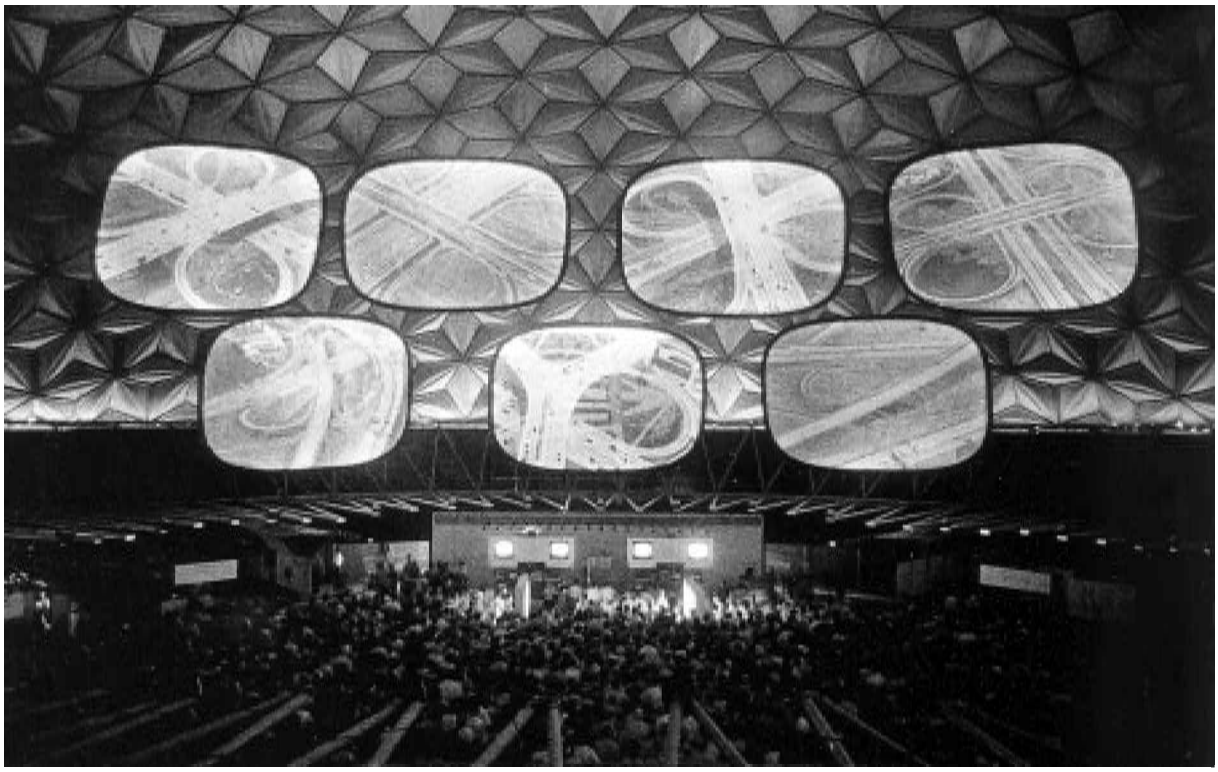
Charles and Ray Eames.
***Glimpses of the USA*, 1959.**
Showing in the interior of the
Moscow World's Fair auditorium.



Enclosed by Images: The Eameses' Multimedia Architecture

BEATRIZ COLOMINA

I.

We are surrounded today, everywhere, all the time, by arrays of multiple, simultaneous images. In the streets, airports, shopping centers, and gyms, but also on our computers and television sets. The idea of a single image commanding our attention has faded away. It seems as if we need to be distracted in order to concentrate. As if we—all of us living in this new kind of space, the space of information—could be diagnosed en masse with Attention Deficit Disorder. The state of distraction in the metropolis, described so eloquently by Walter Benjamin early in the twentieth century, seems to have been replaced by a new form of distraction, which is to say a new form of attention. Rather than wandering cinematically through the city, we now look in one direction and see many juxtaposed moving images, more than we can possibly synthesize or reduce to a single impression. We sit in front of our computers on our ergonomically perfected chairs, staring with a fixed gaze at many simultaneously "open" windows through which different kinds of information stream toward us. We hardly even notice it. It seems natural, as if we were simply breathing in the information.

How would one go about writing a history of this form of perception? Should one go back to the organization of television studios, with their walls of monitors from which the director chooses the camera angle that will be presented to the viewer; or should one go to Cape Canaveral and look at its Mission Control room; or should one even go back to World War II, when so-called Situation Rooms were envisioned with multiple projections bringing information from all over the world and presenting it side by side for instant analysis of the situation by leaders and military commanders?

But it is not simply the military, or war technology, that has defined this new form of perception. Designers, architects, and artists were involved from the beginning,

playing a crucial role in the evolution of the multiscreen and multimedia techniques of presentation of information. While the artists' use of these techniques tends to be associated with the "Happenings" and "Expanded Cinema" of the 1960s, architects were involved much earlier and in very different contexts, such as military operations and governmental propaganda campaigns.

Take the 1959 American exhibition in Moscow, where the government enlisted some of the country's most sophisticated designers. Site of the famous Kitchen Debate between Richard Nixon and Nikita Khrushchev, the exhibition was a Cold War operation in which the Eameses' multiscreen technique turned out to be a powerful weapon.

To reconstruct a little bit of the atmosphere: The USA and USSR had agreed in 1958 to exchange national exhibits on "science, technology and culture." The Soviet exhibition opened in the New York Coliseum at Columbus Circle in New York City in June of 1959 and the American exhibition opened in Sokolniki Park in Moscow in July of the same year. Vice President Nixon, in Moscow to open the exhibition, engaged in a heated debate with Khrushchev over the virtues of the American way of life. The exchange became known as the Kitchen Debate because it took place—in an event that appeared impromptu but was actually staged by the Americans—in the kitchen of a suburban house split in half to allow easy viewing. The Russians called the house the "Splitnik," a pun on the Sputnik, the satellite the Soviets had put into orbit two years before.

What is remarkable about this debate is the focus. As historian Elaine Tyler-May has noted, instead of discussing "missiles, bombs, or even modes of government . . . [the two leaders] argued over the relative merits of American and Soviet washing machines, televisions, and electric ranges."[1] For Nixon, American superiority rested on the ideal of the suburban home, complete with modern appliances and distinct gender roles. He proclaimed that this "model" suburban home represented nothing less than American freedom:

Top: Stan VanDerBeek in the control room of WGBH-TV, Boston. Photo: Gene Youngblood.

Center: NASA Mission Control, Houston.

Bottom: Christopher Faust, Suburban Documentation Project. *Metro Traffic Control, Minneapolis, Minnesota*, 1993.

