

Eameses' Exhibition Architecture 1959–1965

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Focusing on the use of technological means and the knowledge of physiological processes in order to influence the perception of architectural space, Charles and Ray Eames developed their exhibition buildings as a form of communication.

The American National Exhibition 1959 in Moscow, the World's Fair architecture 1962 in Seattle and the World's Fair architecture 1964/65 in New York are examined in terms of their typological structure and organization, including the shape of the exhibition buildings as a medium of communication and the application of digital techniques of image projection.

"Digital" in this sense refers to the way images are applied: by combining moving images and stills, fragmented information is provided.

With the physiological investigation of the function of seeing being an autonomous parameter no longer directly related to the body of men,¹ the perception of images was considered in a different way. The subjects of the physiological exploration concern aspects such as attentiveness, reaction time, barrier of stimulus and tiredness² in the perception of images.

As a consequence Gestalt theory was developed, which unifies categories of recognition of images, including the difference of perception concerning figure and ground, the rule of proximity and similarity³ of the elements in respect to form, colour and size.

Based on this physiological knowledge, an objective space as proclaimed by Kant⁴ could not be assumed any more. Instead material objects and products of the physical function of the brain were considered the same.

In this sense space has to be considered as mentally made and no longer objectively granted. One main result from this approach is the understanding of images as perceived forms from exterior stimuli that affect an electrical field in the brain. Thus, information can be systematically prepared and processed in a way that the attentiveness of the "receiver"—i.e. the spectator—is ensured. In this context information theory reveals the parameter of information transmission: redundancies, average information content and sententiousness.⁵

Following this approach, the recognition and understanding of Gestalt are thus indispensable for the perception of information (fig. 1).

Concerning the technological basis for Eameses' concepts, the development of digital techniques is crucial. Approaches to information calculation were first developed with the emergence of control techniques in the early 20th century and culminate in cybernetics in the Second World War.

The science of cybernetics describes control processes that Norbert Wiener applied not only to machines but also to human beings. In his disquisition entitled *Cybernetics or the Control and Communication in the Animal and the Machine*,⁶ he connected engineering with humanities.

According to Wiener, computability is defined as typing through a machine. The pre-condition is its aesthetic formalization.

Applying the concept of cybernetics, different parameters of information theory can be identified in the system of electronic circuits. These parameters can be transferred and applied to the physiological system of men.

Shannon applied this model in communications engineering.

For the calculation and computability of information, digital techniques are required. They are characterised by discrete, discontinuous conditions of elements of a system. In contrast analogue techniques feature continuous units of any item.

From a point of view based on information theory, techniques of cutting and montage of film seem to be predestinated for the deconstruction and new combination of information. Charles and Ray Eames define three codes of information: language, images and numbers or symbols.⁷

The use of numbers in form of binary codes constitutes the instrument to build up the structure and readability of information.

Charles and Ray Eames apply these methods in terms of simultaneous image presentation and a multi-perspective presentation.

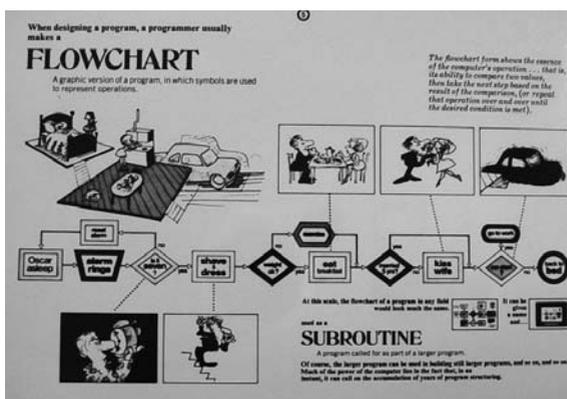


Fig. 1: Communication model after Shannon, drawn by the Eames Office

Though films of the Eameses are transmitted in an analogous way, their presentation of images in the exhibition architecture is fragmented and characterised by discrete units: the discontinuous change creates moving images as well as stills. By cutting and montage the images are perceived in a new way that attaches new functions, meanings and connotations to the images.

National Exhibition Moscow 1959

Together with Jack Masey from the USIA (United States Information Agency) Charles and Ray Eames developed a multi-image presentation for the National Exhibition in Moscow in 1959, the times of the Cold War. The intention of this presentation was—following Luhmann's distinction of messages, entertainment and advertisement as three major forms of information⁸—the advertisement and propaganda of the USA (fig. 2).

