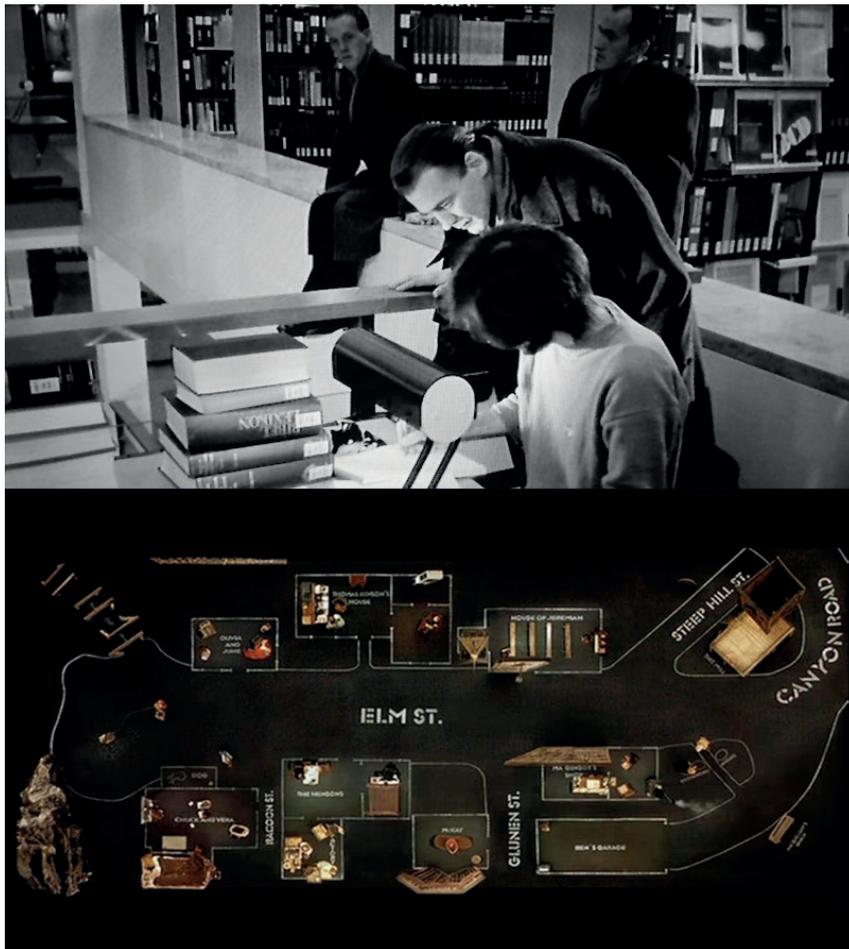


Figure 1. Comparison between two film frames: Win Wenders, *Wings of Desire*, 1987 (top), and Lars von Trier, *Dogville*, 2003 (bottom).

film *Wings of Desire* successfully conveys a melancholic and intimate atmosphere that is explicitly developed in collective environments and outdoor spaces.¹² The formal technique that enables this situation lies in the simultaneity of two filmic spaces on the screen, one representing the inhabitants of Berlin in their city, circus, and library –specifically in Hans Scharoun’s library (1964-1979)– and the other representing the angel protagonists of the story. The latter are not visible to the characters in the film, except on rare occasions, but are visible to the viewers. This formal strategy allows

Wenders to define the interior space in which the angels develop their argument in contrast to the exterior and collective space of Berlin and its inhabitants, generating two worlds that coexist in parallel, but only one of them is visible to the other, except in some exceptions, such as the case of children.

The choice of Scharoun Library (1967-78) as the setting for various scenes in the movie, where angels develop their own plot moving among books and



Figure 2. Comparison between a scribble made by Win Wenders on a photograph by Hisao Suzuki of the Rolex Centre of Sanaa architects, Win Wenders, *If buildings could talk*, 2010 (left), and Robert Rauschenberg's work entitled *Express*, 1963 (right).

people absorbed in reading, is therefore appropriate. The Tiergarten's library provides a landscaped, open, and fluid interior that properly accommodates the intimate and collective act of reading. Additionally, the film employs another formal strategy to make the Berliners visible: angels can hear human thoughts and the viewer hears them through the angels (Figure 1).

Years after his successful cinematographic foray in the Scharoun Library in Berlin, Wenders directed *If buildings could talk*,¹³ focusing on the internal landscape of the Rolex Learning Center in Lausanne, designed by the renowned Japanese studio Sanaa. Kazuyo Sejima herself, speaking about her work, expresses her desire for a park-like space as a space of coexistence, "... a kind of park, similar to the concept of Japanese parks. This kind of space allows people of different types to be in the same space at the same time."¹⁴ The criss-crossing of space and time is a noteworthy observation by Wenders, which he notes in a photograph taken from the interior of the Sejima and Nishizawa building during the preparation phase of the filming. This phenomenon of entanglement had already been evidenced in *Wings of Desire* (Figure 2).

In the building of the Rolex Center, the differentiation of the various programs that take place in a horizontal, extensive, and unitary space, and which can be shared

simultaneously, is delimited by the topography generated by the undulating concrete planes. On the other hand, in the film *Wings of Desire*, a strategy of differentiation of two existential spaces is employed, represented as two distinct and parallel worlds: that of angels and humans. This strategy allows for the superposition of said spaces, each with its own discourse and with the interference of angels in the lives of humans. Consequently, spectators witness both spaces, much like the protagonist photographer in *Rear Window* observed the different scenes and situations in his neighbourhood's courtyard.

In the Berlin film, Wenders presents us with a non-existent space in which angels inhabit in some scenes. This is the strip of no man's land that was located in front of the Berlin Wall, which was still standing in those years. This area was largely an urban void, a space that could not be used for urban and social activities due to government regulations. Wenders places some scenes among the angels in this area, which was visible to us as viewers, but invisible to security guards due to the nature of the angelic world. In this way, Wenders shows us a non-existent space that becomes natural for the angels, after having seen them wandering on the ledges of buildings or sitting on the parapets of the library with their feet dangling into the void, the fact that

they inhabit the prohibited space of the wall comes to seem to us a natural way of using that seemingly non-existent space.