> To us, diversity, the right to choose, is the most important thing. . . . We don't have one decision made at the top by one government official. . . . We have many different manufacturers and many different kinds of washing machines so that the housewife has a choice.[2]

The American exhibition in Moscow captivated the national and international media. Newspapers, illustrated magazines, and television networks reported on the event. Symptomatically, *Life* magazine put the wives, instead of the politicians, on the cover. Pat Nixon appears as the prototype of the American woman depicted in advertisements of the 1950s: slim, well groomed, fashionable, happy. In contrast, the Soviet ladies appear stocky and dowdy, and while two of them, Mrs. Khrushchev and Mrs. Mikoyan, look proudly toward the camera, the third one, Mrs. Kozlov, in what Roland Barthes may have seen as the *punctum* of this photograph, can't keep her eyes off Pat Nixon's dress.[3]

Envy—that is what the American exhibition seems to have been designed to produce (despite vigorous denials by Nixon in his debate with Khrushchev: "We do not claim to astonish the Soviet people"[4]). But not envy of scientific, military, or industrial achievements. Envy of washing machines, dishwashers, color televisions, suburban houses, lawnmowers, supermarkets stocked full of groceries, Cadillac convertibles, makeup colors, lipstick, spike-heeled shoes, hi-fi sets, cake mixes, TV dinners, Pepsi-Cola, and so on. "What is this," the newspaper *Izvestia* asked itself in its news report, "a national exhibit of a great country or a branch department store? Where is American science, American industry, and particularly their factory techniques?"[5] And a Russian teacher is quoted by the *Wall Street Journal*: "You have lots of dolls, furniture, dishes, but where are your technical exhibits?"[6] Even American newspapers described the main pavilion of the exhibition as a "lush bargain basement," but one that, due to the dust of a crumbling concrete floor, forty-eight hours after the opening, already looked as if it "had barely survived a fire sale."[7]

It was for this context that the Eameses produced their film, *Glimpses of the USA*, projecting it onto seven twenty-by-thirty-foot screens suspended within a vast (250 feet in diameter) golden geodesic dome designed by Buckminster Fuller. More than 2,200 still and moving images (some from Billy Wilder's *Some Like it Hot*) presented "a typical work day" in the life of the United States in nine minutes and "a typical weekend day" in three minutes.[8] Thousands and thousands of images were pulled from many different sources, including photo archives (such as

Magnum Photos, Photo Researchers and the magazines *Fortune, Holiday, Life, Look,* the *Saturday Evening Post*, *Sports Illustrated, Sunset*, and *Time*), individual photographers (such as Ferenc Berko, Julius Shulman, Ezra Stoller, Ernst Braun, George Zimbel, and Charles Eames), and friends and associates of the Eameses (including Eliot Noyes, George Nelson, Alexander Girard, Eero Saarinen, Billy Wilder, Don Albinson, and Robert Staples).[9] The images were combined into seven separate film reels and projected simultaneously through seven interlocked projectors. Fuller later said that nobody had done anything like this before and that advertisers and filmmakers would soon follow the Eameses.[10]

The Eameses did not simply install their film in Fuller's space. They were involved in the organization of the whole exhibition from the beginning. George Nelson, who had been commissioned by the United States Information Agency (USIA) to design the exhibition, and Jack Masey from the USIA brought them into the team. According to Nelson, it was in an evening meeting in the Eames House in Los Angeles, culminating three days of discussions, where "all the basic decisions for the fair were made. Present were Nelson, Ray and Charles (the latter occasionally swooping past on a swing hung from the ceiling), the movie director Billy Wilder, and Masey."[11] According to Nelson, by the end of the evening a basic scheme had emerged:

(1) A dome (by Bucky Fuller).

(2) A glass pavilion (by Welton Beckett) "as a kind of bazaar stuffed full of things, [the] idea being that consumer products represented one of the areas in which we were most effective, as well as one in which the Russians . . . were more interested."

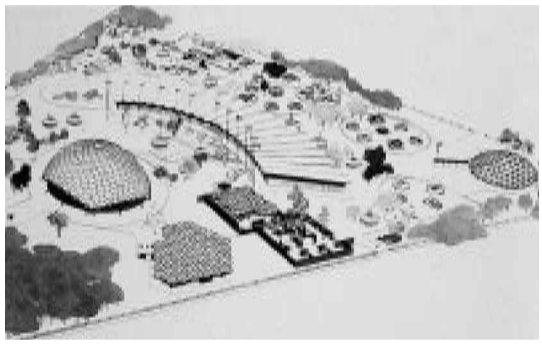
(3) An introductory film by the Eameses, since the team felt that the "80,000 square feet of exhibition space was not enough to communicate more than a small fraction of what we wanted to say."[12]

In addition, the USIA had already contracted for the inclusion of Disney's "Circarama," a 360-degree motion picture which offered a twenty-minute tour of American cities and tourist attractions and which played to about one thousand Russians an hour;[13] an architecture exhibit curated by Peter Blake; a fashion show curated by Eleanor Lambert; a packaging exhibition by the Museum of Modern Art's associate curator of design, Mildred Constantine; and Edward Steichen's

famous photographic exhibit, "The Family of Man."[14] The exhibition also included a full-scale ranch-style suburban house, put up by a Long Island builder and furnished by Macy's. It was in the kitchen of this fourteen thousand-dollar, six-room house filled with appliances that the Kitchen Debate began with an argument over automatic washers.

The multiscreen performance turned out to be one of the most popular exhibits at the fair (second only to the cars and color televisions).[15] *Time* magazine called it the "smash hit of the Fair,"[16] the *Wall Street Journal* described it as the "real bomb shell," and U.S. officials believed this was "the real pile-driver of the fair."[17] Groups of five thousand people were brought into the dome every forty-five minutes, sixteen times a day, for the duration of the fair.[18] Close to three million people saw the show, and the floor had to be resurfaced three or four times during the six-week exhibition.[19]

The Eameses were not just popular entertainers in an official exhibition. *Glimpses of the USA* was not just images inside a dome. The huge array of suspended screens defined a space, a space within a space. The Eameses were self-consciously architects of a new kind of space. The film breaks with the fixed perspectival view of the world. In fact, we find ourselves in a space that can only be apprehended with the high technology of telescopes, zoom lenses, airplanes, night-vision cameras, and so on, and where there is no privileged point of view. It is not simply that many of the individual images that make up *Glimpses* have been taken with these instruments. More importantly, the relationship between the images re-enacts the operation of the technologies.



The film starts with images from outer space on all the screens: stars across the sky, seven constellations, seven star clusters, nebulae, etc., then moves through aerial views of the city at night, from higher up to closer in until city lights from the air fill the screens. The early morning comes with aerial views of landscapes from different parts of the country: deserts, mountains, hills, seas, farms, suburban developments, urban neighborhoods. When the camera

Opposite: Nikita Khruschev and Richard Nixon in "The Kitchen Debate" at the Moscow World's Fair, 1959.

Top: American National Exhibition. Moscow World's Fair, 1959. Aerial Perspective.

Left: Richard Nixon cutting the ribbon of the American National Exhibition with Buckminster Fuller dome in background. Moscow World's Fair, 1959.

eyes finally descend to the ground, we see close-ups of newspapers and milk bottles at doors. But still no people, only traces of their existence on earth.