In order to spread this propaganda, they made use of the facilities of the new media. The overall view of the screens was organised in a way that was perfectly oriented towards the range of vision of the spectators.

The images changed simultaneously so the viewer's eye is not attracted to any one image in particular.⁹ According to the theory of Miller, the maximum number of information units perceived at the same time is seven,¹⁰ so the Eames installed seven screens (fig. 3).

The film entitled *Glimpses of the USA* was projected on seven 6 by 9 meter screens, in a 76 diameter dome, designed by Buckminster Fuller.¹¹ The shape of the screens is reminiscent of the form of early televisions.

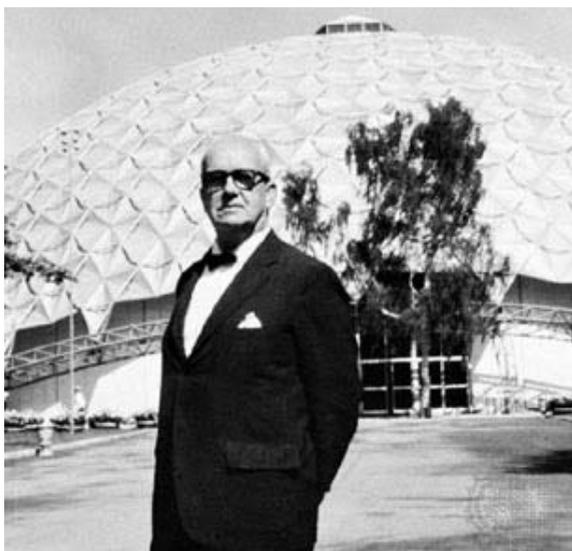


Fig. 2: R. Buckminster Fuller in front of the Trade Fair Dome, American National Exhibition, Moscow 1959

The space between the screens allows the application of Gestalt theory. Visual perception focuses on the fore- or the background¹² depending on the content of the images projected on the screens. The eye could see a complete figure or "Super images",¹³ withdrawn from the structure of the cupola or atomized images which structured space in separated units.

Glimpses of the USA began with simultaneous projections of astronomical space images, switched to night-time images made out of the view from cities and changed to zoom details of cities. Landscapes at daybreak were projected, then scenes of everyday life. Objects of everyday life, and then people in action.¹⁴ In this way messages were combined with situations which evoked emotions.

In the World's Fair architecture in Seattle 1962 Charles and Ray Eames then used a panoramic screen, on which a multi-image presentation of one to six images was presented.¹⁵ The contents presented varied from six different images to unified "Super images" (fig. 4).

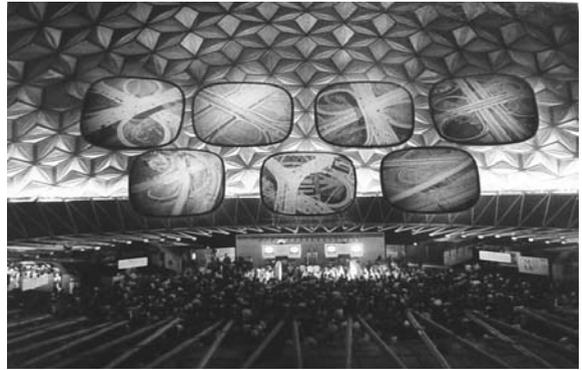


Fig. 3: Multi-Screen Presentation, American National Exhibition, Moscow 1959



Fig. 4: Panorama-Screen Presentation, World's Fair Architecture, Seattle 1962

The most complex pavilion is the 1964/65s IBM World's Fair building in New York. In cooperation with Eero Saarinen, Charles and Ray Eames designed an 22 by 32 by 13 meter ovoid (fig. 5).¹⁶

The film *Think* presented in this pavilion referred to an IBM advertising campaign. The film was presented on 22 screens in the shape of circles, rectangles and triangles, syntactically summarised to groups of seven while presented.

The contents of the images, as in the other two pavilions, followed the rules of Super position or atomized image presentation, confirmed by the concise forms which influence visual perception.

The content of moving images affords psychological, calculable control of the viewer. To categorize the effects of moving images, Gilles Deleuze developed film theories entitled *Cinema 1*¹⁷ and *Cinema 2*¹⁸. The categories¹⁹ represent an attempt at classifying images as elements within any system.

