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Charles and Ray Eameses' museums without walls: Films as exhibition and exhibitions as film

ABSTRACT

This article outlines the intersections between the exhibition and film work of Charles and Ray Eames and the Eames Office, and explores the ways in which film was used to create exhibition environments and vice versa. The Eameses' desire to transmit ideas to the broadest public generated a concept of the 'museum without walls' that found its ultimate expression in the creation of large-scale multi-media and multi-sensory exhibition environments. Their influential practice pioneered new methods of immersive exhibition design, experimented with the use of film as inhabitable exhibit and also as a tool to capture and display cultural subjects and artefacts typically experienced in museum settings. Considering the Eameses' projects afresh allows us to assess their role in shaping the expansive possibilities of film and the exhibition environment and the challenges of communicating ideas that continue to face museum professionals today.

KEYWORDS

Charles and Ray
Eames
design
film
exhibitions
expanded cinema
multi-screen
environment
modernism

Charles and Ray Eames are renowned for their pioneering and influential furniture designs, and for Case Study House Number 8, their home in California, which they designed for themselves and which is now regarded as a

masterpiece of modern architecture. However, the importance of their practice was not solely defined by iconic products that survive in museum collections or continue to furnish homes and offices around the world. Throughout their prolific creative partnership operating as the Eames Office, Charles and Ray realized a new conception of design that applied creative thinking to the challenges and technological advances of the era and utilized a range of tools, media and technologies to lend shape to their ideas. The Eameses made furniture, products, architecture, sculpture, textiles and graphic design but also created over 120 short films, produced a huge body of photographs that were often made into films or shown as multi-channel slide shows, performed lectures and created exhibitions on a wide range of subjects and scales. They were not limited by disciplinary boundaries, notions of style or the pursuit of innovation and originality for its own sake. Instead they were driven by philosophical ideals that favoured knowledge, discovery and discipline, and sought to make connections across specialist fields, and time and space, to get towards the fundamental questions of life. Their method of working was one in which the concept of design became an attitude – not a formula – that addressed itself to the need and the ‘rightness’ of the solution. All of their projects were vehicles for the transmission of ideas. When one surveys the complex environments that they created in physical exhibition experiences or as rendered through film one finds the Eameses’ own ‘museum without walls’ – a conceptual space in which images and ideas connected in new ways and could be disseminated to a broad public with urgency. This article considers the way in which the Eameses’ work in film and exhibition-making was closely intertwined to this end and focuses on projects in which exhibition becomes film and film becomes exhibition, to yield new forms of curatorial enquiry and visual and spatial language. Looking afresh at their approach to exhibitions through the lens of their use of film in this context offers new perspectives on the power of the moving image to express and convey ideas. Their vision challenged the conventions of mediation and exhibition-making practices, and pioneered new methods of immersive environmental design that fused popular entertainment, storytelling, communication theory and new technologies with the concept of expanded cinema. As a result the Eameses encouraged people to see in new ways and connect ideas to understand the complexities of the world and approach life with a renewed sense of possibility.

NEW FIELDS OF VISION

Like many of their contemporaries Charles and Ray Eames were interested in exhibitions as a vehicle for not only showing works but as a site for experimenting with modes of display and visual and spatial experience to create an environment capable of communicating a holistic concept greater than the sum of its parts. Charles had first designed faculty exhibitions while teaching at the Cranbrook Academy of Art in 1939 with his fellow instructor and friend Eero Saarinen. Their designs utilized the volume of the gallery space and sculptural objects were placed on thin platforms suspended from wire so that the works, which were mostly figurative, appeared to be floating in space or flying through the air like a trapeze act. Although modestly scaled and resourceful in execution, Eames and Saarinen’s approach to display owed much to the groundbreaking exhibitions designed by Bauhaus figures Herbert Bayer, Walter Gropius and László Moholy-Nagy in Europe in the late 1920s and the 1930s. Herbert Bayer’s influential 1930 ‘Field of Vision’ diagram is a

central influence here and a reference that recurs throughout the Eameses' exhibition displays and particularly their multi-media experiences. Bayer's concept challenged the dominance of single or limited horizontal viewing lines in conventional modes of museum display. Writing about his approach to exhibition design he characterized his method as one that

explored possibilities of extending the field of vision in order to utilise other than vertical areas and activate them with new interest. The normal field of vision becomes larger by turns of the head and body, whereby the direction of viewing and the relative position of exhibits gain new possibilities.

(Bayer 1961: 269–70)

These circulating influences begin to appear when Charles and Ray undertook exhibition design work more formally during the late 1940s and the 1950s – starting with the display *New Furniture Designed by Charles Eames* at MoMA in 1946 – albeit expressed with the Eameses' own unique aesthetic and attitude towards visual and spatial language. Like the Bauhaus room in Section 5 of the *Deutsche Werkbund* exhibition at the Salon Des Artistes Décorateurs in Paris in 1930, the furniture presented in the MoMA display by the Eameses was hung on walls at a high level. In other exhibitions the Eameses began to incorporate large photographic reproductions of objects to play with scale and create visual drama (see their *Good Design* exhibition in Chicago, 1950) and used lighting to dramatic effect, exaggerating shadows to make the everyday and familiar uncanny and surreal (see their window displays for Carson Pirie Scott, 1950). The showrooms designed for the furniture manufacturer Herman Miller also provided a rich landscape on which the Eameses could test their playful ideas and Eames Office displays in these retail environments became increasingly exuberant over the years. These early projects were a modest prelude to the zenith of their experimental exhibition-making activities in the late 1950s and the early 1960s, where film became exhibit and environment simultaneously.