Given the above, it is worthwhile to analyze the case of the film *Dogville* by Lars Von Trier from a scientific perspective.¹⁵ The director's budgetary constraints led him to utilize a theatrical technique in the construction of the film's urban space and domestic interiors in the form of scenic design. The entire town, including its houses and streets, is depicted on the floor like an architectural plan, but on a natural scale, with a functional legend outlining each space. The absence of walls is compensated for by the characters simulating the movements of opening and closing doors when they pass from one room to another or go in and out of their houses. The film's spatial perception is skillfully coded using the play of transparencies and opacities to convey the film's narrative. Although viewers can see everything, both inside and out, the differentiation between public and private space is achieved through the necessary opacity that preserves the intimacy of the characters inside, represented by a white outline on the floor, and those outside. The sequence of the film's argument is directed by camera focalization and scene montage, which correspond to each specific case.

SCREENS AND INFORMATIONAL SPACE

Both examples of Wenders and Von Trier require the viewer's eye to selectively process information that is presented on the screen. In other words, the viewer must be able to organize and differentiate the information according to Deleuzian opposition between "the brain-information and the eye nature" and the displacement of the former over the latter: "The screen itself, even when it retains a vertical position by convention, can no longer refer to human posture, like a window or a painting, but rather constitutes a board of information, opaque surface on which "data" are inscribed: information replaces Nature and brain-city, third eye, replaces eyes of nature."¹⁶ Thus,

opposes idea of film as concept versus conquest of pure optical space, "it is film as concept where eye has come not see."¹⁷

This opposition between visual experience and informational experience is also recognized in modern painting. As Leo Steinberg noted in his lecture at MOMA New York in 1968, modern painting is characterized by the loss of reference to human vertical position and the treatment of painting as a surface of information. For example, Mondrian transforms the sea and sky into signs, while Rauschenberg's paintings relate to operational processes rather than natural visual experiences. The plane of Rauschenberg's painting is equivalent to consciousness submerged in the brain-city, where the painted surface no longer represents an analogy with natural visual experience.¹⁸

Plato's cave prisoners were only able to perceive shadows projected on the wall as their sole source of visual information about the outside world (Figure 3). Since Plato's time, it has become clear that we need an interface, a mediator, a window to the outside world in order to establish an informational relationship. In the film *Things to Come*, which depicts a utopia set in 2036 after an apocalyptic war, a small screen fulfills this function of an informational window.¹⁹ An old man uses it to give a history lesson to a girl and show her the skyscrapers that existed long ago. In *Matrix Reloaded*,²⁰ the Architect's room is a circular space whose walls are entirely covered by countless televisions, a mechanism that allows for the dialectic development between reality and virtuality that is central to the film.²¹ The film continually plays with the ambiguity of both existences, real and virtual, and with the possibility of constructing space with informational and cybernetic means. Since Fritz Lang's *Metropolis* in 1924, which was inspired by the bright lights of Broadway, the potential of media and their impact on space, public or private, has evolved tremendously.²² We can now easily recognize the media facades of dystopian urban spaces in *Blade Runner*, which are also present, although with varying sizes, in our medium and



Figure 3. Comparison between Plato's Allegory of the cave made by the Markus Maurer (left), and the frame of Giuseppe Tornatore, *Nuovo Cinema Paradiso*, 1988 (right).

small size cities, public spaces, facilities, social events, and infrastructures. We are learning to coexist and interact with these informational surfaces in our daily lives (Figure 4).

THE REAL AND THE VIRTUAL: FICTION AND REALITY ON SAME PLANE

The film *Cinema Paradiso* offers an interesting example of the interplay between cinema and architecture, as well as between fiction and reality.²³ In one scene, Alfredo directs the projection of a film onto the façade of a square, where people who have been expelled from the cinema are gathered. As the film is projected, a neighbor appears in a window to silence the screams from the square. The real image of the neighbor overlaps and crosses the fictitious image of the film, creating an unusual screen on the neighboring façade. In this way, the film and reality become intertwined, and Alfredo's actions bring the cinema to the street, returning a weekly meeting space and collective dream to his fellow citizens. This example illustrates the complex and overlapping relationships between cinema, architecture, image, and public space.²⁴

The integration of various themes that provide opportunities for research and the development of specific technological advancements are intertwined. These themes include social education, collective memory, cultural visibility, interdisciplinary visual culture, the image as an informational support, the development of visual culture as social knowledge, and the significance of the social history of a place.

The experience of cinema and other forms of moving images constitute a spatial experience that has extended to digital production. The relationship between physical and digital spaces is becoming increasingly important in the design of architecture and public spaces, as well as in daily urban life. The city is a space of relationships and new media satisfy unprecedented information needs, enhancing the social interaction of urban spaces. The emergence of recent technologies has brought about a new terminology, such as the "media city," which defines a precise urban form specific to our contemporary age. Digital culture has permeated different scales of human experience, from personal perception to private and public spaces, and the urban landscape.²⁵

