

Control Room Architecture: Towards a Theory

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This paper initiates a theorizing for architecture of what the author terms the control room, interior spaces that might be as thin as a screen or far, far thicker, from which our contemporary networked existence can be productively read and engaged. It establishes control rooms as those entities that share three criteria: they are junctures within a determinate network; they are public; and they display multiple surfaces with multiple images upon them. Moving from images of control rooms on to theoretical images and concluding with a provisional dip into image processing, the investigation relates multi-screen environments by the Eames Office to other depicted spaces and architectural representations, suggesting that Philip Agre's distinction between surveillance and capture, tied to Michel Foucault's panopticism and Gilles Deleuze's society of control, is at the heart of the control room's logic. Incorporating concepts and interpretations of images, both as representations and as screen captures, from Hélène Lipstadt, Guy Dubord, Jacques Guillerme, and Catherine Ingraham, as well as design ideas from Abbe Laugier, Jeremy Bentham, Gottfried Semper and IKEA, the trip from depiction to surveillance to capture suggests an excursion architecture might yet want to undertake, and perhaps even learn to control.

There is no link that could move from the visible to the statement, or from the statement to the visible. But there is a continual relinking, which takes place over the irrational break or crack.

—Gilles Deleuze, *Foucault*

If architectural theory has enabled designers to handle their design processes while allowing society at large to recognize—and manage—what it deems to be architecture, how does control enter into the mix?¹ Despite three quarters of a century of cultural attention to control as a vitally important topic, has architectural theory yet seen fit to give any scrupulous meaning to the term?² Admitting that representations (and schedules) by and large control the design process amounts to

saying language and time control discourse and practice; yet aside from scattered instances of research into cybernetics, the revolutionary nature of Norbert Wiener's 1948 elevation of a logic of control over energy (as in organisms and machines) and measurement has been relatively underexamined within architecture culture.³

Towards such ends, this paper aims to begin to theorize what I term the logic of the control room, as an important yet overlooked architectural consideration. By "control room" I do not mean primarily a room from which control emanates; instead, my interest lies in those spaces (designed, or not) that constitute key locations within control networks, i.e., any and all of those junctures within sets of relays that determine what circulates within them—and, significantly, how we interface with what circulates.⁴ Control rooms, then, are those spaces in which multiple surfaces displaying myriad images can be viewed by multiple individuals simultaneously, either in person or remotely. They need to be linked elsewhere—to other spaces, other subjects, other screens—across a network. Additionally, control rooms need to be on display, i.e., publicly accessible, in mediated or unmediated form. Ultimately, though, control rooms might *not* be a room per se; a car is a control room, but so is a living room. Old fashioned telephone booths were control rooms; nowadays, your cell phone is a control room.

IMAGES OF CONTROL ROOMS

In the next three sections, I will expand upon these three criteria—network juncture, multiple surfaces with multiple images, and publicness—in order to conclude with a more precise definition. But first let me turn to an example, the multi-screen presentation *Think!*, created by the Eames' for Eero Saarinen's IBM Pavilion at the 1964 New York World's Fair. Within a dark room, a series of projected moving and still images exposed a viewing audience to the idea that the secret to planning a successful dinner party was in controlling the important variables (number of guests, seating arrangement, menu, shopping list, etc.) by treating them as so much information awaiting processing. The theater was basically an electronic camera obscura, projecting a complex world beyond Saarinen's elevated egg onto the retinas of its audience members.⁵ Although it is not what most might think of as a control room, for me it