For Charles and Ray Eames, the 'new possibilities' between things on display or juxtaposed through multi-image techniques generated an array of associations that allowed them to communicate complex ideas or conceptual connections across time and space. The image became their most effective means for creating these new 'museums without walls'.

CIRCULATING IDEAS: FILM AS EXHIBITION

Work at the Eames Office in the 1950s was demanding and exciting, with projects ranging from new groups of furniture (their most significant and commercially successfully designs came from this period), designs for houses for Billy and Audrey Wilder, and Max duPree, retail designs for Herman Miller, graphics, toys and domestic products, and many invitations to travel and lecture across America and internationally. Film and photography started to play a vital role in Charles and Ray's life, and increasingly the life of the Office, at this time too. From a young age, Charles was a keen photographer and the photographic image was central to communicating the couple's ideas from the beginning of their creative partnership. Photos of prototypes and products were endlessly cut up and montaged for press and promotion, and to aid with thinking through an idea or to enable a new way of looking at – and

therefore understanding – an object. In the Eames Collection held at the Library of Congress there are approximately 500,000 photographic artefacts, including 35mm slide transparencies, contact prints and negatives. This vast body of images tells us much about the centrality of photography to the Eameses' *oeuvre* and their approach to thinking through images.

In 1945 Charles delivered a lecture to the California Institute of Technology in Pasadena using, for the first time, a 'fast-cut' slide show technique presenting 30–40 slides in succession on a single projector. Later referred to as 'Lecture 1', Charles' talk brought together an array of images captured on his Leica 35mm camera – of toys, the natural world, complex built structures, moments at the circus, machines, landscapes and details of artworks – to show the relationship between design and structure in the man-made and natural worlds. The slide show would become an important tool by which the Eameses communicated their ideas or new projects both in the office and in public. As the need to convey more information or a greater number of associations between the subject of their images grew, presentations were subsequently made using two or three slide channels simultaneously. Their most ambitious lecture experiment took place in 1953 and brought together multiple slide projections, moving image, visual 'exhibit' boards, live narration and sound and scent.

The Eameses also made a number of short films composed entirely of still photographs. They are attempts to communicate a multi-sensory, spatial experience and function as examples of film as exhibition environment. *House: After Five Years of Living* (1955) was the Eameses' first short film produced using only still images and was made by recording slide transparencies sequentially on 35mm motion-picture film by a stop-motion camera typically used for animation. The film's lyrical and poetic visual choreography allows the viewer to 'experience' the Eames House in a way a didactically structured 'walk-through' documentary could never achieve. The Eameses invite us to see the House – its textures and play of light, the relationship with the landscape and the fluidity of spaces inside and out – and thereby to live it, as an environment on film.

Charles and Ray reprised this technique when they made *Textiles and Ornamental Arts of India* (1955), a cinematic record of an exhibition held at The Museum of Modern Art in New York and designed and installed by their friend and collaborator Alexander Girard and curated by Edgar Kaufmann Jr., MoMA's director of Architecture and Design (Figure 1). *Textiles and Ornamental Arts of India* 'intended to celebrate the revival under India's new Commonwealth status of some of her oldest native crafts, known and admired in the West since the time of the Roman Empire' (Anon. 1954: 1). Material was selected for display by Kaufmann Jr., who was accompanied by Girard during a six-week trip to Europe and India, under the guidance of experts from the Victoria and Albert Museum (V&A) in London, and exhibition texts were written by Pupul Jayakur, an Indian textiles specialist. Girard's luscious design utilized the exhibits to full effect and took the form of an imagined bazaar or market-place; 'gold columns surround a fifty-foot long pool of water over which hung colourful and patterned saris' and in another treasure room,

under a multicoloured canopy, are displayed hundreds of pieces of the finest jewellery, many set with rubies, emeralds, pearls, diamonds and crystal in settings which vary from hammered gold to minute gold and silver filigree, together with rare sixteenth- and seventeenth-century enamels and vessels of carved and inlaid jade.

(Anon. 1955: 1)



Figure 1: Charles and Ray Eames / Eames Office, still from Textiles and Ornamental Arts of India, 1955, film. Courtesy and © 2018 Eames Office, LLC (eamesoffice.com).