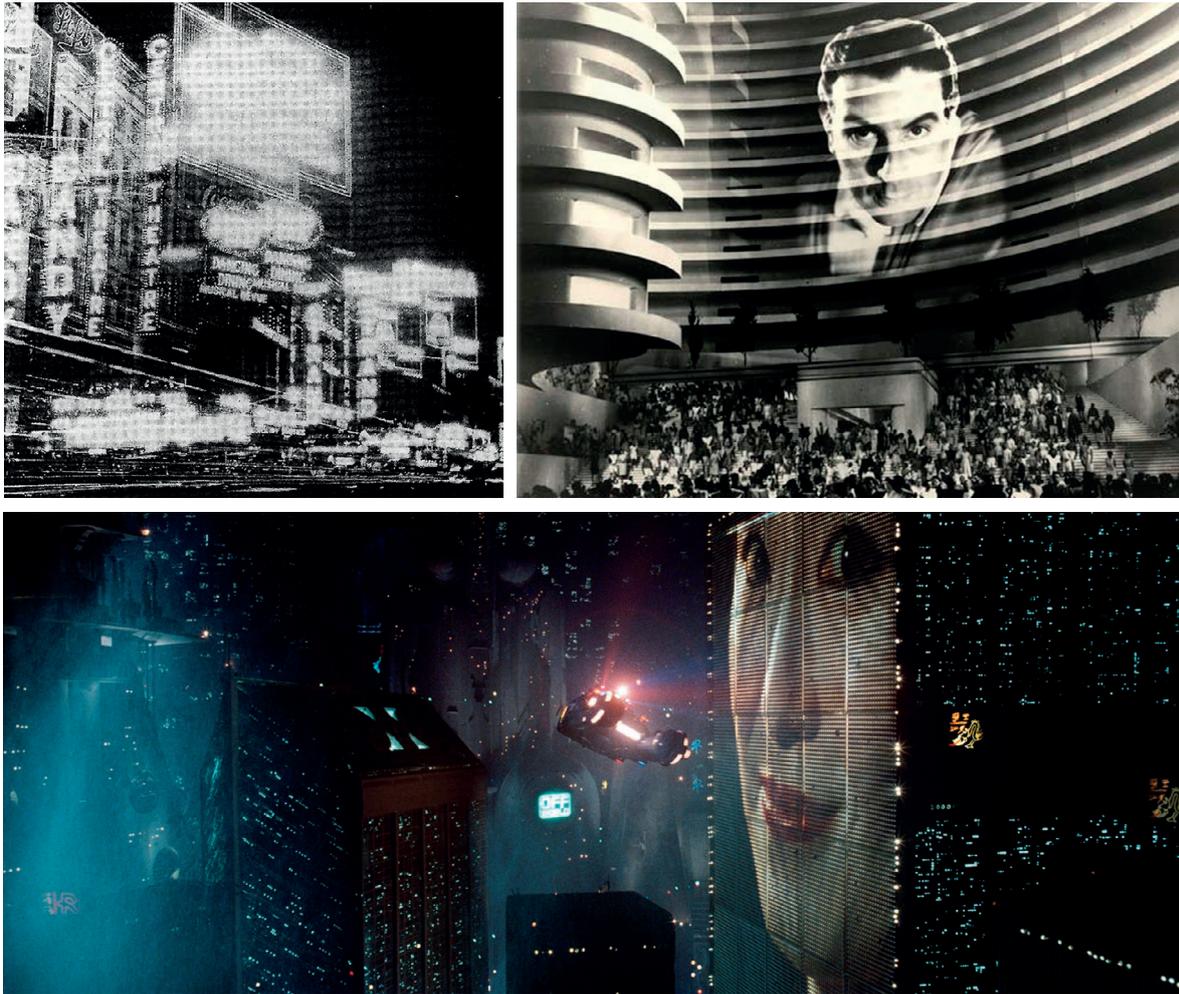


Figure 4. Comparative editing of three frames; Fritz Lang, *Night picture of Broadway* (top left); William Cameron Menzies. *Things to Come*, 1936 (top right); and Ridley Scott. *Blade Runner*, 1982 (bottom).

Recent advances in architecture have considered the results of these investigations, but specialized critics have also warned of the risks of technology being used merely for spectacle rather than responsible use for new didactic and social opportunities. Overall, the opportunities presented by modern technologies for social and didactic purposes are vast, and it is important to carefully consider their application in architecture and urban design.²⁶

INCLUSIVE GAZES AND MULTIMEDIA SYSTEMS

Beatriz Colomina's study on the multimedia architecture of Charles and Ray Eames, titled "Enclosed by Images," is a significant contribution to the field of architecture and design.²⁷ Their projects from the 1950s and 1960s, along with Josef Svoboda's contemporary scenography, are important references

Year, Exhibition, Fair	Josef Svoboda	Charles and Ray Eames
1958 Czechoslovak Pavilion at the Brussels World's Fair	POLYEKRAN - 8 screens suspended from different angles on a black background; - 8 still image projectors and 7 film projectors; - synchronized with the music LATERNA MAGIKA - 8 moving screens with moving images - with which the actors interacted	
1959 Moscow International Fair	- Reuse of Laterna Magika's technique	GLYMSES OF U.S.A. - 7 screens suspended from Buckminster Fuller's geodesic dome - audio-visual projection on them - definition of a space inside the dome
1964 New York World's Fair		OVOID THEATRE - ovoid volume for IBM, with Eero Saarinen - multi-screen system and ascending movable bleachers. - projection of the film Think
1967 Montreal World's Fair	POLYVISION - 4 audio-visual installations combined theatre and image - The State of Textile and Pressure Vessel: Variants of POLYEKRAN - The other two were more innovative; - Symphony: combined film projection and slides on volumes, cubes, prisms and spheres, which moved vertically and horizontally. - The Birth of the World was a projection of images on a wall-mosaic called DIAPOLYEKRAN composed of 112 moving tesserae that zoomed in and out.	