Not by chance, the first signs of human life are centered upon the house and domestic space. From the stars at night and the aerial views, the cameras zoom to the most intimate scenes: "people having breakfast at home, men leaving for work, kissing their wives, kissing the baby, being given lunchboxes, getting into cars, waving good-bye, children leaving for school, being given lunchboxes, saying good-bye to dog, piling into station wagons and cars, getting into school buses, baby crying."[20]

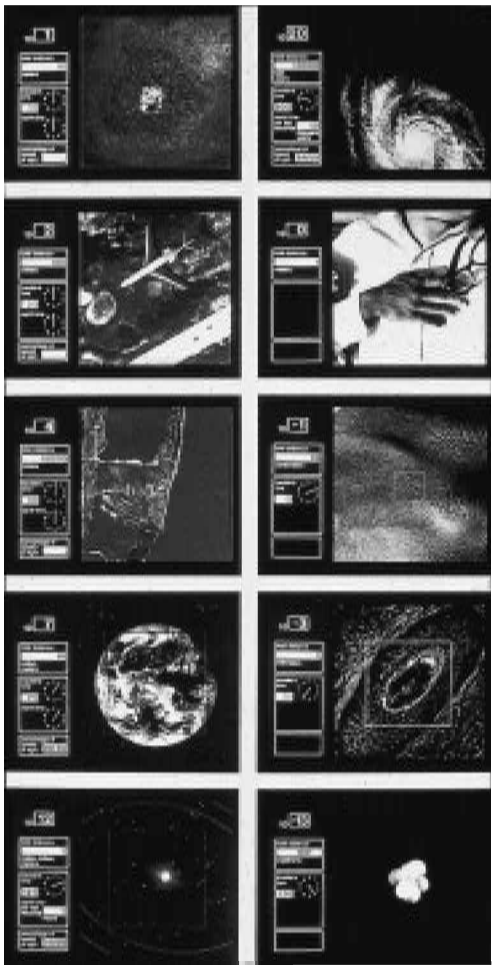
As with the Eameses' later and much better-known film *Powers of Ten* (1968),[21] which, incidentally, reused images of the night sky from *Glimpses of the USA*,[22] the film moves from outer space to the close-up details of everyday life. As the working script of the film indicates, the close-ups are: "last sips of coffee" of men before leaving for work, "children washing hands before dinner," "housewives on the phone with clerks (supermarket food shelves in b.g.),"[23] and so on. In *Powers of Ten,* the movement will be set in reverse, from the domestic space of a picnic spread with a man sleeping beside a woman in a park in Chicago out into the atmosphere, and then back down inside the body through the skin of the man's wrist to microscopic cells and to the atomic level. Even if *Powers of Ten*, initially produced for the Commission on College Physics, was a more scientific, more advanced film, in which space is measured in seconds, the logic of both films (*Glimpses* and *Powers of Ten*) is the same. Intimate domesticity is suspended within an entirely new spatial system—a system that was the product of esoteric scientific-military research but that had entered the everyday public imagination with the launching of Sputnik in 1957. Fantasies that had long circulated in science fiction had become reality. This shift from research and fantasy to tangible fact made new forms of communicating to a mass audience possible.[24] The Eameses' innovative technique did not simply present the audience with a new way of seeing things. Rather, it gave form to a new mode of perception that was already in everybody's mind.

Glimpses breaks with the linear narrative of film to bring snippets of information, an ever-changing mosaic image of American life. And yet the message of the film is linear and eerily consistent with the official message represented by the Kitchen Debate. From the stars in the sky at the beginning of the film—which the narrative insists are the same in the Soviet Union as in the USA—to the people kissing their goodnights and the forget-me-not flowers in the last image, the film

emphasized universal emotions,[25] while at the same time it unambiguously reinforced the material abundance of one country. From the parking lots of factories, which the narrative describes as filled with the cars of the workers, to the aerial views of suburban houses with a blue swimming pool in each yard, to the close-ups of shopping carts and shelves full of goodies in supermarkets and housewives cooking dinner in kitchens equipped with every imaginable appliance, the message of the film was clear: we are the same but, on the material level, we have more.

Glimpses, like the "Splitnik" house where the Kitchen Debate took place, displaced the USA-USSR debate from the arms and space race to the battle of the appliances. And yet the overall effect of the film is that of an extraordinarily powerful viewing technology, a hyperviewing mechanism, which is hard to imagine outside the very space program the exhibition was trying to downplay. In fact, this extreme mode of viewing goes beyond the old fantasy of the eye in the sky. If *Glimpses* simulates the operation of satellite surveillance, it exposes more than the details of life in the streets. It penetrates the most intimate spaces and reveals every secret. Domestic life itself becomes the target, the source of pride or insecurity. The Americans, made insecure by the thought of a Russian eye looking down on them, countered by exposing more than that eye could ever see (or at least pretending to, since "a day in the life of the USA" became an image of the "Good Life" without ghettos, poverty, domestic violence, or depression).

Glimpses simply intensified an existing mode of perception. In fact, it synthesized several already existing modes that were manifest in television, space programs, and military operations. As is typical of all the Eameses' work, it was the simplicity and clarity of this synthesis that made it immediately accessible to all.[26]



II.

What kind of genealogy can one make of the Eameses' development of this astonishingly successful technique?

It was not the first time they had deployed multiple screens. In fact, the Eameses were involved in one of the first multimedia presentations on record, if not the first. Again, it was George Nelson who set up the commission. In 1952 he had been

Opposite: Charles and Ray Eames. *Glimpses of the USA*, 1959. Projection simulation in half-inch scale model of auditorium.

Left: Charles and Ray Eames. *Powers of Ten*, 1968. Storyboard.

asked to make a study for the Department of Fine Arts at the University of Georgia in Athens, and he brought along Ray and Charles Eames and Alexander Girard. Instead of writing a report, they decided to collaborate on a "show for a typical class" of fifty-five minutes. Nelson referred to it as "Art X" while the Eameses called it "A Rough Sketch for a Sample Lesson for a Hypothetical Course." The subject of the lesson was "Communications"[27] and the stated goals included "the breaking down of barriers between fields of learning . . . making people a little more intuitive . . . [and] increasing communication between people and things."[28] The performance included a live narrator, multiple images (still and moving pictures), and even smells and sounds (music and narration). Charles Eames later said, "We used a lot of sound, sometimes carried to a very high volume so you would actually feel the vibrations."[29] The idea was to produce an intense sensory environment so as to "heighten awareness." The effect was so convincing that apparently some people even smelled things when no smells were introduced, only a suggestion in an image or a sound (for example, the smell of oil in the machinery).[30]

It was a major production. Nelson described the team arriving in Athens "burdened with only slightly less equipment than Ringling Brothers. This included a movie projector, three slide projectors, three screens, three or four tape recorders, cans of films, boxes of slides, and reels of magnetic tape. Girard brought a collection of bottled synthetic odors that were to be fed into the auditorium during the show through the air-conditioning ducts."[31]

The reference to the circus was not accidental. Talking to a reporter for *Vogue* magazine, Charles later argued that "'Sample Lesson' was a blast on all senses, a super-saturated three-ring circus. Simultaneously the students were assaulted by three sets of slides, two tape recorders, a motion picture with sound, and peripheral panels for further distraction."[32]

The circus was one of the Eameses' lifetime fascinations[33]—so much so that in the forties, when they were out of work and money, they were about to audition for parts at the circus. They would have been clowns, but

Right: Charles Eames. Photographs of the circus.