The film montage techniques are characterised by different camera perspectives, scales and the number of images per time unit.²⁰ Together with the content of the images presented, new combinations of still images are possible which allow new contexts to be built.

These montage techniques aim to influence perceptions of man and were used from the very beginnings of film.²¹

With their exhibition architectures, however, the Eameses' do not restrict these options to the films

and images as such, but they integrate them as a key-element in their buildings (fig. 6).

In the 1964/65s IBM Pavilion, the whole building was staged as a spaceship, the symbol of post-modernity.

A few years earlier, NASA had institutionalized civil space flights.²² The adoption of the formal vocabulary of aerospace however had occurred before, from the 1930s onwards especially in form of comics.²³ The related fascination for science fiction is connected to the idea of robots, that was encouraged by the findings of cybernetics in the 1940s.

The segmentation and serialisation of working processes that became possible thanks to the development of computers produced robots as an extension of men.²⁴

The whole IBM pavilion functions like a machine. Following the rules of cybernetics people were transported by a mechanical platform to the inner space of the ovoid. Natural movement was replaced by the mechanical work of a machine. Thus, the platform forms a kind of artificial replacement of the function of movement and a replacement of the classical stairs or elevator.

The process of automation of human movements was not imitated here, but the natural form of movement was replaced by a new form of movement that became possible thanks to the replaceability of natural and artificial systems (fig. 7).²⁵

The interface between outer and inner space was constituted by a man in morning dress. He welcomed the spectators from a platform before they were transported into the ovoid. Playing the role of the instructor he occupied the classical stage which formed a typological part of the whole space in front of the platform.

He also adopted the role of a moderator between information space and audience, between transmitter and receiver.

According to cognition theory, the human brain functions in analogy to technical systems presented by the communication concept²⁶ of Shannon. In this sense the instructor has to perform the task of

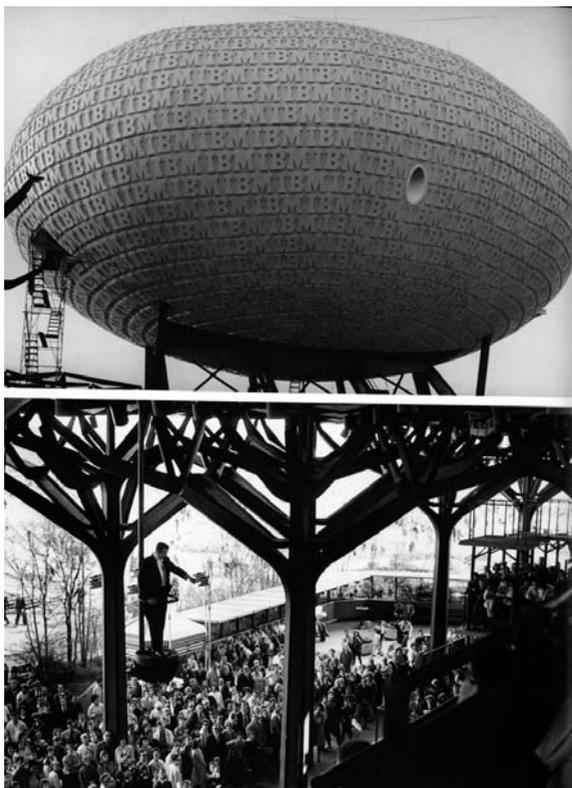


Fig. 5: World's Fair Architecture, New York 1964/65

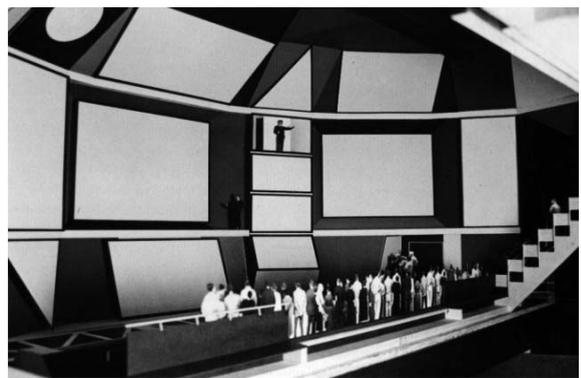


Fig. 6: Digital Image Projection, World's Fair Architecture, New York 1964/65

controlling and directing the audience's perception of information displayed on the screens.

The World's Fair visitors got into a black box in which they view the sender as a simultaneous image presentation or light field and/or the transmitter put on stage. The abstract concept of communication as a fundamental theorem of the cybernetics of Shannon is converted into the aesthetics of architectural space.