Figure 5. Comparative table of audio-visual installations by Josef Svoboda and the Charles & Ray Eames team between 1958 and 1967.

for this theme. However, it's worth noting that the exhibitions of the Austrian artist Herbert Bayer predate these works and were an even greater precedent.²⁸ According to Bayer, the exchange of information occurs through all known means of design, including diagrams, letters, words, photography, architecture, painting, sculpture, tone, light, and film, throughout the entire field of vision and simultaneously.²⁹

Bayer's design of the "inclusive gaze" ideogram shows floating planes with visual information freed from the orthogonality of the walls, with a viewer with an eye-shaped head in the centre of the space. The gaze is represented by lines of sight that justify the composition of these stimuli and panels. Bayer used the psychology of advertising design and anticipated the principle of integration of media

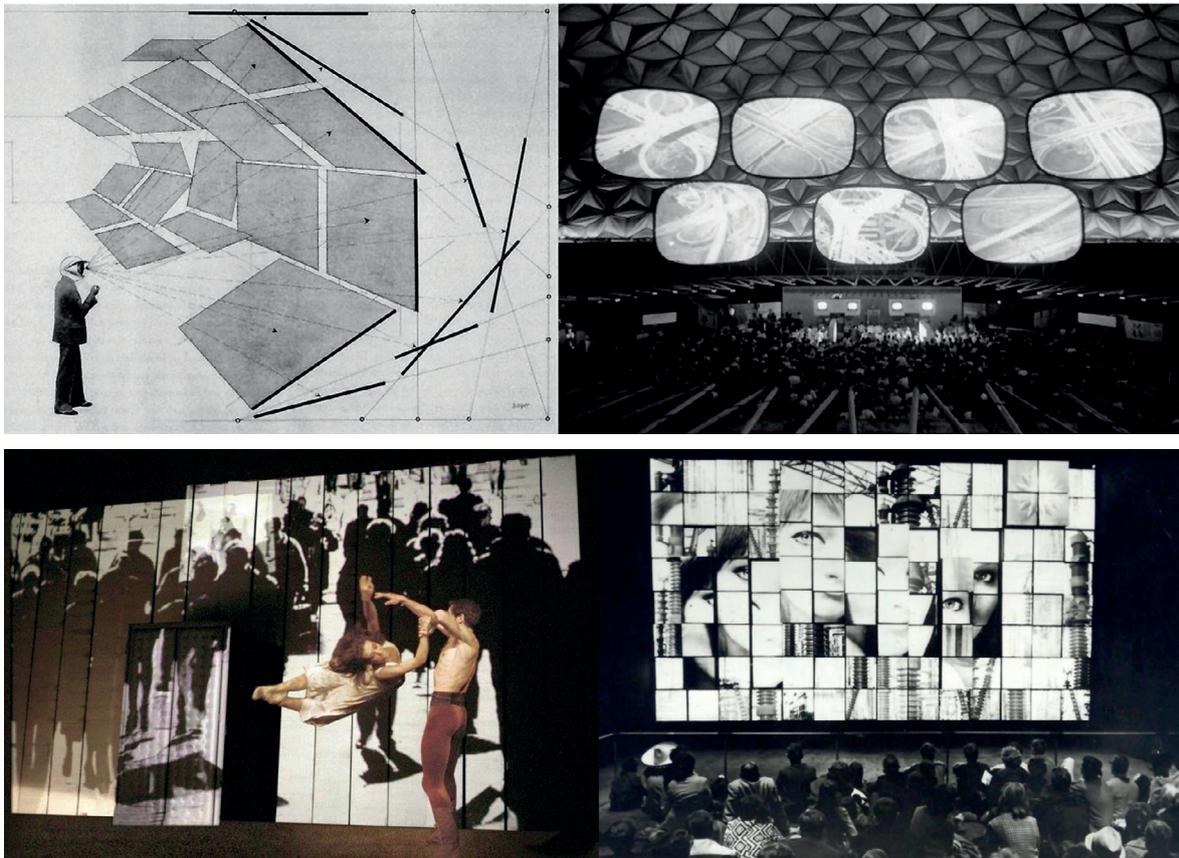


Figure 6. Comparative editing between four pictures: Herbert Bayer, *Inclusive gaze*, 1930 (top left); Charles and Ray Eames, *Glimpses of the USA*, 1959 (top right); Josef Svoboda and Emil Radok, *Laterna magika*, Expo 58 (bottom left); Josef Svoboda, *Diapolyekran*, Montreal's World Fair, 1967 (bottom right).

architecture; the visual content should be responsible for constructing the space, and not just the tectonic structures that support it.³⁰

From 1958 to 1967, Josef Svoboda and Charles and Ray Eames participated in various international exhibitions (Figure 6), where their multimedia scenographies transformed spaces into dynamic and adaptable environments. They utilized a range of techniques, including projections of still images and films, several types of projection screens that were stationary, movable or able to move, synchronization with sound,

live actors interacting with the projections, mobile bleachers, and even buildings that were integrated into the scenography creation process (Figure 5).³¹

ENVELOPED BY IMAGES. REPRESENTATION, ACTION, INTERACTION

The discourse surrounding the potential impact of multimedia systems on the definition of architectural space remains ongoing. On one side of the spectrum, there is the notion of spectacle, in which