The Eameses were clearly taken with India, its culture and its magnificent craft heritage, and the riches assembled by Girard and Kaufmann Jr. were too seductive to resist documenting on film. What is interesting to note about the Eameses' objectives with their film project, however, is not that it was undertaken for posterity's sake but that it expressly aimed to 'extend the audience for the exhibition, as it could be seen by relatively few people in its museum run, and to provide a full-screen, close-up look at exotic objects and textiles rarely seen outside a museum context' (Neuhart et al. 1989: 201). The film takes viewers on a tour through the exhibition and focuses on many details of the objects and designs on display; it is in part narrated by Pupul Jayaker and includes a music score, 'A Morning Raga', by notable Indian musicians Ali Akbar Khan on sitar and Chatur Lal on the tabla, who were brought to the United States to perform in relation to the exhibition. Charles took the photographs that make up the film on his hand-held camera as filming live-action would have been too disruptive an operation during installation of the exhibition. Ray can be seen viewing works on display in one shot and photos of museum visitors were taken once the exhibition was open to the public. This rich and captivating 'cinematic record' has allowed the life of an exhibition – always an ephemeral venture – to continue long into the future. The film was circulated so that viewers of the time were able to experience an exhibition beyond their reach because of the boundaries of geography or financial resource. For Eames scholar Pat Kirkham, 'the message that one witnessed a vision of another culture makes this film more than a mere record of an exhibition' (Kirkham 1995: 333). Looking back from today's perspective the film still stands as an important work not only in relation to the way in which it so beautifully communicates knowledge and expertise on the subject matter but as an archival record of exhibition-making practices and visitor experience, which are so rarely captured so thoughtfully on film. More importantly,

like *House*, the film manages to create a compelling sensory experience, one in which the film is perhaps more successful as a communicative tool than the exhibition itself. Discussing their use of film as a method of communicating a lot of information in a compressed time with historian Ruth Bowman, Ray Eames remembers the making of the film:

Museums have shows and then nothing is left but a catalogue that doesn't tell everything that it should. It tells a great deal, but it doesn't tell everything. Whereby a film – a film contains a great deal of held information. [...] Anyway, people called up and said, 'It was marvelous, except that I was at the exhibition and there were things in the show that were not in the exhibition'. For instance, they said there was a pot in the movie that they knew wasn't in the exhibition. And they had spent hours there. Actually, it was there, and we knew that it was there on the screen for less than a half a second. So to have someone see something in less than half a second that they had not seen or not remembered seeing right in the exhibition meant a great deal. We were convinced of it anyway [...] And it has been proven many other times by things that were on for a very short time which were compelling the eye to see.

(Eames 1980: 12)

Textiles and Ornamental Arts of India is a 'museum without walls' both in terms of its expression of the Eameses' desire to use film and image media to circulate ideas to more people, and its success in creating a richly associative field of connections between objects, art and ideas; exhibition becomes film, film becomes exhibition.

Two years later the Eameses collaborated again with Alexander Girard, this time looking at the objects and rituals associated with the Mexican celebration of All Soul's Day or *Día de Los Muertos* (Day of the Dead). Like Girard, the Eameses were as fascinated with Mexico as they were with India and found it impossible to turn down Girard's invitation to make the film, which was sponsored at his request by the Museum of International Folk Art in Santa Fe, New Mexico. The film was shot in Mexico primarily using still photography; a short live-action sequence was filmed at the Girard's house in Santa Fe and shows a procession of toys and objects from both the Eameses' and Girard's Day of the Dead collections. *Day of the Dead* (1957) was shown at many film festivals both in the United States and abroad, and was also made available to museums, libraries and schools for screening. While not a record of an exhibition, or a film made for a specific display, its support from the Museum of International Folk Art (see the publicity poster designed by Eames Office staff Deborah Sussman [Figure 2]) and its subsequent dissemination to museums and other places of education attest to its value – beyond the inherent quality of the film itself – in terms of exploring new ways to show and share knowledge about the artefacts and intangible aspects of cultural heritage typically found in museum exhibitions or books. In her recent appraisal of the film for the catalogue accompanying the Los Angeles County Museum of Art's exhibition *Found in Translation: Design in California and Mexico, 1915–1985*, design historian and curator Bobby Tigermann highlights the lasting worth of keeping such films in circulation and discusses the deep impression that the film made on Sister Karen Boccalero, founder of the Self Help Graphics arts centre in East Los Angeles and former student of artist Sister Corita Kent, who



Figure 2: Eames Office, *Day of the Dead*, 1957, film title and printed poster. Courtesy and © 2018 Eames Office, LLC (eamesoffice.com).

taught at the renowned Immaculate Heart College and was a close friend of both Charles and Ray. Boccacero screened *Day of the Dead* regularly and found the film to be a formative influence in her decision to instigate *Día de Los Muertos* festivities at Self Help Graphics and thereby bring what were private, home-based ceremonies into a larger public setting. For Tigerman the *Day of the Dead* film, so successful due to the Eameses' aptitude for effective communication and their passion for folk art, 'played a small but crucial role in fostering a Chicano observance north of the border' (Tigerman 2017: 244–47).

Moments in the life of an exhibition or artefacts of cultural significance continued to be captured on film by the Eameses and circulated to different audiences through film festivals, corporate partnerships or educational bodies. In 1958 the Eames Office made a film of Herman Miller's presence in the American Pavilion at the Brussels World Fair. It is a lively four-and-a-half-minute overview of visitors to the Pavilion and of people resting on Eames-designed furniture manufactured by Herman Miller but the real treat is a long segment of images of Saul Steinberg's epic 70-metre-long mural-collage *The Americans* (1958). Steinberg and the Eameses were friends and so it comes as no surprise to see the artist featuring so prominently in the film: 'In the Pavilion or in the Fair there is nothing more impressive than Saul Sternberg's mural' says Charles in the narration. Yet few people today know about the film itself – or its inclusion of Steinberg's masterwork – and for scholars and researchers interested in the artist or in World Fairs, the footage of the Pavilion in use, and the mural in situ and visitor engagement with it, is an invaluable resource for understanding past exhibition histories. In later years Charles and Ray, along with colleagues at the Eames Office, curated and produced an exhibition titled *Photography and the City: The Evolution of an Art and Science*