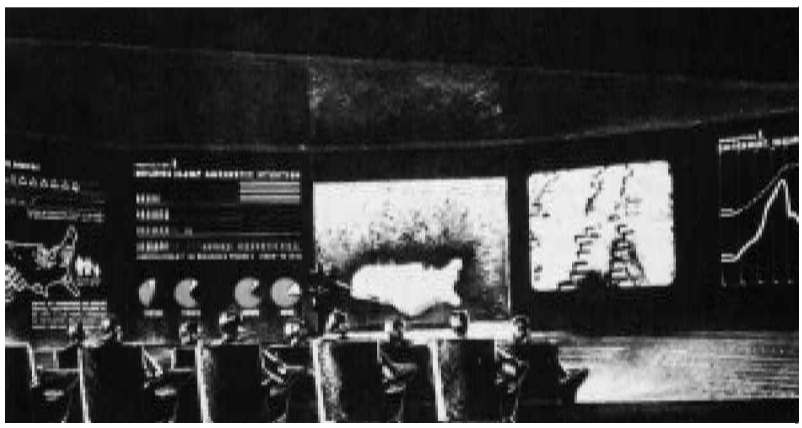
Opposite: Henry Dreyfuss. Presidential War Situation Room. Sketch view.

ultimately a contract to make plywood furniture allowed them to continue as designers. And from the mid-1940s on, they took hundreds and hundreds of photographs of the circus which they used in many contexts, including *Circus* (a 180-slide, three-screen slide show accompanied by a soundtrack featuring circus music and other sounds recorded at the circus) presented as part of the Charles Eliot Norton Lectures at Harvard University that Charles delivered in 1970, and the film *Clown Face* (1971), a training film about "the precise and classical art of applying makeup" made for Bill Ballentine, director of the Clown College of Ringling Brothers Barnum & Bailey Circus. The Eameses had been friends with the Ballentines since the late forties when the Eameses photographed the circus's behind-the-scenes activities during an engagement in Los Angeles.[34] Charles was on the board of the Ringling Brothers College and often referred to the circus as an example of what design and art should be: not self-expression but precise discipline:

> Everything in the circus is pushing the possible beyond the limit—bears do not really ride on bicycles, people do not really execute three and a half turn somersaults in the air from a board to a ball, and until recently no one dressed the way fliers do. . . . Yet within this apparent freewheeling license, we find a discipline which is almost unbelievable. . . . The circus may look like the epitome of pleasure, but the person flying on a high wire, or executing a balancing act, or being shot from a cannon must take his pleasure very, very seriously. In the same vein, the scientist, in his laboratory, is pushing the possible beyond the limit and he too must take his pleasure very seriously.[35]

The circus, as an event that offers a multiplicity of simultaneous experiences that cannot be taken in entirely by the viewer, was the Eameses' model for their design of multimedia exhibitions and the fast-cutting technique of their films and slide shows,[36] where the objective was always to communicate the maximum amount of information in a way that was both pleasurable and effective.

But the technological model for multiscreen, multimedia presentations may have been provided by the War Situation Room, which was designed in those same years to bring information in simultaneously from numerous sources around the world so that the president and military commanders could make decisions. It is not without irony, in that sense, that the Eameses read the organization of the circus as a form of crisis control. In a circus, Charles said, "there is a strict hierarchy of events, and an elimination of choice under stress, so that one event can automatically follow another. . . . There is a recognized mission for everyone involved. In a

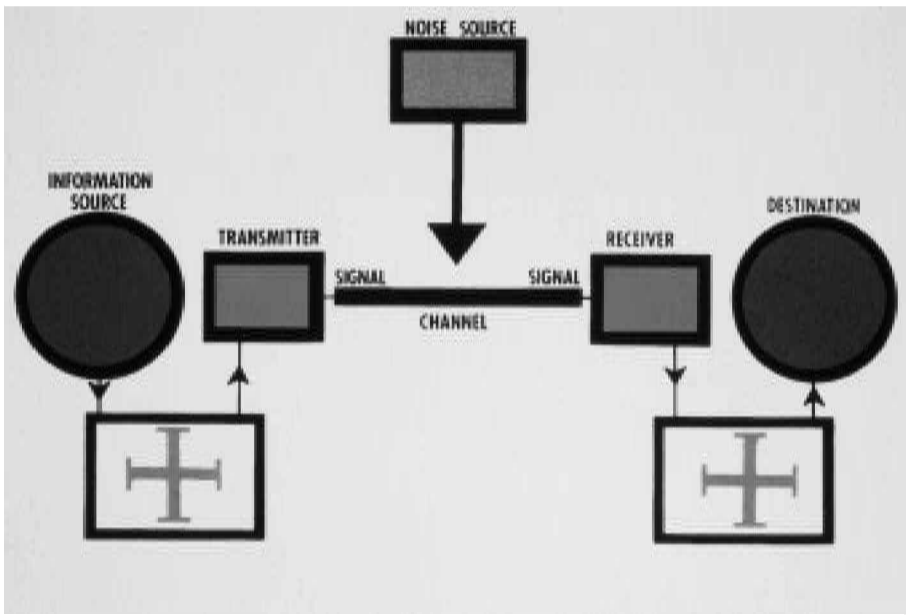


crisis there can be no question as to what needs to be done."[37] A number of the Eameses' friends were involved in the secret military project of the War Rooms, including Buckminster Fuller, Eero Saarinen, and Henry Dreyfuss, whose unrealized design involved a wall of parallel projected images of different kinds of information.[38] It is not clear that the Eameses knew anything about the project during the war years, but it is very likely, given their friendship with Fuller, Saarinen, and Dreyfuss, that they would have found out after the war. In 1970, in the context of his second Norton Lecture at Harvard University, Charles referred to the War Rooms as a model for city management:

> In the management of a city, linear discourse certainly can't cope. We imagine a City Room or a World Health Room (rather like a War Room) where all the information from satellite monitors and other sources could be monitored; [Fuller's World Game is an example.]. . . . The city problem involves conflicting interests and points of view. So the place where information is correlated also has to be a place where each group can try out plans for its own changing needs.[39]

The overall theme of the Norton Lectures was announced as "Problems Relating to Visual Communication and the Visual Environment," and a consistent theme was the "necessity to devise visual models for matters of practical concern where linear description isn't enough." Gyorgy Kepes's *Language of Vision* was a constant reference point for the Eameses. The "language of vision" was seen as a "real threat to the discontinuity" (between the arts, between university departments, between art and everyday life, etc.) that the Eameses were always fighting.[40] Architecture ("a most non-discontinuous art") was seen as both the ultimate model for discontinuity and where the new technologies should be implemented.

A number of wartime research projects, including work on communications, ballistics and experimental computers, had quickly developed after the war into a full-fledged theory of information flow, most famously with the publication of Claude Shannon's *The Mathematical Theory of Communication* in 1949, which formalized the idea of an information channel from sender to recipient whose efficiency could be measured in terms of speed and noise.



This sense of information flow organized the *Sample Lesson* performance. The Eameses said, "we were trying to cram into a short time, a class hour, the most background material possible."[41] As part of the project, the Eameses produced *A Communication Primer*, a film that presents the theory of information, explaining Shannon's famous diagram of the passage of information. The film was subsequently developed in an effort to present current ideas in communication theory to architects and planners and to encourage them to use these ideas in their work. The basic idea was to integrate architecture and information flow.