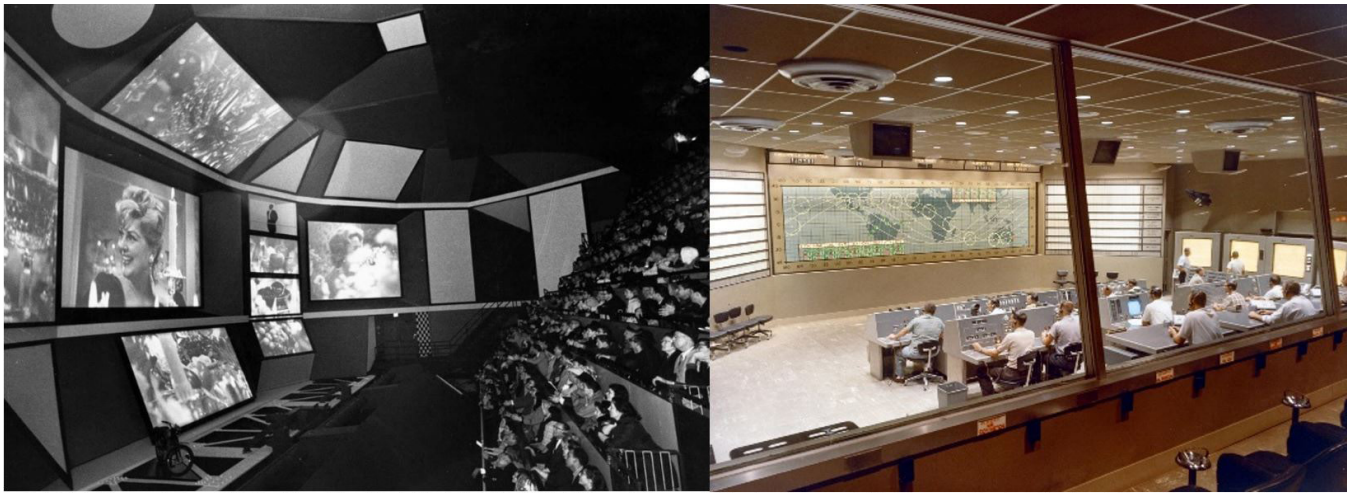


Figure 1. l. Think! IBM Pavilion, New York World's Fair 1964, Eero Saarinen w/ Eames' Office; r. Mercury Control Center, Cape Canaveral FL 1962.

captures the term's mix of generality and specificity. It is clearly distinct from a normal movie theater, but perhaps it also is not so different from the Mercury Control Center at Cape Canaveral completed two years earlier. While they both give their occupants the illusion of being somewhere else—at a dinner party, in a narrative, floating above Earth, basically elsewhere in the world beyond the confines of the room—they also ask that viewer to choose how to capture the plentiful information available to them on its many surfaces, as more than merely attractive (moving) pictures.

I use the word capture in the sense foregrounded in Philip Agre's 1994 "Surveillance and Capture," opposed as it is to practices of surveillance.⁶ To Agre, capture describes how the world is made accessible for linguistic transcription, through seizing portions of it as so many representations available for eventual processing, i.e., as data. He further argues that these two types of "worlds"—though not mutually exclusive—each suggest a distinct episteme or political *weltanschauung*, with *capture* having gradually eclipsed *surveillance* during the 20th century. How does the architect navigate these worlds? Surveillance is clearly the ethos of Foucault's panopticism, symbol of a disciplinarity that rendered the architect's primary task the specifying of the form for those social institutions (i.e., prison, school, museum, library, family home, etc.) that ostensibly shape and control the human subject. Capture, on the other hand, calls to mind Deleuze's "society of control," in which the role of the architect is far less clear and rather more nebulous, primarily because the ways in which subjects are disciplined no longer require such architectures. True, within a logic of surveillance, the eye of Big Brother (real or imagined) can capture the subject's actions as so many metaphoric or real images, yet from within a logic of capture those very same actions are relentlessly atomized and apprehended—captured and catalogued, if you will—as data points within information sets, awaiting further use. Although the consequences are similar under surveillance and capture—the production of what

Foucault termed "docile bodies," capable of being "known" in precise ways—for Agre the means and ultimately the ends, are decidedly not, as the very system of surveillance doesn't escape attention, and control, within a logic of capture.

While Agre's observations might seem somewhat tangential to architecture, relating as it does to data, perhaps new images can act as asymptotes. I would suggest the specifics of auditoria architecture, barely discernible in the Eyerman image depicting viewers of a 3D movie, is a different apparatus than those producing the screen capture of Scout & Nimble's Instagram feed. My earlier images could then be taken as hinges of a sort, negotiating between these two images and their architectures. Debord famously argued that capitalism's development was such that society's innerworkings increasingly appear as spectacle, that is, as "a social relation among people, mediated by images"; this sentiment allows us to further interpret Eyerman's photograph, as an additional means of mediating between the 3D movie theater and Instagram.⁷ Note that in a movie theater, there is only one primary location for the spectacular image: on the screen in front of the audience, next to which the room's décor all but disappears while the movie is projected. In the Instagram image on the right, unlike the theater space, vestiges of any material architecture are even hazier to discern by a viewer—despite the presence of myriad photographs of interiors—subsumed as they are in their encounter with a logic of multiple images, operating systems, and pixels, together forming a mediating space of perusal, consumption and, perhaps, another newer kind of spectacle. If Eyerman's photograph juxtaposes the spectacle on the screen with the one in the auditorium, the ubiquitous 3D glasses rendered the moving image more life-like. Nowadays, users need a more advanced apparatus to "see" cavalcades of Instagrammable moments. Returning to my earlier question: what is the role of the architect in this contemporary logic of capture and control?