(1968) for the Smithsonian Institution, which was shown at their Arts and Industries Building on the National Mall in Washington, DC. Charles' passion for photography and urban planning were combined to great effect in this interrogation of the role of photography in shaping our understanding of and ideas about the changing nature of cities. The exhibition was a comprehensive survey of the city and its relationship with the image, from the earliest photographs of urban centres such as Paris and London and their dissemination through newspapers and other print media, to the ways in which photographers have consistently documented social change or shifts in urban infrastructure. Charles was reportedly displeased with the way in which the exhibition failed to convey the chaos of cities and the urgency of the challenges facing them. The following year the Eames Office produced a film version of *Photography and the City*, which he hoped would in part answer some of the shortcomings of the exhibition. The film *Image of the City* (1969) – presumably titled in homage to urbanist and MIT professor Kevin Lynch's seminal 1960 text of the same name – started life as an idea for two separate films intended to be shown together simultaneously. The final film is still structured in two halves but the segments are shown successively in a single channel; the first examines the history of photography and its shaping of the city, and the second presents (then) new visual imaging technologies and techniques – from satellite observation and thermo-imaging to cutting-edge computer generated spatial image modelling – 'from which a wide variety of information about the city can be derived' (Ostroff 2015: 297). Although a little clunky because of the shift in subject and visual mode between the two halves the second segment of *Image of the City* is a masterpiece of information design and an insightful exploration of visual communication tools that still feel as exciting and as pertinent today as they must have done at the end of the 1960s. On viewing one understands the frustration that Charles experienced with static presentations of these new technologies in the exhibition; they needed sound, moving image and voiceover to fully convey not just the imaging technologies themselves but the scale and complexity of global urban infrastructural questions that the Eames Office sought to foreground with the exhibition project as a whole. Until technology progressed to enable the Eameses to transmit the full extent of their ideas through moving image or multi-media experience, the conventional exhibition mode – in which presenting film was difficult to maintain and prohibitively expensive – would never be enough.

COMPELLING THE EYE TO SEE

We have never thought of ourselves as motion picture producers. We have never been involved in a theory of multiple projection. Rather, we came upon it out of desperation, more as a tool to get across ideas and to relate ideas of importance.

(Charles Eames, 1962, in Ostroff 2015: 241)

The illustrated or multi-media lecture was another visual and experiential form, analogous to an exhibition, that the Eameses used to experiment with modes of communicating complex ideas or highly associative relationships between subjects of interest to them. In 1952 designer and writer George Nelson was invited by the Department of Fine Arts at the University of Georgia in Athens to review its curriculum and help develop a new programme for

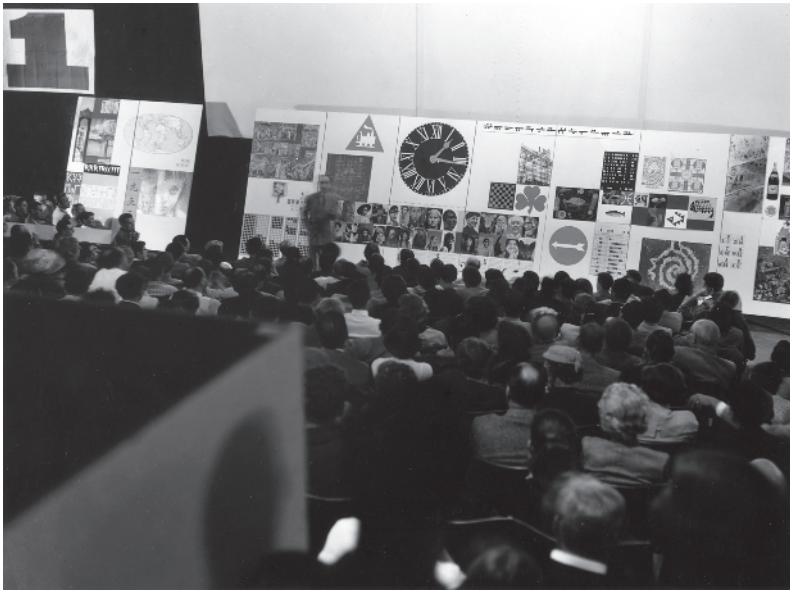


Figure 3: Charles and Ray Eames / Eames Office, second presentation of *A Rough Sketch for a Sample Lesson for a Hypothetical Course*, University of Los Angeles, California, May 1953. Courtesy and © 2018 Eames Office, LLC (eamesoffice.com).