If the great heroes of the Renaissance were, for the Eameses, "people concerned with ways of modeling/imaging, . . . not with self-expression or bravura. . . . Brunelleschi, but not Michelangelo,"[42] the great architects of our time would be the ones concerned with the new forms of communication, particularly computers:

> It appeared to us that the real current problems for architects now—the problems that a Brunelleschi, say, would gravitate to—are problems of *organization of information*. For city planning, for regional planning, the first need is clear, accessible models of current states-of-affairs, drawn from a data base that only a computer can handle for you.[43]

The logic of information flow is further developed in the 1955 Eames film *House: After Five Years of Living*. The film was entirely made from thousands of color slides the Eameses had been taking of their house over the first five years of its life.[44] The images are shown in quick succession (a technique called "fast cutting" for which the Eameses won an Emmy Award in 1960[45]) and accompanied with music by Elmer Bernstein. As Michael Braune wrote in 1966:

> The interesting point about this method of film making is not only that it is relatively simple to produce and that rather more information can be conveyed than when there is movement on the screen, but that it corresponds surprisingly closely with the way in which the brain normally

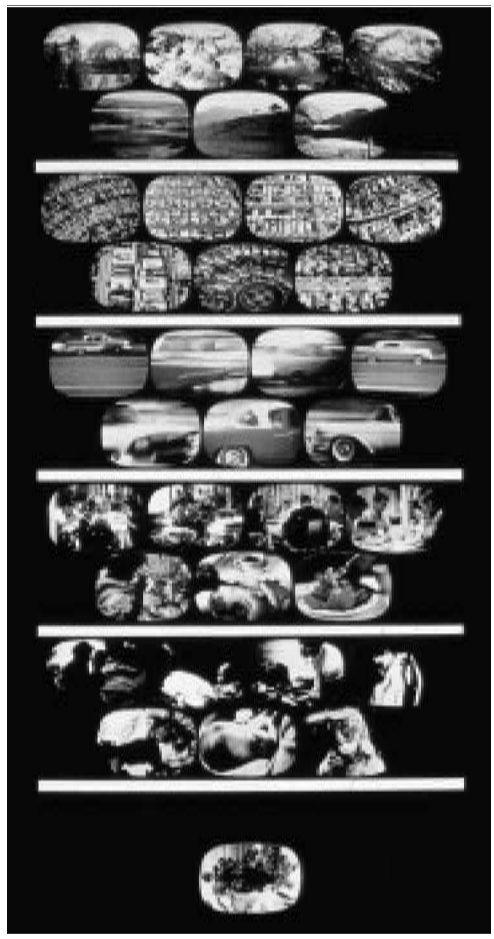
Opposite: Charles and Ray Eames. *A Communications Primer*, 1953. Film frame.

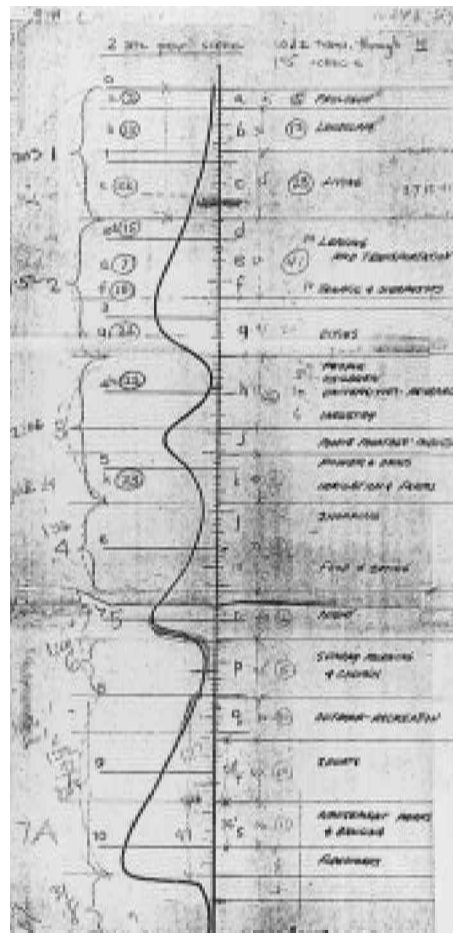
Left: Charles and Ray Eames. *House: After Five Years of Living*, 1955. Collection of Stills.

records the images it receives. I would assume that it also corresponds rather closely with the way Eames's own thought processes tend to work. I think it symptomatic, for instance, that he is extremely interested in computers, . . . and that one of the essential characteristics of computers is their need to separate information into components before being able to assemble them into a large number of different wholes.[46]

This technique was developed even further in *Glimpses,* which is organized around a strict logic of information transmission. The role of the designer is to design a particular flow of information. The central principle is one of compression. At the end of the design meeting in the Eames House, in preparation for the American exhibition in Moscow, the idea of the film emerged precisely "as a way of compressing into a small volume the tremendous quantity of information" they wanted to present, which would have been impossible to do in the eighty thousand square feet of the exhibition.[47] The space of the multiscreen film, like the space of the computer, compresses physical space. Each screen shows a different scene, but all seven at each moment are on the same general subject—housing, transportation, jazz, and so forth. As the *New York Times* described it:

Perhaps fifty clover-leaf highway intersections are shown in just a few seconds. So are dozens of housing projects, bridges, skyscrapers scenes, supermarkets, universities, museums, theatres, churches, farms, laboratories and much more.[48]





According to the Eameses, repetition was done for credibility. They said, "if, for example, we were to show a freeway interchange, somebody would look at it and say, 'We have one at Smolensk and one at Minsk; we have two, they have one'—that kind of thing. So we conceived the idea of having the imagery come on in multiple forms, as in the *Rough Sketch for a Sample Lesson*."[49] But the issue was much more than one of efficiency of communication or the polemical need to have multiple examples. The idea was, as with the "Sample Lesson," to produce sensory overload. As the Eameses suggested to *Vogue, Sample Lesson* tried to provide many forms of "distraction," instead of asking students to concentrate on a singular message.[50] The audience drifts through a multimedia space that exceeds their capacity to absorb it. The Eames-Nelson team thought that the most important thing to communicate to undergraduates was a sense of the relationships between things, what the Eameses would later call "Connections." Nelson and the Eameses argued that this awareness of relationships between seemingly unrelated phenomena is achieved by "high-speed techniques." They produce an excessive input from different directions that has to be synthesized by the audience. Likewise, Charles said of *Glimpses*:

> We wanted to have a credible number of images, but not so many that they couldn't be scanned in the time allotted. At the same time, the number of images had to be large enough so that people wouldn't be exactly sure how many they have seen. We arrived at the number seven. With four images, you always knew there were four, but by the time you got up to eight images you weren't quite sure. They were very big images—the width across four of them was half the length of a football field.[51]

One journalist described it as "information overload—an avalanche of related data that comes at a viewer too fast for him to cull and reject it . . . a twelve-minute blitz." The viewer is overwhelmed. More than anything, the Eameses wanted an emotional response, produced as much by the excess of images as their content. They said:

> At the Moscow World's Fair in 1959—when we used seven screens over an area that was over half the length of a football field—that was just a desperate attempt to make a credible statement to a group of people in Moscow when words had almost ceased to have meaning. We were telling the story straight, and we wanted to do it in 12 minutes, with images; but we found that

Opposite, left: Charles and Ray Eames. *Glimpses of the USA*, 1959.