THEORETICAL IMAGES

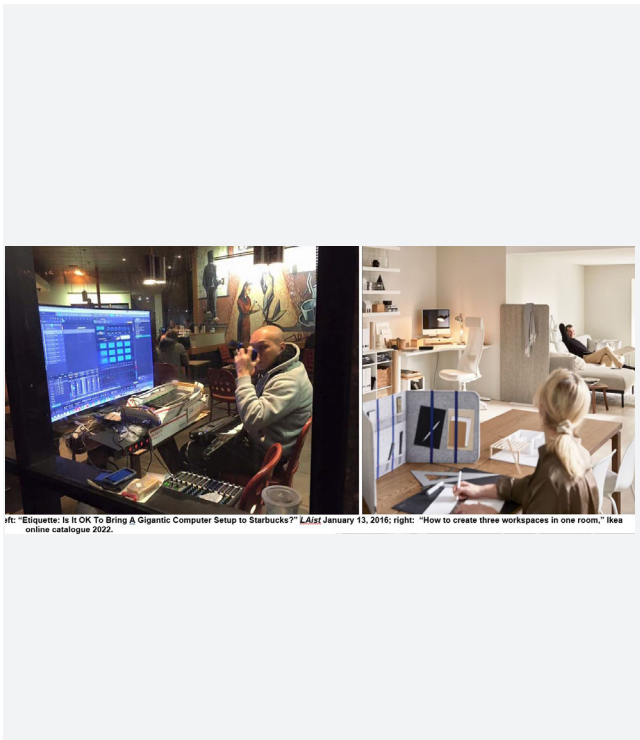


Figure 2. “How to Create Three Workspaces in One Space,” IKEA online catalogue

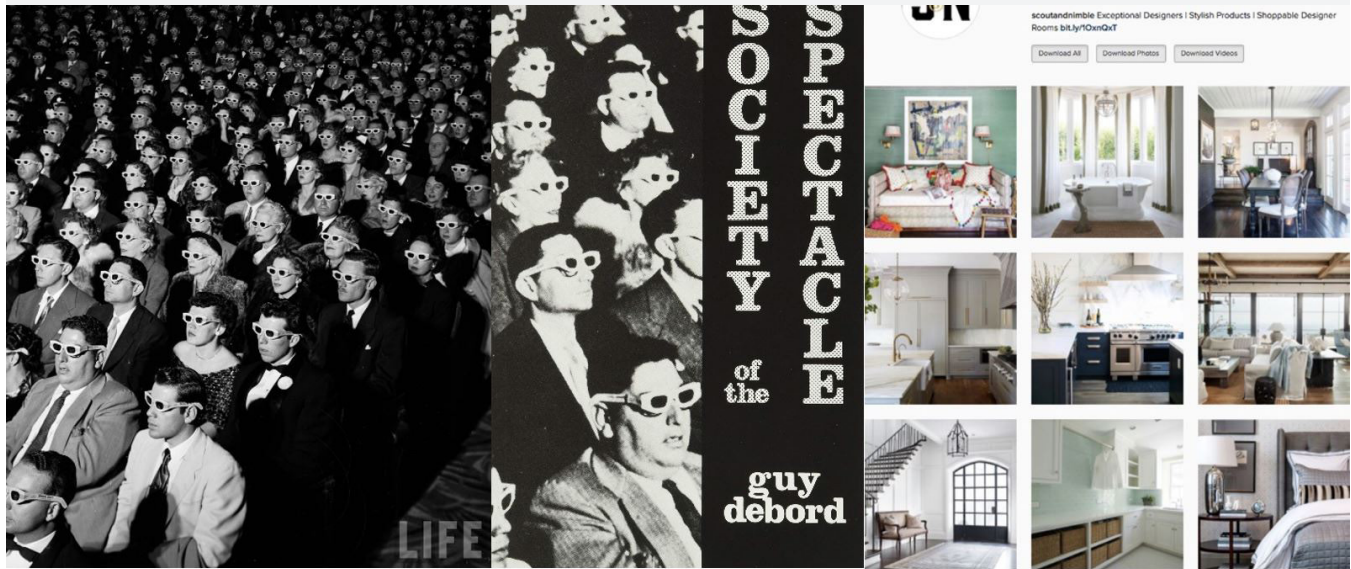
To reiterate my opening assumptions—namely, that the architectural is basically a dual theoretical operation, instrumental for designers yet also necessary for the proper functioning of the social imaginary—I turn to the frontispiece added to Abbé Laugier’s 1753 *Essay on Architecture*. For the French cleric, Eisen’s Primitive Hut etching broadcast two basic qualities: simplicity and clarity. Reducing architecture to just over a dozen nearly identical wooden elements—four tree trunks, four horizontal lintels connecting them, and at least five or so elements suggesting the pedimented roof of a tempietto—served to reduce extraneous noise, so a precise form could be unambiguously communicated. Simultaneously, its character called out a clear tectonic logic, opposing the Gothic’s excessive pyrotechnics with a more subdued Classical (and Gaullist) temperament.