the faculty. After observing classes and the student body, whose reasons for studying art ranged from hobbyist interest to professional ambition, Nelson felt that the problem his educational experiment needed to address was in 'fostering understanding and creative capacity so that these qualities could be employed in any future situation' (Nelson 1954: 44–51). He assembled a team to work with him to devise the experiment: Charles and Ray Eames along with Alexander Girard. The result was *Art X* or, as the Eames named it, *A Rough Sketch for a Sample Lesson for a Hypothetical Course* – a lecture-performance, which brought together a range of audio-visual aids to communicate effectively complex course material in a compressed period of time (Figure 3). The lecture was performed six times in Athens and three times at a later date at University of California, Los Angeles. The brochure for the 'sample lesson' states the overarching concept as 'a normal progression, perhaps, toward breaking down the barriers between fields of learning [...] towards making people a little more intuitive [...] towards increasing communication between people and things' (Ince 2015: 227). This advocacy for interdisciplinary teaching and learning, and an *intuitive* and open (as opposed to fixed) understanding of relationships between things across time and space was of great interest to the Eameses and circulated among other leading cultural thinkers of the twentieth century, from Aby Warburg and his epic constellations of images in the *Mnemosyne Atlas* (1924–29), to Andre Malraux's influential book *La Musée Imaginaire* (*Museum without Walls*) (Malraux 1965). The art critic and curator Laurence Alloway noted that Charles Eames 'thinks in terms of relationships rather than aesthetic standards of form' (Alloway 1956: 55). The *Sample Lesson* was a multi-media experience of the highest order and its subject was,

fittingly, ‘communication’. A long strip of white exhibition boards prepared by Girard, on which a huge variety of differently sized printed images were pasted, were placed at the front of the lecture hall facing the audience; large circus numbers and other graphic elements were displayed on either side of the central panels at different heights. Three slide projectors showing still images and additional motion picture segments, which would go on to feature in subsequent Eames films, completed the visual presentation. Recorded sounds and live narration were used along with synthetic scents of bread and incense, which were pumped into the auditorium through the ventilation system at strategic points in the script to heighten the sensory experience. Organized like a tightly choreographed circus performance so beloved of the Eameses, the *Sample Lesson* whisked the audience through ideas around visual communication, communications theory and transmission processes, abstraction, typography, sound, ancient civilization and methods of communication. Members of the audience were enlightened, while some were left perplexed; others remembered things that were not there and, in a report published on the experiment, some attendees felt that they had seen not just one lesson but the whole semester’s course. Whether successful or not, *Rough Sketch for a Sample Lesson for a Hypothetical Course* has entered art history as one of the most radical and intriguing pedagogical models of the last century. For the Eameses it would become a testing ground for their thinking about ways to condense complex concepts and the effectiveness of transmitting those ideas as an experience in space. It was the starting point for their explorations of exhibition as film and image as an inhabitable environment.

INFORMATION MACHINES

Coming out of the war mentality, the Eameses’ innovations in the world of communication, their exhibitions, film, and multi-screen performances transformed the status of architecture. Their highly controlled flows of simultaneous images provided a space, an enclosure – the kind of space we now occupy continuously without thinking.

(Colomina 2001: 5–9)

The ‘environments’ that Charles and Ray sought to create were attempts to communicate ideas using a variety of tools and technologies to arrange the information in the most effective way and thereby convey, with purpose, the bigger message of the whole endeavour. In 1957 the Eameses made a short film for IBM to present in their pavilion at the 1958 Brussels World Fair. It was their first fully animated film and told the story of the evolution of technologies and processes that led to the development of the electronic computer; it was called *The Information Machine*. The exhibitions and multi-media experiences that the Eameses produced between 1959 and 1965 were the concept of the ‘Information Machine’ expressed as environment. *Glimpses of the U.S.A* (1959), *House of Science* (1962) and the IBM Pavilion at the New York World’s Fair (1964/65) were literal information machines in which visitors were, to use Colomina’s term, ‘enclosed by images’. Their conceptual ambition, technical complexity and spectacular realization mean that they remain among the most innovative design exhibition installations ever achieved and confirm Charles and Ray Eames as truly original pioneers of their generation.

Although *Glimpses of the U.S.A* is often seen as a direct successor to the multi-sensory experiment in Georgia, Charles viewed the challenge and intention in Moscow as an entirely different affair. In *Sample Lesson* taking information in from the main focus *and* the periphery (other images, film, sound, smell, narration, etc.) simultaneously was intended to compound the complexity of the central concept and unpack the constellation of associated relationships. Speaking about the project in Moscow at an Industry Film Producers Association Conference at UCLA in 1962, Charles said:

We were making a message – taking a message – to a group of people who had not heard from this country at all. There was an exhibition that showed a tremendous amount of gear: toasters, pancake mix and all those things that make life worthwhile [...] they had been hearing words for many years and words are a very unconvincing thing. Pictures are more convincing [...] The thing was how to make the message credible. We were not saying 'how can we use the gadget called the multiple image technique'. So what we figured was, we wanted enough images going at the same time so that it would completely discourage being absorbed in a single one. But we didn't want so many that you would be absolutely confused.