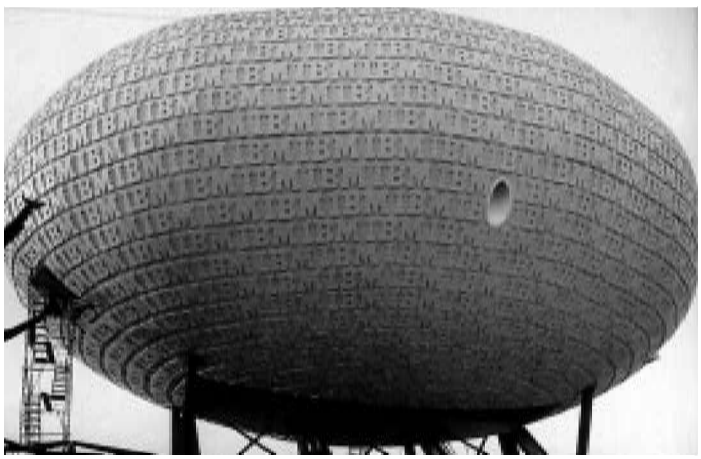
Opposite, right: Charles and Ray Eames. Notation of timing of sequences for *Glimpses of the USA*, 1959.

> we couldn't really give credibility to it in a linear way. However when we could put 50 images on the screen for a certain subject in a matter of 10 seconds, we got a kind of breadth which we felt we couldn't get any other way.[52]

The multiscreen technique goes through one more significant development in the 1964 World's Fair in New York. In the IBM ovoid building, designed by the Saarinen office, visitors board the "people wall" and are greeted by a "host" dressed in coat-tails, who slowly drops down from the IBM ovoid; the seated five hundred-person audience is then lifted up hydraulically from the ground level into the dark interior of the egg where they are surrounded by fourteen screens on which the Eameses project the film *Think*.[53] To enter the theater is no longer to cross the threshold, to pass through the ceremonial space of the entrance, as in a traditional public building. To *enter* here is to be lifted in front of a multiplicity of screens. The screens wrap the audience in a way that is reminiscent of Herbert Bayer's 1930 "diagram of the field of vision," produced as a sketch for the installation of an architecture and furniture exhibition.[54] The eye cannot escape the screens and each screen is bordered by other screens. Unlike the screens in Moscow, those in the IBM building are of different sizes and shapes. But once again, the eye has to jump around from image to image and can never fully catch up with all of them and their diverse contents. Fragments are presented to be momentarily linked together. The film is organized by the same logic of compression. Each momentary connection is replaced with another. The speed of the film is meant to be the speed of the mind. The "host" welcomes the audience to "the IBM Information Machine":

> . . . 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.[55]

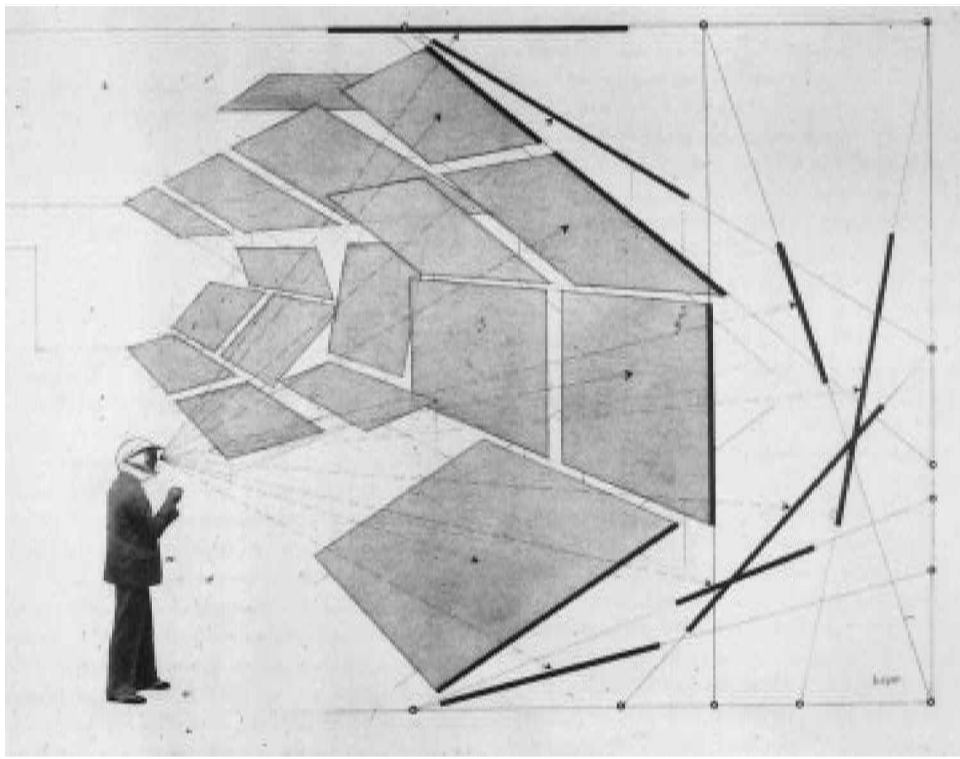
Already in 1959, the design team (Nelson, the Eameses, etc.) had used exactly the same term—"information machine"—to describe the role of Fuller's dome in Moscow, taking it from the title of a 1957 film the Eameses had prepared for the 1958 Brussels World's Fair. In addition to the multiscreens, the dome housed a huge RAMAC 305 computer, an "electronic brain" which offered written replies to 3,500 questions about life in the United States.[56] The architecture was conceived of from the very start as a combination of structure, multiscreen film, and computer.



Right: Roche/Dinkeloo and Associates. *IBM Corporation Pavilion for the New York World's Fair*, 1964–65.

Opposite, top: Herbert Bayer. *Diagram of Field of Vision*, 1930.

Opposite, bottom: Charles and Ray Eames. *Think*, 1965. Multiscreen projection.




2

Each technology creates an architecture in which inside/outside, entering/leaving, meant entirely different things and yet they co-existed. All were housed by the same physical structure, Fuller's dome, but each defined a different kind of space to be explored in different ways. From the "Sample Lesson" in 1953 to IBM in 1964, the Eameses treated architecture as a multichannel information machine. And, equally, multimedia installations as a kind of architecture.

III.

All of the Eameses' designs can be understood as multiscreen performances: they provide a framework in which objects can be placed and replaced. Even the parts of their furniture can be rearranged. Spaces are defined as arrays of information collected and constantly changed by the users.

This is the space of the media. The space of a newspaper or an illustrated magazine is a grid in which information is arranged and rearranged as it comes in: a space the reader navigates in his or her own way, at a glance, or by fully entering a particular story. The reader, viewer, consumer, constructs the space, participating actively in the design. It is a space where continuities are made through "cutting." The same is true of the space of newsreels and television. The logic of the Eameses multiscreens is simply the logic of the mass media.

It is not by chance that Charles Eames was always nostalgic for the time of his set design job for MGM in the early forties, continuously arranging and rearranging existing props at short notice.[57] All Eames architecture can be understood as set design. The Eameses even present themselves like Hollywood figures, as if in a movie or an advertisement, always so happy, with the ever-changing array of objects as their backdrop.