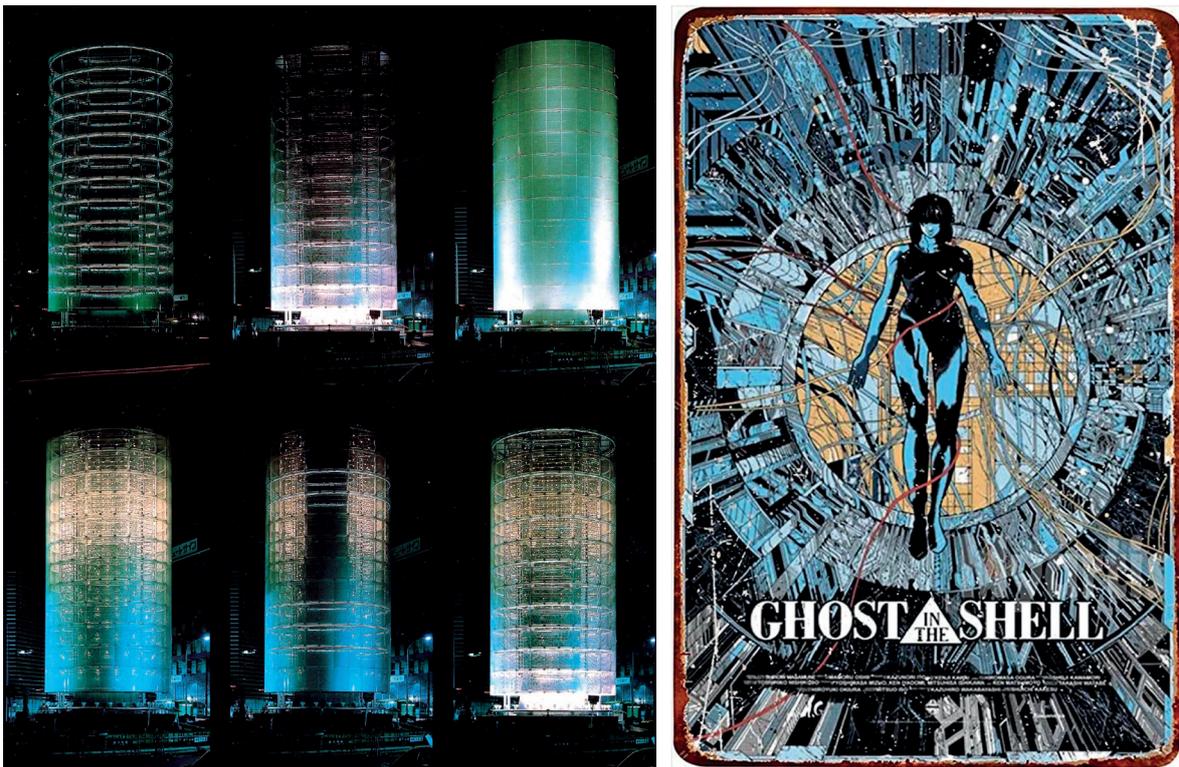


Figure 7. Comparative editing between Toyo Ito, *Tower of Winds*, Yokohama, 1991 (left), and Mamoru Oshii, *Ghost in the Shell* poster, 1995 (right).

individuals serve as passive viewers who observe a performance from a distance. On the other end, there is the application of these systems to urban and architectural spaces, which can serve as a medium for socialization, communication, and interaction. The emergence of spaces designed for socialization through information flows and visual stimuli, coupled with various interaction strategies, is an undeniable growing phenomenon.

In the 1990s, Toyo Ito became interested in the intersection of architecture and information technology, as the importance of information flows continued to grow in contemporary culture.³² This is exemplified in the film *Ghost in the Shell*, where the character Puppet Master describes themselves as “a living, thinking

entity created from the sea of information.”³³ In 1991, Ito designed the *Tower of Winds* (Figure 7), which utilized sensors to capture and transmit information about wind flows in the ventilation tower of Yokohama Station. This data was transformed into a visual experience through a neon system, allowing for the visualization of changing images based on the random flow of air. The *Tower of Winds* serves as an example of the dialogue and contrast between “visual experience” and “informational experience,” a concept previously explored in the work of Rauschenberg.

The inclusion of the media facade in architectural practice has evolved from its most iconic urban references, such as the advertising facades of