(Ostroff 2015: 241–43)

In 1958 the USSR and the United States made an agreement to enter a period of cultural exchange, which resulted in two major exhibitions: the first was the *Soviet Exhibition of Science, Technology and Culture* held in the New York Coliseum in the summer of 1959; the *American Exhibition* in Sokolniki Park in Moscow opened a little later that same summer. The US State Department turned to the United States Information Agency (USIA) to organize the exhibition and the USIA's Director of Design, Jack Masey, appointed George Nelson to undertake the design commission. Nelson brought Charles and Ray Eames to the creative team and Masey invited Buckminster Fuller to design the central dome in which the Eameses' seven-screen film *Glimpses of the U.S.A* was shown (Figure 4). The Fuller dome was the central 'statement' building in Sokolniki Park and was referred to as the 'Information Machine'. An IBM RAMAC computer was located at the entrance and visitors could put questions to the machine, which were answered from a bank of 4000 pre-programmed replies. The machine also recorded the visitors' questions, capturing data for the US authorities (Turner 2013: 249). An enormous Glass Pavilion – called the 'jungle gym' because of its complex internal multi-platformed structure – was to be filled with the 'fruits of American labour'. It also contained a full-size model suburban house – dubbed the 'splitnik' in reference to the fact that the house had been cut in two to enable visitor circulation, and a play on Sputnik 1, the satellite successfully launched into space in 1957 – which was the site of the now infamous 'Kitchen Debate' between American Vice-President Richard Nixon and Soviet leader Nikita Khrushchev. Products were piled high; kitchen appliance demonstrations and fashion shows entertained visitors, who could also browse books in a library or sample the delights of American food and beverage brands such as Pepsi Cola. Several exhibitions were also on view, including Edward Steichen's *The Family of Man*, an epic survey of mankind told in 503 photographs from 68 countries, which had originally been staged at MoMA in New York in 1955. Against this abundant backdrop of American consumer culture, everyday domestic products and static exhibitions, the



Figure 4: Charles and Ray Eames / Eames Office, installation view of *Glimpses of the U.S.A.*, American National Exhibition, Moscow, 1959. Courtesy and © 2018 Eames Office, LLC (eamesoffice.com).

Eameses' total film environment shifted the scale and drama of the *American Exhibition* to a new level.

Buckminster Fuller's golden geodesic dome was 250ft in diameter, a huge space in which the Eameses projected their twelve-minute film *Glimpses of the U.S.A* onto seven screens, each 20 by 30 ft and suspended from the ceiling at one end. The 'glimpses' were into daily routines – a typical work day and a typical weekend day in the life of the average American citizen. As with previous film projects the narrative was built from still photographs intercut with moving image. The Eameses amassed over 2200 images of daily activities and of aerial shots of the sky, landscape, cities, streets and transportation infrastructure gleaned from a great variety of sources beyond their own photographic collection. *Life*, *Time* and *Fortune* magazines, photo archives, institutional libraries, individual photographers such as Ezra Stoller and Julius Shulman and friends and associates of the Eames Office contributed to the bank of images from which the Eameses would select and edit the final film. Architect Kevin Roche – an associate at Eero Saarinen's office at the time – remembers being asked by the Eameses to go out and photograph new shopping malls designed by Victor Gruen, which eventually made their way into *Glimpses*:

He was especially interested in the Northland shopping centre in Detroit, one of the very first large-scale hopping centres in the US, designed by Victor Gruen, and so with a crew of people from the office we went down there and took about 300 photographs.

(Roche 2015: 37)

The images were cut into seven separate reels of film and projected in synch simultaneously. To build the credibility the Eameses felt was central to the success of the message; each cut of seven images was always different but

related in subject. One of the most memorable segments in the film is the only example of the same image repeated on each screen and features a short clip of Marilyn Monroe singing in the movie *Some Like it Hot* (Billy Wilder, 1959). The film was released the same year and directed by Charles and Ray's friend Billy Wilder, who was also involved in preparations of the *American Exhibition* at meetings with Nelson at the Eames House.

Viewers watched the film standing in the vast central space of the dome, looking up towards the hanging screens. The scale of the film projection and its dominance of the interior of the dome along with the impressive and abundant flow of captivating visual images and lively jazz soundtrack must have left visitors reeling. For one journalist it was an 'information overload – an avalanche of related data that comes to a viewer too fast for him to cull and reject it [...] a twelve-minute blitz' (Colomina 2001: 5–29). Despite the impressive onslaught of domestic products in the rest of the *American Exhibition*, Charles Eames found most visitors interested in 'how Americans live' (Ostroff 2015: 198) and *Glimpses of the U.S.A* proved to be one of the most popular at the *American Exhibition*. The conventional didactic and static displays about US business and industry placed around the perimeter of the dome must have seemed terrifically dull in comparison and in most photographic documentation of the Dome these supporting exhibits are rarely seen. The Eameses' sensational filmic environment offered at once a powerful new exhibition experience and commanding visual story, accessible to visitors of all backgrounds. The audience adeptly synthesized the 'blitz' of images and found its theme of universal human connection emotionally moving. The last images in the film are ones of love and intimacy between people; the seven screens fade away to just one final image showing a simple vase of purple 'forget-me-not' flowers, which have the same meaning in Russian as in English – a hospitable gesture, in typical Eames fashion, of warmth and understanding.

At the end of the 1950s immersive multi-media environments were the site of experimentation in both corporate and counter-culture alike. At the 1958 Brussels World's Fair, for example, visitors could experience Disney's popular nineteen-minute travelogue *The USA in Circarama*; the Philips Pavilion's *Le Poème Électronique*, a synthesis of art and architecture by Le Corbusier, Iannis Xenakis and Edward Varèse, or Josef Svoboda's *Polyekran*, a three-dimensional spatial montage created using seven film projectors and eight slide projectors showing images of varying scales and placed at different angles in the space. The impulse to create these immersive environments or 'surrounds', as cultural theorist Fred Turner terms them, and their possible effect on audiences have come to represent the persuasive techniques used to communicate the political ideologies of the time. For Turner, *Circarama*

took charge of its audience's senses, undermined its viewers' ability to reason, and set their bodies in motion in a single, swaying, overawed mass [...] there was no choosing in Disney's world; there was only going along for the ride.