This logic of architecture as a set for staging the good life was central to the design of the Moscow exhibition. Even the famous kitchen, for

example, was cut in half not only to allow viewing by visitors, but most importantly to turn it into a photo op for the Kitchen Debate. Photographers and journalists knew already the night before that they had to be there, choosing their angle. Architecture was reorganized to produce a certain image. Charles had already spoken, in 1950, of our time as the era of communication. He was acutely aware that the new media were displacing the old role of architecture. And yet everything for the Eameses, in this world of communication that they were embracing so happily, is architecture: "The chairs are architecture, the films—they have a structure, just as the front page of a newspaper has a structure. The chairs are literally like architecture in miniature . . . architecture you can get your hands on."[58] In the notes for a letter to Italian architect Vittorio Gregotti accompanying a copy of *Powers of Ten*, they write: "In the past fifty years the world has gradually been finding out something that architects have always known, that is, that *everything* is architecture. The problems of environment have become more and more interrelated. This is a sketch for a film that shows something of how large—and small—our environment is."[59]

In every sense, Eames architecture is all about the space of information. Perhaps we can no longer talk about "space," but rather about "structure," or more precisely, about time. Structure for the Eameses is organization in time. The details that are central to Mies van der Rohe's architecture are replaced by what the Eameses call the "Connections." As Charles said in a film about a storage system they had designed: "The details are not details. They make the product. The connections, the connections, the connections."[60] But as Ralph Caplan pointed out, the connections in their work are not only between such "disparate materials as wood and steel," or between "seemingly alien disciplines" like physics and the circus, but also between ideas. Their technique of "information overload," used in films and multimedia presentations, as well as in their trademark "information wall" in exhibitions, was not used to "overtax the viewer's brain" but precisely to offer a "broad menu of options," and to create an "impulse to make connections."[61]

For the Eameses, structure is not linear. They reflected often on the impossibility of linear discourse. The structure of their exhibitions has been compared to a scholarly paper, loaded with footnotes, where "the highest level of participation consists in getting fascinated by the pieces and connecting them for oneself."[62] Seemingly static structures, like the frames of their buildings or of their plywood cabinets, are but frameworks for positioning ever-changing objects. And the frame

Charles and Ray Eames.
***Eames House*, 1945–49.**

itself is, anyway, meant to be changed all the time. These changes, this ever-fluctuating movement, can never be pinned down.

Mies van der Rohe's exhibition of his work at the Museum of Modern Art in 1947 was significant, according to the Eameses, not because of the individual exhibits, but because of the way the architect had organized them.[63] The organizational system of the exhibition communicated, in their view, the idea of Mies's architecture better than any single object (model, drawing, photograph) on display. When Charles published his photographs of the Mies exhibition in *Arts & Architecture* he wrote: "The significant thing seems to be the way in which he [Mies] has taken documents of his architecture and furniture and used them as elements in creating a space that says, 'this is what it's all about.'"[64]

The multiscreen presentations, the exhibition technique, and the Eameses' films are likewise significant not because of the individual factoids they offer, or even the story they tell, but because of the way the factoids are used as elements in creating a space that says: "this is what [the space of information] is all about."

Like all architects, the Eameses controlled the space they produced. The most important factor was to regulate the flow of information. They prepared extremely detailed technical instructions for the running of even their simplest three-screen slide show.[65] Performances were carefully planned to appear as effortless as a circus act. Timing and the elimination of "noise" were the major considerations. Their office produced masses of documents, even drawings showing the rise and fall of intensity through the course of a film, literally defining the space they wanted to produce, or, more precisely, the existing space of the media that they wanted to intensify.

With *Glimpses*, the Eameses retained complete control over their work by turning up in Moscow only forty-eight hours before the opening, as Peter Blake recalls it, "dressed like a boy scout and a girl scout," clutching the reels of the film.[66] A photograph shows the smiling couple descending from the plane, reels in Charles's hands, posing for the camera. As he later put it:

> Theoretically, it was a statement made by our State Department, and yet we did it entirely here and it was never seen by anyone from our government until they saw it in Moscow. . . . If you ask for criticism, you get it. If you don't, there is a chance everyone will be too busy to worry about it.[67]

The experience for the audience in Moscow was almost overwhelming. Journalists speak of too many images, too much information, too fast. For the MTV

Charles and Ray Eames. *A Computer Perspective*, 1971. Exhibition view.

and the Internet generation watching the film today, it would not be fast enough, and yet we do not seem to have come that far either. The logic of the Internet is already spelled out in the Eameses multiscreen projects.

Coming out of the war mentality, the Eameses' innovations in the world of communication, their exhibitions, films, and multiscreen 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.

Notes

1. Elaine Tyler May, *Homeward Bound: American Families in the Cold War Era* (New York: Basic Books, 1988), 16. See also Karal Ann Marling, *As Seen on TV, The Visual Culture of Everyday Life in the 1950s* (Cambridge, Mass.: Harvard University Press, 1994).

2. Quoted by May in *Homeward Bound*, 17. For transcripts of the debate see "The Two Worlds: A Day–Long Debate," *New York Times,* 25 July 1959, 1–3; "When Nixon Took on Khrushchev," a report of the meeting, and the text of Nixon's address at the opening of the American National Exhibition in Moscow on 24 July 1959, printed in "Setting Russia Straight On Facts about U.S.," *U.S. News and World Report*, 3 August 1959, 36–39, 70–72; "Encounter," *Newsweek*, 3 August 1959, 15–19; and "Better to See Once," *Time*, 3 August 1959, 12–14.

3. *Life*, 10 August 1959.

4. Khrushchev: "You Americans expect that the Soviet people will be amazed. It is not so. We have all these things in our new apartments."

Nixon: "We do not claim to astonish the Soviet people."
U.S. News & World Report, 3 August 1958, 36–37.

5. Quoted in Alan L. Otten, "Russians Eagerly Tour U.S. Exhibit Despite Cool Official Attitude," *Wall Street Journal*, 28 July 1959, p. 16, col. 4.

6. Otten, p. 16, col. 4.

7. Max Frankel, "Dust From Floor Plagues U.S. Fair," *New York Times*, 28 July 1959, p. 12, col. 3.

8. John Neuhart, Marilyn Neuhart, and Ray Eames, *Eames Design: The Work of the Office of Charles and Ray Eames* (New York: Harry N. Abrams, 1989), 238–241. See also, Hélène Lipstadt, "Natural Overlap: Charles and Ray Eames and the Federal Government," in *The Work of Charles and Ray Eames: A Legacy of Invention,* ed. Donald Albrecht (New York: Abrams, 1997), 160–166.

9. Eames Archives, Library of Congress, box 202.

10. Letter from Buckminster Fuller to Ms. Camp, 7 November 1973. Eames Archives, Library of Congress, box 30.

11. Stanley Abercrombie, *George Nelson: The Design of Modern Design* (Cambridge, Mass.: MIT Press, 1995), 163.

12. Abercrombie, 164.

13. Max Frankel, "Image of America at Issue in Soviet," *New York Times*, 23 August 1959. "Circarama" had already been shown in the 1958 World's Fair in Brussels.

14. Abercrombie, 167.

15. "The seven-screen quickie is intended as a general introduction to the fair. According to the votes of Russians, however, it is the most popular exhibit after the automobiles and the color television." Frankel, "Image of America at Issue in Soviet."

16. "Watching the thousands of colorful glimpses of the U.S. and its people, the Russians were entranced, and the slides are the smash hit of the fair." "The U.S. in Moscow: Russia Comes to the Fair," *Time*, 3 August 1959, 14.

17. "And Mr. Khrushchev watched unsmilingly as the real bombshell exploded—a huge exhibit of typical American scenes flashed on seven huge ceiling screens. Each screen shows a different scene but all seven at each moment are on the same general subject—housing, transportation, jazz and so forth. U.S. officials believe this is the real pile-driver of the fair, and the premier's phlegmatic attitude—not even smiling when seven huge Marilyn Monroes dashed on the screen or when Mr. Nixon pointed out golfing scenes—showed his unhappiness with the display." *Wall Street Journal*, 28 July 1959.