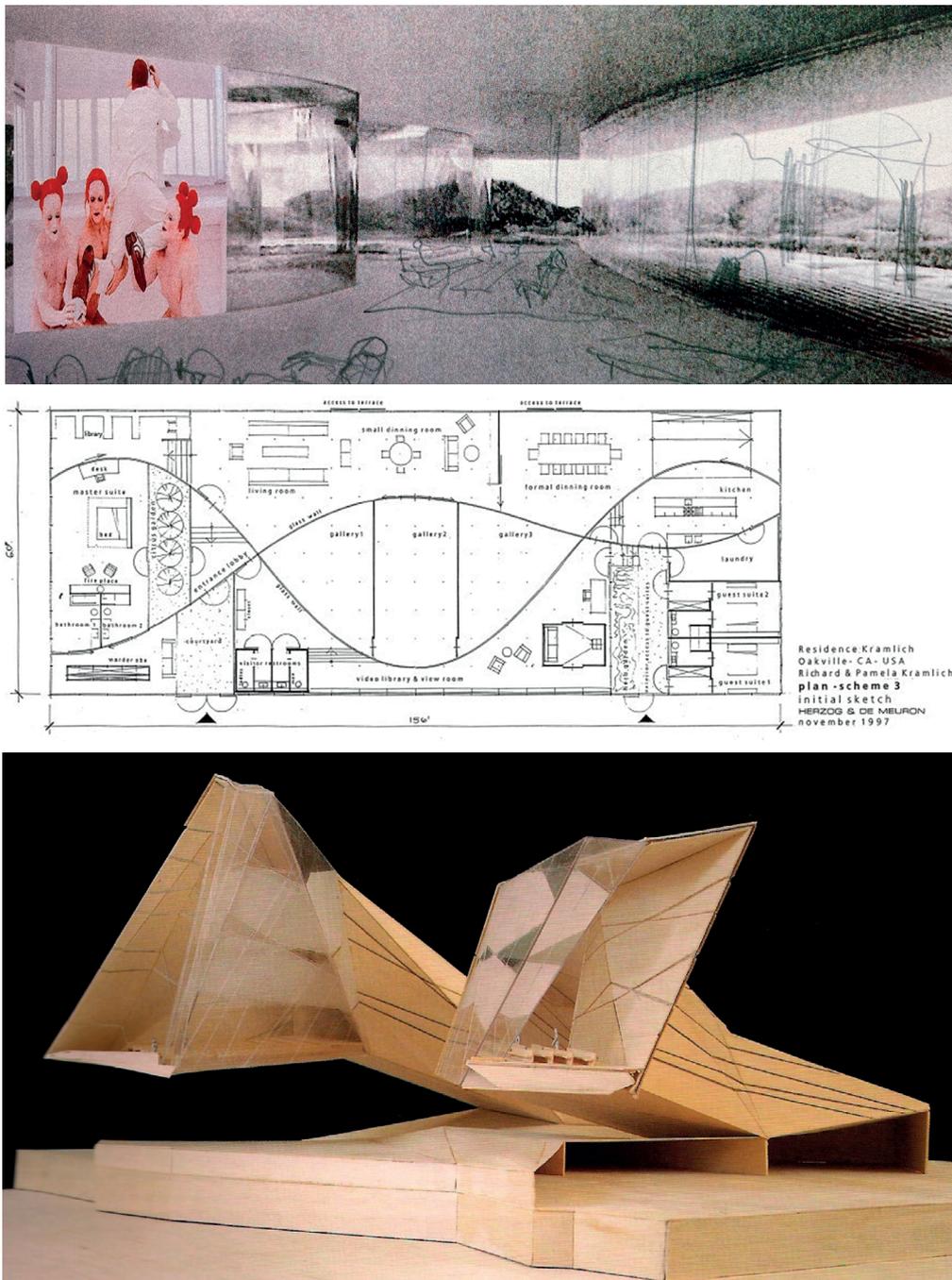


Figure 8. Comparative editing of two non-built projects which incorporated multimedia systems at the end of the XX century: interior sketch and plan of Herzog & de Meuron, *Kramlich house*, 1997-2003 (top); Peter Eisenmann, *Church of the 2000 year*, Rome, 2000 (bottom).



Figure 9. Comparative editing of two projects: MVRDV, *The Twin Towers*, Taipei, 2018 (left); J.J. Pan & Partners, *Ring Celestial Bliss*, Hsinchu, Taiwan, 2013 (right).

Times Square in New York, Piccadilly Circus in London, and Shibuya in Tokyo, to achieve its own specificity in the formal strategy of the project and in the assigned functional operations (Figure 8 and 9).³⁴ In these architectural proposals, the use of multimedia systems is no longer limited to mere spectacle, but is aimed at activating places and buildings in relation to their programs and social context. The design of these structures promotes citizen participation in scheduled events and explores the potential of multimedia technology and communication to give meaning to public space of collective action. These are architectures whose image is constantly renewed by updating the transfer of messages.³⁵

Video art has conducted extensive experimentation in relation to the subject matter. Bill Viola was one of the first video artists to participate in a Venice Biennale in 1995, presenting his work "The Veiling". In it, he placed two projectors at the ends of a row of nine translucent and suspended fabrics, each emitting a different figure, either a man or a woman, that passed through the fabrics to meet in the center, creating a composite and diffuse figure.³⁶ The latest editions of the Venice Biennale have presented various experiences in multimedia exhibitions related to the themes

addressed in this context, such as informational overexposure, immersive spaces, the dialogue between abstraction and nature, and the integration of new multimedia technologies in heritage spaces and architectures. They have become renewed successors of Bayer, Eames, and Svoboda (Figure 10).³⁷

The latest research focuses on analyzing transformations in the perception of space through the implementation of interactive design. This type of phenomenological experience is situated at the intersection of spectacle, installation, and public art. Interactive practices in architecture, enabled using recent technologies, aim to blur the boundaries between the virtual and physical realms. These lines of inquiry have been motivated by experiences gleaned from some film and art proposals.³⁸

Digital environments that emerge from the use of these new communication systems combine flexibility and immersiveness in a novel type of space, both for public and private spheres.³⁹ The hybrid discipline that underpins such environments presents a challenge to the classical identity of architecture, leading to the emergence of new typologies in both the architectural and artistic domains.⁴⁰

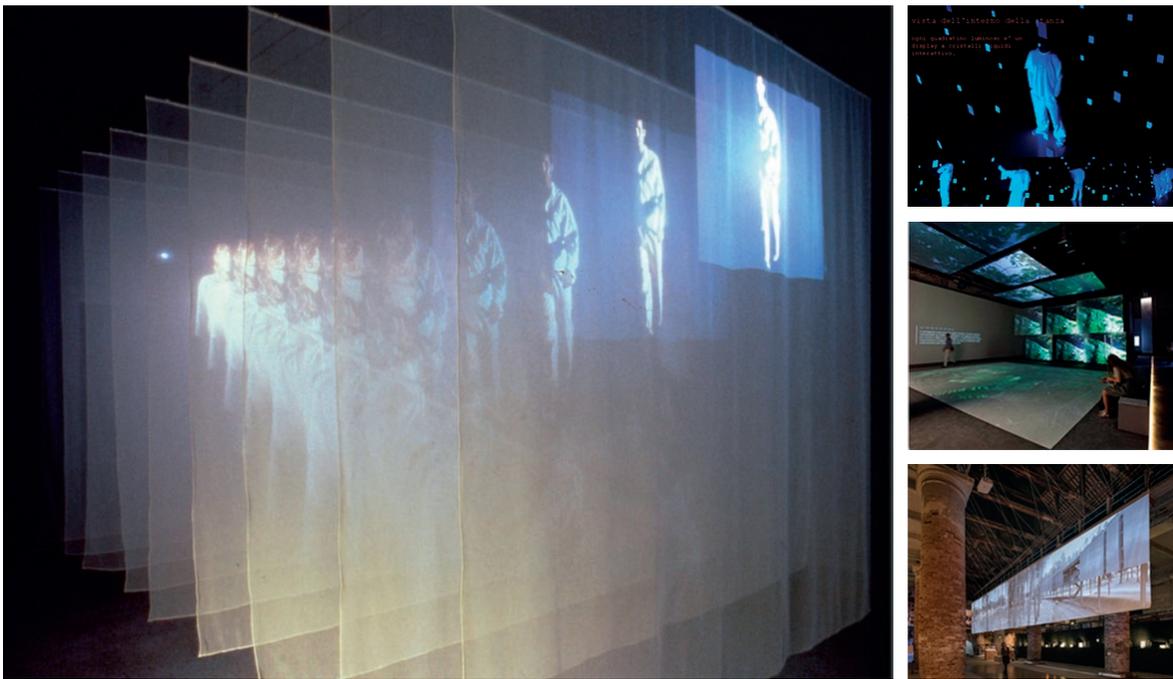


Figure 10. Comparative editing of three video art installations: Viola, *The veiling*, 1995 (left); Luca Zevi, *Italian Pavilion*, Venice Biennale, 2012 (middle right); José María Sánchez, *The Ring: Broadcasting Live*, 15th International Architecture Exhibition, Venice Biennale, 2016 (bottom right).