(Turner 2013: 238–39)

In his recent book on the Eameses' film work Eric Schuldenfrei draws a line through these filmic environment experiments back to the earlier half of the twentieth century and the concept of 'total theatre' developed by German theatre director Erwin Piscator. Piscator's dramaturgy combined live action with still and moving image projections, immersing the audience in a 'total' or an 'epic'

environment as a means by which to explore man's relationship with society. The Eameses' multi-screen and multi-sensory compositions can be understood in a similar frame; their filmic exhibition environments sought to make connections between images, and between audience and image, that explored ideas about society on a deeper level. Like Piscator, the Eameses' recognized that the immediate and absorbing effect of a total environment utilizing a variety of media in concert enabled ideas to be communicated beyond the realm of aesthetic theatrical or exhibition experience. Immersion in these filmic environments was intended to move the audience from passive spectator to active and transformed collective participant; viewers were still going along for the ride, but the expansive landscape of their journey had changed.

EXTENSIONS OF MAN

To function in his fullest scope man must restore the unity of his experiences so that he can register sensory, emotional, and intellectual dimensions of the present in an indivisible whole. The language of vision, optical communication, is one of the strongest potential means both to reunite man and his knowledge and to re-form man into an integrated being. The visual language is capable of disseminating knowledge more effectively than almost any other vehicle of communication.

(Kepes 1944: 13)

The aesthetic and conceptual foundations of the Eameses multi-media exhibitions owe considerable debt to thinkers such as Gyorgy Kepes, who taught at the new Bauhaus in Chicago alongside Moholy-Nagy, and founded the Centre for Advanced Visual Studies at MIT in 1967. Kepes was known to the Eameses and they were great admirers of his work. In 1969 they included an 'update' of his ideas published in *The Language of Vision* in 1944 as part of a report the Eames Office produced for MIT on the role of the Arts in education (Ostroff 2015: 298–301). In the Report, the Eameses advocated for an infrastructure to be put in place that did not deliver the arts as a 'dietary supplement' but instead took the form of a practical programme that enabled students to develop communication skills and a 'sensitivity to the quality of things in general' resulting in an ability to communicate effectively and with communities outside of their immediate life; the student would be 're-formed into an integrated being' (Ostroff 2015).

The Eameses' exhibition at the IBM Pavilion at the 1964–65 New York World's Fair fused this new 'language of vision' with the ideas explored by Herbert Bayer and his Field of Vision in the 1930s and the cinematic 'surrounds' of Svoboda and Le Corbusier at the Brussels World's Fair. They extended their own experiments in information compression and film/exhibition as environment to create a spectacular and theatrical experience that pushed display technologies to the limit and created a new form of architectural space: 'the Eameses treated architecture as a multichannel information machine. And equally, multimedia installations as a kind of architecture' (Colomina 2001: 22).

Communications theory and the origins of information processing that led to the development of the computer were of deep and long-standing interest to Charles Eames, particularly in its potentially powerful application to problems related to architecture and planning. In a letter to Ian McCallum, editor of the British journal *Architectural Review*, in 1954 about the Eames Office



Figure 5: Eames Office and Eero Saarinen and Associates, view of the IBM Pavilion, New York World's Fair, 1964–65. Courtesy and © 2018 Eames Office, LLC (eamesoffice.com).

film *A Communications Primer* (1953) – a film about communications theory – Charles writes of a step-by-step process of evaluating economic situations in mathematical terms:

Here is a useful working tool that comes to us at a time when numbers and complications seem about to obliterate the human scale. What makes this tool so handy is that it would seem to actually use large numbers and unlimited relationships to help us return to the human scale and the richness of the townscape in terms of our times.

(Ostroff 2015: 137)

The IBM Pavilion presented the world of computers and data processing in an immersive exhibition and multimedia experience in which the Eameses sought to connect these unlimited relationships back to a human scale recognizable to and – crucially – comfortable for the general public (Figure 5). These new ‘extensions of man’ and their seemingly limitless capacities frightened people and the IBM Pavilion as part garden of delights, part vision of the future, was conceived to ‘take the curse off the image of the soulless giant computer’ (Ince 2015: 280). The Eames Office collaborated with Eero Saarinen and Associates on the design and construction of the Pavilion, which consisted of a large ‘grove’ covered by a canopy of cor-ten steel trees under which visitors could explore a carnival-like array of educational displays. Product demonstrations of the latest typewriters were hugely popular as were interactive exhibits such as IBM’s Optical Scanning and Information Retrieval System, from which visitors were able to request a news headline from a specific date in the New York Times’ history; the date and headline were retrieved and then printed onto souvenir cards for visitors to take home. The Ovoid Theater, a giant elliptical structure clad in a repeat pattern of 2 ft high moulded plastic



Figure 6: Charles and Ray Eames / Eames Office, installation view of *Think*, IBM Pavilion, New York World's Fair, 1964–65. Courtesy and © 2018 Eames Office, LLC (eamesoffice.com).