18. Frankel, "Dust From Floor Plagues U.S. Fair," p. 12, col. 3.

19. Pat Kirkham, *Charles and Ray Eames: Designers of the Twentieth Century* (Cambridge, Mass.: MIT Press, 1995), 324. From interview of Wilder by Kirkham in 1993.

20. Taken from the working script of *Glimpses*, Eames Archives, Library of Congress, box 202.

21. *Powers of Ten* was based on the 1957 book by Kees Boeke, *Cosmic View: The Universe in Forty Jumps*. The film was produced for the Commission on College Physics. An updated and more developed version was produced in 1977. In the second version the starting point is still a picnic scene but it takes place in a park bordering lake Michigan in Chicago. See Neuhart, Neuhart, and Eames, 336–337 and 440–441.

22. See handwritten notes on the manuscript of the first version of *Powers of Ten*. Eames Archives, Library of Congress, box 207. The film is still referred to as *Cosmic View*.

23. Working script of *Glimpses*, Eames Archives, Library of Congress, box 202.

24. In 1970, in the context of Charles Eames's third Charles Eliot Norton Lecture at Harvard University, where he once again insisted on the need to incorporate media into the classroom, he still spoke of changing forms of communications with reference to Sputnik: "In post-Sputnik panic, a great demand for taping science lectures; when they were shown on television, distribution cost ended up as 100:1 of production cost; no way to run a railroad." Eames Archives, Library of Congress, box 217, folder 10.

25. Apparently even the forget-me-not flowers were understood in precisely the intended way, as symbols of friendship and loyalty. According to the Eameses, the audience could be heard saying "*nezabutki,*" "forget-me-not," as the flowers appeared on the screen as the last image of the film. Neuhart, Neuhart, and Eames, 241.

26. For example, *Powers of Ten* was a "sketch film" to be presented at an "assembly of one thousand of America's top physicists," but the Eameses decided that it should "appeal to a ten-year-old as well as a physicist." Paul Schrader, "Poetry of Ideas: The Films of Charles Eames," *Film Quarterly* 23, no. 3 (Spring 1970): 10.

27. "Grist for Atlanta paper version," manuscript in the Eames Archives, Library of Congress, box 217, folder 15.

28. Neuhart, Neuhart, and Eames, 177.

29. Owen Gingerich, "A Conversation with Charles Eames," *The American Scholar* 46, no. 3 (Summer 1977): 331.

30. Gingerich, 331.

31. Abercrombie, 145, quoting George Nelson, "The Georgia Experiment: An Industrial Approach to Problems of Education," manuscript, October 1954.

32. Allene Talmey, "Eames," *Vogue*, 15 August 1959, 144.

33. Beatriz Colomina, "Reflections on the Eames House" in *The Work of Charles and Ray Eames*, 128.

34. Neuhart, Neuhart, and Eames, 373; Bill Ballentine, *Clown Alley* (Boston: Little, Brown and Co., 1982).

35. Charles Eames, "Language of Vision: The Nuts and Bolts," *Bulletin of the American Academy of Arts and Sciences* 28, no. 1 (October 1974): 17–18.

36. Neuhart, Neuhart, and Eames, 91.

37. Charles Eames, "Language of Vision: The Nuts and Bolts," 17–18. See also typescript of the actual lecture in Eames Archives, Library of Congress, box 217, folder 12.

38. Barry Katz, "The Arts of War: 'Visual Presentation' and National Intelligence," *Design*

Issues 12, no. 2 (Summer 1996): 3–21. I am grateful to Dennis Doordan for pointing out this article to me.

39. Partial transcript of Norton Lectures. Eames Archives, Library of Congress, box 217, folder 10. Square brackets appear in original.

40. See, for example, Charles Eames, "On Reducing Discontinuity," manuscript of a talk to the American Academy of Arts and Sciences in 1976: "My wife and I had made a commitment to disregard the sacred enclosure around a special set of phenomena called art; in our view preoccupation with respecting that boundary leads to an unfortunate and unwarranted limitation on the aesthetic experience." Eames Archives, Library of Congress, box 217, folder 17.

41. Gingerich, 332.

42. Notes for second Norton Lecture. Eames is referring here to "Professor Lawrence Hill's Renaissance," Eames Archives, Library of Congress, box 217, folder 10.

43. "'Communications Primer' was a recommendation to architects to recognize the need for more complex information . . . for new kinds of *models* of information." Eames, "Grist for Atlanta paper version," manuscript in the Eames Archives, Library of Congress, box 217, folder 15.

44. Colomina, passim.

45. Charles and Ray Eames won an Emmy Award for Graphics for their rapid cutting experiments in *The Fabulous Fifties*, a television program broadcast on 22 January 1960, on the CBS network. It included six film segments made by the Eames Office. Schrader, 3.

46. Michael Braune, "The Wit of Technology," *Architectural Design* 36 (September 1966): 452.

47. See Abercrombie, 163–164.

48. Frankel, "Image of America at Issue in Soviet."

49. Gingerich, 332–333.

50. Allene Talmey, "Eames," *Vogue*, 15 August 1959, 144.

51. Gingerich, 333.

52. Digby Diehl, "West Q&A: Charles Eames," manuscript in the Eames Archives, Library of Congress, box 24, folder 4–5. Published as "Charles Eames: Q&A," *Los Angeles Times, WEST Magazine*, 8 October 1972. Reprinted in Digby Diehl, *Supertalk* (New York: Doubleday, 1974).

53. Mina Hamilton, "Films at the Fair II," *Industrial Design* (May 1964): 37-41.

54. Arthur A. Cohen, *Herbert Bayer: The Complete Work* (Cambridge, Mass.: MIT Press, 1994), 292. Mary Anne Staniszewski, *The Power of Display: A History of Exhibition Installations at the Museum of Modern Art* (Cambridge, Mass.: MIT Press, 1998), 25–28.

55. Script of the IBM film *View from the People Wall* for the Ovoid Theater, New York World Fair, 1964. Eames Archives, Library of Congress.

56. "U.S. Gives Soviet Glittering Show," *New York Times*, 25 July 1959.

57. Colomina, 129.

58. Gingerich, 327.

59. "Powers of Ten—Gregotti," handwritten notes. Eames Archives, Library of Congress, box 217, folder 11.

60. Charles Eames, speaking in a film about a storage system the Eameses had designed. Quoted in Ralph Caplan, "Making Connections: The Work of Charles and Ray Eames," *Connections: The Work of Charles and Ray Eames*, catalogue of an exhibition at the University of California, Los Angeles (Los Angeles: UCLA, 1976), 15.

61. Caplan, 43.

62. Caplan, 45.

63. Colomina, 146.

64. Charles Eames, "Mies van der Rohe," photographs by Charles Eames taken at the exhibition, *Arts & Architecture* 64, no. 12 (December 1947): 27.

65. "To show a 3–Screen slide show," manuscript in Eames Archives detailing the necessary preparations for an "Eames 3 screen 6 projectors slide show" with "sound" and "picture operation procedure," illustrated with multiple drawings, 14 pp. Eames Archives, Library of Congress, box 211, folder 10.

66. Peter Blake, in "An Eames Celebration: The Several Worlds of Charles and Ray Eames," WNET Television, New York, 3 February 1975. Quoted in Kirkham, 320.

67. Eames in Gingerich, 333.