This spatial experience, based on interactivity, is grounded in placing the subject at the center while relegating the object to a secondary position. In this sense, although the emergence of digital technologies is often associated with current changes, it is more important to focus on the new modes of relating and interacting with these new types of communication than on the hardware or software that supports them.⁴¹

CONCLUSIONS. FUTURE CHALLENGES

At the beginning of this text, we set out to explore the contemporary phenomenological potential that lies in the fact of living enclosed by images. We highlighted the formative - from Latin, "forma" -and educative- from Latin, "educare," which means to guide or lead

- capacity of the gaze, its intentional condition, and its luminous and informational potential, acquired after the advent of cinema and the evolution of the moving image in our perceptual apparatus. The incorporation of multimedia systems into artistic and architectural practices has generated renewed influences on the relationship between cinema and architecture.

Filmmakers, architects, and artists are aware of the potential of information, its technology, and new media in the construction of architectural space and the configuration of the city over the last century. Based on the analysis carried out, we aimed to focus on the evolution of the subject up to its current development and bring it to the threshold of its future challenge. Themes such as the greater hybridization between the virtual and

the physical, new uses of modern technologies as an informational interface, the architectural potential of multimedia systems, and the open controversy between spectacle and socialization in the use of these systems are emerging on the horizon.

Although the case studies referenced in different disciplines are just the beginning, it is acknowledged that this conclusion should stimulate further research in this area. The main objective of this work has been to open pertinent and necessary ideas for a debate that, far from being closed, remains inconclusive like an “opera aperta.”

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- 2 Ridley Scott, dir., *Blade Runner* (Los Angeles, CA: The Ladd Company, 1982).
- 3 Hans Werckmeister, dir., *Algo* (Berlin: Deutsche Lichtbild-Gesellschaft, 1920).
- 4 King Vidor, dir., *The Fountainhead* (Los Angeles, CA: Warner Bros, 1949).
- 5 Jacques Tati, dir., *Play Time* (France: Specta Films; Italy: Jolly Film, 1967).
- 6 Richard Koeck, *Cine-Scapes: Cinematic Spaces in Architecture and Cities* (New York: Routledge, 2013), 100.
- 7 Alfred Hitchcock, dir., *Rear Window* (Los Angeles, CA: Paramount Pictures, 1954).
- 8 Juhani Pallasmaa, “Geometry of Terror, Alfred Hitchcock’s *Rear Window*,” in *Chora vol. 4: Intervals in the Philosophy of Architecture*, ed. Alberto Pérez Gómez and Stephen Parcell (Montreal: McGill-Queen’s University Press, 2004), 225.
- 9 Gilles Deleuze, *La imagen-movimiento: Estudios sobre cine 1* (Barcelona: Paidós, 1994), 285.
- 10 Walter Benjamin, *Discursos interrumpidos 1* (Madrid: Taurus, 1989), 52. “Cinema is the stylistic form that corresponds to the growing danger of death that men face today. The need to expose oneself to shock effects is an adaptation of hunger to the dangers that threaten it. Cinema corresponds to far-reaching modifications in the perceptual apparatus, modifications that today every pedestrian in the traffic of a great city experiences on a private existence scale, as well as any citizen of a contemporary state on a historical scale.”
- 11 Peter Zumthor, *Atmósferas* (Barcelona: Gustavo Gili, 2006), 13.
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- 18 Deleuze, *La imagen-movimiento: Estudios sobre cine 2*, 354.
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- 22 Dietrich Neumann, *Architecture of the Night* (Munich: Prestel, 2002); Dietrich Neumann, *Film Architecture: Set Designs from Metropolis to Blade Runner* (Munich: Prestel, 1996).
- 23 Giuseppe Tornatore, dir., *Nuovo Cinema Paradiso*, (France: Les Films Ariane; Roma: Cristaldifilm, 1988).
- 24 On March 6, 2021, the awards ceremony for the 2021 Goya Awards of Spanish Cinema was held virtually due to the pandemic from the Soho Theater in Málaga. A stage background built with LED technology, including part of the floor, resolved the scenography of each performance, served to project the competing films, or transformed into numerous televisions to connect telecommuting guests. Through a gap in this audio-visual wall, the hosts entered and exited.
- 25 In the 1950s and 1960s, architects and set designers such as Josep Svoboda or Charles and Ray Eames experimented with multi-screen projects and installations, some of which were featured in world expos. In the 1990s, digital technology began to have an increasing influence, driven by the work of various theorists and the creation of *MediaLabs* (MIT Medialab 1985). Ivan Rincon Borrego *et al.*, “La imagen como materia y material. Arquitecturas avanzadas y experimentación audiovisual desde la mirada inclusiva de Herbert Bayer,” *Arte, Individuo y Sociedad* 34, no. 1 (January 2022): 335-350, <https://dx.doi.org/10.5209/aris.74210>; Ivan Rincon Borrego *et al.*, “Arquitecturas pantalla en la era de la información. Notas sobre paramentos mediáticos y nuevos paradigmas,” *Estoa* 11, no. 21 (January 2022): 127-140, <https://dx.doi.org/10.18537/est.v011.n21.a11>; Nicholas Negroponte, *Being digital* (New York: Vintage Books, 1995).
- 26 Anthony Townsend. “Digitally mediated urban space: New lessons for design.” *PRAXIS: Journal of Writing + Building*, no. 6 (2004): 100. According to the technical paradigms established by Anthony Townsend and the attributes of media architecture: “visualization” based on the number and proliferation of screens in the urban environment; “communications” based on wireless networks that change the way users relate to the built environment; “positioning” referring to mobile technologies and their infinite possibilities in this regard; and “documentation” which would speak of the computer cartography of the city through geographic information systems (GIS).
- 27 Beatriz Colomina, “Enclosed by Images: The Eameses’ Multimedia Architecture,” *Grey Room*, no. 2 (Winter 2001): 5-29, <http://www.jstor.org/stable/1262540>
- 28 Herbert Bayer and Walter Gropius, *Section Allemande: exposition de la Société des artistes décorateurs, Grand Palais, 14 mai-13 juillet* (Berlin: Verlag Hermann Reckendorf, 1930). Herbert Bayer and Walter Gropius participated alongside Marcel Breuer and László Moholy-Nagy in the German Section of the Annual Salon of the *Société des Artistes Décorateurs* in Paris in 1930.
- 29 Herbert Bayer, “Fundamentals of Exhibition Design,” *PM: an intimate journal for advertising production managers, art directors and their associates* 6, no. 2 (Dec. 1939-Jan. 1940): 17. <https://digitalcollections.nypl.org/items/90f27111-9714-4fc1-e040-e00a18064ba4>
- 30 Bayer and Gropius, *Section Allemande*, 5; Bayer, “Fundamentals of Exhibition Design,” 17; Bayer, *Herbert Bayer: Painter, Designer, Architect* (New York: Reinhold, 1967), 30, 72.
- 31 María Nieto Sánchez, “Beyond the Screen. Dynamic, Multiple and Transformable Spaces,” in *Avanca Cinema. International Conference 2016* (Avanca, Portugal: Cineclub de Avanca, 2017), 1099-1107.