The man on the platform represents the center of attraction when the projection of the image changes to the projection focusing on his person and so does the alteration from illuminated to dark screens.

The well directed control of attractiveness allows the transmission of stimuli as information from short-term to long-term memory.²⁷ These strategies or processes of control guarantee the forwarding of information. Cybernetic information transport does not refer on its content.²⁸ But possibly the syntactical and numerical information units can be transformed to a new semantical level (fig. 8–10).

Cybernetics replaces the former theories as the view of Kant who considered aesthetics as external. The overwhelming image presentation of the exhibition architecture of Charles and Ray Eames however constitutes the condition of aesthetics as a relation of outer stimuli with inner perception.

The principle of perception of space is converted to fragmented and calculable systems made out of energy, material and information.

Regarding Deleuze's film theories, the single photo image can be an information unit beyond any meaning. Montage, fragmentation and discontinuity accumulate the assumption of different conditions of perception. Deleuze demands fragmentation and destabilisation²⁹ as a main condition for the constitution of space.

While the psychology of Gestalt was based on the so called good Gestalt assuming that there is a collective universal perception of aesthetics, the information architecture of Charles and Ray Eames set the benchmark for calculable structures of information which referring to perception establish the new qualification of the knowledge of space.

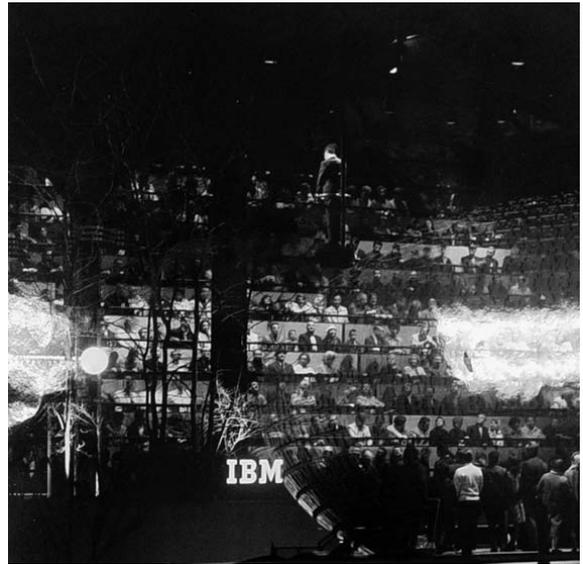


Fig. 7: Instructor in front of the "People Wall", World's Fair Architecture, New York 1964/65

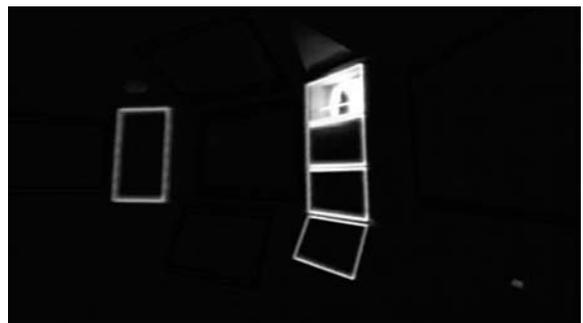
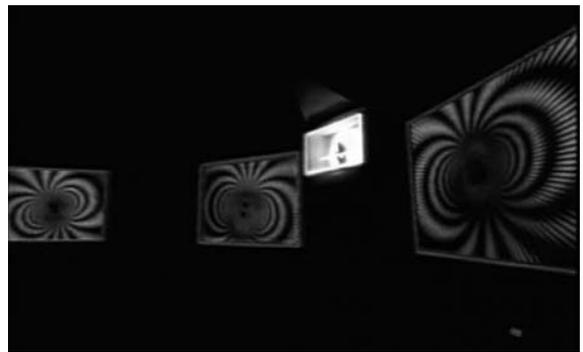


Fig. 8, 9 and 10: Still from the film IBM at the Fair, World's Fair Architecture, New York 1964/65

Notes:

- 1 Jonathan Crary, *Techniken des Betrachters. Sehen und Moderne im 19. Jahrhundert*, Verlag der Kunst, Dresden, Basel, 1996, p. 87.
- 2 Abraham A. Moles, *Informationstheorie und ästhetische Wahrnehmung*, DuMont Verlag Schauberg, Köln, 1971, pp. 15 et seq.
- 3 Wolfgang Metzger, *Gestaltpsychologie. Ausgewählte Werke aus den Jahren 1950 bis 1988*, Waldemar Kramer Verlag, Frankfurt/Main, 1999, pp. 124 et seqq.
- 4 Immanuel Kant, *Kritik der reinen Vernunft*, II.; 2.; 3., in: Jens Timmermann (Hrsg.), Felix Meiner Verlag, Hamburg, 2003 [Original 1781]
- 5 Rul Gunzenhäuser, *Mass und Information als ästhetische Kategorien*, Agis Verlag, Baden Baden, 1975, pp. 108 et seqq.
- 6 Nobert Wiener, *Cybernetics or Control and Communication in the Animal and the Machine*, MIT Press Paperback Edition, 1965, (Copyright 1948 and 1961 by the Massachusetts Institute of Technology).
- 7 Charles Eames, Box 152, Folder 13, *Invention and Innovation*, Manuscript Division, Library of Congress.
- 8 Niklas Luhmann, *Die Realität der Massenmedien*, Westdeutscher Verlag, Opladen, 1996, p. 51.
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- 10 George A. Miller, *The Magical Number Seven, Plus or Minus Two*, The Psychological Review, 1956, vol. 63, pp. 81 et seqq.
- 11 Eames Office, Box 202, Folder 3, *Films, Glimpses of the USA*, Manuscript Division, Library of Congress.
- 12 Wolfgang Metzger, see note 3, p. 239.
- 13 Rul Gunzenhäuser, see note 5, p. 89.
- 14 See note 11.
- 15 San Francisco Chronicle, 1965 in: Box 202, Folder 8, *Films, The House of Science*, Manuscript Division, Library of Congress.
- 16 Eames Office, *Set up in Ovoid Theater, IBM Museum and Exhibition Center Armonk, New York, Conceptual Planning*, Notes, General, 1966–69, OV I, Manuscript Division, Library of Congress
- 17 Gilles Deleuze, *Das Bewegungs-Bild. Kino 1*, Suhrkamp Verlag, Frankfurt/Main, 1997 [original 1983].
- 18 Gilles Deleuze, *Das Zeit-Bild. Kino 2*, Suhrkamp Verlag, Frankfurt/Main, 1997 [original 1985].
- 19 Gilles Deleuze, see note 17, pp. 103 et seqq.
- 20 Michel Frizot, *Geschwindigkeit der Fotografie. Bewegung und Dauer*, in: *Neue Geschichte der Fotografie*, Michel Frizot (Hrsg.), Könemann Verlag, Köln, 1998.
- 21 Béla Balázs, *Der Geist des Films. Artikel und Aufsätze 1926–1931*, Henschelverlag Kunst und Gesellschaft, Berlin, 1984, [original 1930], Rudolf Arnheim, *Film als Kunst*, Rowohlt Verlag, Berlin, 2002 [Original 1932].
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- 25 Nobert Wiener, see note 6.
- 26 Claude E. Shannon, Warren Weaver, *The Mathematical Theory of Communication*, Illini Books Edition, 1963, [Copyright 1949 by the Board of Trustees of the University of Illinois].
- 27 Rul Gunzenhäuser, see note 5, p. 108.
- 28 Claude E. Shannon, Warren Weaver, see note 26, p. 8.
- 29 Gilles Deleuze, see note 17.

Credits:

- fig. 1: LOT 13191-22, no. 55, Library of Congress, Foto Division
fig. 2: LECO Photo Service, New York City, in: John McHale, *R. Buckminster Fuller*, New York, 1962, Abb. 82
fig. 3: LOT 13393, no. 18 (H), Foto Division, Library of Congress
fig. 4: LOT 13373, no. 36 (H), Foto Division, Library of Congress
fig. 5: Property of the Eames Office, in: *Eames Design. The Work of the Office of Charles and Ray Eames*, John Neuhart, Marilyn Neuhart, Ray Eames, Ernst und Sohn Verlag, Berlin, 1989, p. 284
fig. 6: Property of the Eames Office, in: *Eames Design. The Work of the Office of Charles and Ray Eames*, John Neuhart, Marilyn Neuhart, Ray Eames, Ernst und Sohn Verlag, Berlin, 1989, p. 290
fig. 7: Box 81, Folder 5, Manuscript Division, Library of Congress
fig. 8–10: Screen Shot from the Film *IBM at the Fair* by Charles and Ray Eames