letters spelling IBM, floated above the tree canopy. The Theater was called the *Information Machine* and inside visitors watched the Eameses' most ambitious multi-media installation, a fifteen-minute experience titled *Think*. The journey into the *Information Machine* started on a set of elevated walkways where visitors were entertained by musicians while queuing to take their place on the 'People Wall', a grandstand-style seating structure that could seat roughly 420 people in twelve rows. From this great vantage point over the Pavilion and the rest of the World's Fair, visitors watched and waited for the *Information Machine* show to begin. The People Wall was operated by a hydraulic lift and moved the audience into the Theater at a 45-degree angle in a smooth motion similar to riding an elevator. A host dressed in formal coat and tails, who oversaw proceedings like a circus ringmaster, dropped down in front of the audience on a moving vertical platform, then travelled back up at the same time as the audience and reappeared in the configuration of multiple screens that made up the *Think* presentation (Figure 6). His welcome prepared the audience for what was to come:

Ladies and Gentlemen, welcome to the *IBM Information Machine*. And the *Information Machine* is just that, a machine designed to help me give you a lot of information in a very short time [...] the machine brings you information in much the same way as your mind gets it – in fragments and glimpses – sometimes relating to the same idea or incident. Like making toast in the morning.

The visual presentation that followed was about problem-solving and human processes of decision-making akin to those used by computers, and was made on 22 screens configured in a way that directly recalls Herbert Bayer's Field of Vision diagram. Fifteen of the Ovoid Theater's largest screens were



Figure 7: Charles and Ray Eames / Eames Office, installation view of Think, IBM Pavilion, New York World's Fair, 1964–65. Courtesy and © 2018 Eames Office, LLC (eamesoffice.com).

used for the 'film' elements (moving image films on nine screens, slides on the remaining six), while the rest of the screens punctuated the show with light and colour at different moments (Figure 7). The synchronization of the People Wall, the host and the projection system made the *Information Machine* a highly complex challenge, and one that had to be timed to within a 25th of a second (Gallick 2015: 289) to keep everything tightly coordinated and visitors moving through at strict twenty-minute intervals. It is estimated that some 16,000 people passed through the *Information Machine* each day. This spectacle of educational exhibition as popular entertainment, of the presentation of an idea through film was, like every Eames endeavour, an efficient and memorable way to communicate a complex concept with beauty and intellectual stimulation. In 'Poetry of ideas', his lengthy appraisal of the Eameses films, the writer and filmmaker Paul Schrader notes: 'Eames's films present a new kind of chase, a chase through a set of information in search of an Idea [...] it is in the quest of the Idea that we often gain the richest rewards' (Schrader 1969: 2–16).

IBM afforded the Eames Office great freedom to pursue their ideas through exhibitions and films, and retained the Office on a general stipend as a consultant without precise tasks to perform (Schuldenfrei 2014: 181). In looking back on their relationship with IBM, Ray found the ideal client.

We'd done many exhibits for IBM, who have been the most wonderful clients, I think, that you could imagine, because they wanted something to happen and didn't care, didn't make it part of it to be selling anything, you know. They felt that the value was in making better people, more educated and interested people.

(Bowman 1980)

After the IBM Pavilion Charles and Ray Eames moved away from the multi-screen installation and devoted an increasing amount of their time and interest to single-channel films, three-screen slide shows, traditional exhibition displays on subjects such as the history of the computer or significant figures in politics, mathematics and science. They undertook research projects, corporate and academic consultancy and large-scale architectural projects such as the unrealized *National Fisheries Centre and Aquarium* (1966–69), developed in collaboration with Kevin Roche John Dinkerloo Associates (KRJDA), the practice formed out of Eero Saarinen and Associates following Saarinen's premature death in 1961.

Film still proved the most useful and appropriate medium with which to represent and explore questions of communication and exhibition-making practices and museology. Increasingly the Eameses' felt that the goal was to work towards a greater dissemination of knowledge among non-specialist citizens and looked to collaborate with large institutions to find ways for the educational assets of these public bodies to reach more people by capitalizing on new media distribution technologies or mediated museum experiences. A number of films produced in the late 1960s and up until Charles' death in 1978 operate as models for exhibitions or study films on the future of information networks that we now take for granted. *National Fisheries Centre and Aquarium* (1968), *IBM Museum* (1968), *Metropolitan Overview* (1975) are all film models of unrealized museum projects for which the Eameses imagined new methods of display and public engagement for museum collections or public institutions and their research. Each film was a comprehensive project proposal that took the viewer/future visitor on a journey through spaces designed for the study of exhibits, for supporting media presentations, hands-on activities and formal education, respite and playful interaction. These compelling and succinct narrative films not only brought imagined exhibition experiences to life but turned a filmed 'project report' into a deeply sophisticated ethical rationale for the importance of public sites of knowledge production and their relevance to the problems facing society of the time. They reveal much of the thinking that continues to challenge museum professionals, curators and exhibition makers today: chiefly, the question of how to communicate effectively and develop relevant curatorial and educational practices that engage a broad public in ideas about the world. The Eameses saw connections in everything and their body of work in film and exhibition environment shows us the continuum of connected ideas that changed the landscape of design thinking and helped shape the networked information age in which we live today.

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