- ³² Toyo Ito participates and develops these arguments in texts such as "Architecture in a Simulated City" (1991) and "A Garden of Microchips" (1993). Toyo Ito, *Escritos* (Murcia: Colegio Oficial de Aparejadores y Arquitectos Técnicos, 2000); Toyo Ito, "Tarzanes en el bosque de los medios," *2G: revista internacional de arquitectura*, no. 2 (1997): 121.
- ³³ Mamoru Oshii, dir., *Ghost in the Shell* (Los Angeles, CA: Manga Entertainment; Tokyo: Bandai Visual, Production I.G., 1995). The Japanese animated film, based on the manga of the same name by Masamune Shirow, has influenced movies such as *The Matrix* (by Lana and Lilly Wachowski, 1999 and 2003) or *Avatar* (by James Cameron, 2009).
- ³⁴ Robert Venturi and Denise Scott Brown's National College Football Hall of Fame, New Brunswick, 1967, is an example of a building attached to a large screen. This project was referenced in R. Koolhaas' proposal for the Centre for Art and Media ZKM, Karlsruhe, 1989; R. Piano and R. Rogers' Pompidou Museum, Paris, featuring a facade's unconstructed large screen with iconography reminiscent of Rauschenberg; J. Herzog and P. de Meuron's Cultural Centre, Blois, 1991, with two screens having a larger development than the enclosed volume, sliding over and defining two exterior public spaces. Other examples include the multimedia walls for a video collector in Casa Kramlich, the LCD liquid crystal facades and giant stained-glass windows enclosing the central courtyard in P. Eisenmann's church for the year 2000 in Rome, and J. J. Pan and Partners' The Ring of Celestial Bliss, Hsinchu, Taiwan, 2013, with a 30-meter helicoid-shaped screen suspended 10 meters above the ground, forming a media plaza in the new neighbourhood. Finally, MVRDV's The Twins Towers, Taipei, 2018, consists of stacked blocks creating a vertical neighbourhood with interactive media displays on the facades using LED panels to provide information on its interior life, events, and advertisements.
- ³⁵ Lucy Bullivant, "4dspace: Interactive Architecture: Introduction." *AD Architectural Design*, 75, no. 1 (January-February 2005): 5, <https://doi.org/10.1002/ad.5>. "...interactive architects and designers are in fact responding to the question posed in 1960s by Cedric Price: What if a building or space could be constantly generated and regenerated?"
- ³⁶ David Morgan, "Spirit and Medium. The Video Art of Bill Viola", in *The Art of Bill Viola*, ed. Chris Townsend (London: Thames and Hudson, 2004), 101.
- ³⁷ At the Italian Pavilion of 2002, Walter Aprile and Stefano Mirti suspended mini-computers in a black atmosphere, creating an intersection between architecture and interactive technology in response to the question "What if you could walk inside a screen?". Similarly, at the Italian Pavilion of 2012, Luca Zevi deployed multimedia systems on ceilings, floors, and walls. Likewise, at the Spanish Pavilion of 2016, architect José María Sánchez broadcasted live footage of the moving image of the exhibited building through filmed projection on a large screen from cameras located within the building. Finally, musician and video artist Ryoji Ikeda participated in the Venice Biennale of 2019. His 2011 work, "The Transfinite," presents the immersive nature of his audio-visual creations and multimedia installations as well as their ability to stimulate perception of space and time.
- ³⁸ Recent artistic experiences, such as those by TeamLab or Atelier des Lumieres, have used digital creations to transform space. The exhibition "Future World" (TeamLab, Singapore Museum, 2017) immerses the viewer in a digitally rendered virtual garden space, where floors, ceilings, and vertical surfaces are presented as unlimited projection surfaces that users interact with. The space changes with the projections based on the actions of each viewer. The result is a space that is coded as both virtual and real simultaneously. The traditional physical boundaries of architectural space are transformed into audiovisual and informational supports. In contemporary dance, choreographers Adrien M and Claire B literally interact with digital representations and strobe lights; the representation of space and narrative arises from visual interaction with their own bodies (in the memory of Josef Svoboda). Adrien Mondot and Claire Bardainne, "Le mouvement de l'air," 2015, <https://vimeo.com/145201272>
- ³⁹ Bullivant, "4dspace: Interactive Architecture: Introduction," 7.
- ⁴⁰ "4dspace: Interactive Architecture," *AD Architectural Design* 75, no. 1 (January-February 2005), <https://onlinelibrary.wiley.com/toc/15542769/2005/75/1>.
- ⁴¹ Antonino Saggio, "Interactivity at the Centre of Avant-Garde Architectural Research," *AD Architectural Design* 75, no. 1 (2005): 23-29, <https://doi.org/10.1002/ad.9>

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