Over the next century, imaginings of such a construction changed yet visual simplicity and clarity were rarely abandoned. In Gottfried Semper’s version, inspired by the Caribbean Hut he saw at the Crystal Palace of 1951 and included as an illustration in his *Style* ten years later, more elements were added (hearth, paneling, shingles, etc.) and a more complex, contemporary tectonic logic was proffered. Significantly, the image differed from Eisen’s hut, in that it was an image combining three discreet types of representations: plan at bottom, elevation and cutaway section above. Just as I inserted the cover of Dubord’s tract to mediate between cinema and Instagram, here I have inserted another image, layering it into the mix: architect Willey Reveley’s 1791 depiction of social reformer Jeremy Bentham’s

proposal for a panopticon-style prison. Again, Semper’s ruse is employed to depict multiple aspects of the structure in what appears to be a single image but is really a composite. Note, however, that this depiction’s central tower is not in fact an occupiable space for guards to look out from, but instead a sort of attenuated (primitive?) hut, constructed out of steel and elevated on stilts. In Robin Evans’ interpretation of this image, the protruding galleys, projecting from the upper circular hallway accessing cells, allow the guards who keep watch in turn to be overseen by the institution’s governors. Evans reads this as producing not a dyadic relationship (prisoners watched by guards) but instead a triad of surveillance, in which “a hierarchy of three stages was [produced], a secular simile of God, angels and man,” analogous perhaps to plan, elevation and section.⁸ Bentham’s panopticon—indeed, its very diagram of surveillance—is thus not as simple as might seem at first, an insight clearly not lost on Foucault; rather than just producing one kind of docile body, it makes available for capture a tripartite relay, a nesting of social relations as multiple connections within a determinate environmental milieu.

My understanding of the control room importantly embraces Reveley’s and Semper’s composite drawings: as multi-image representations, they predate yet anticipate the multi-screen environment of IBM’s *Think!* and Cape Canaveral, as well as their relation to the logic of capture that has pervaded developments since WWII, referred to recently as our “Second Modernity.”⁹ Obviously, architectural representations clearly are not just practical or technical images; they are information, and as such, they allow for images and their contents to be organized as data. As precursors to the Eames’ multi-screen presentation, the Reveley and Semper images also suggest that while architects use representations to control the forms of their designs, in the process more might be captured within sets of images than meets the eye. The composite architectural drawing does this by constituting not just images but precise locales—screens, as opposed to pages—where the world and its order can be installed, observed, and, over time, replaced, the old swapped out for the new.¹⁰

As practices of publicity and spectacle have changed over the years, so, too, have the ways in which we take in images. Both Beatriz Colomina and Hélène Lipstadt have argued that architecture’s modernity stems from both the form of a designed project and those forms of representation or communication employed to “display” design as such, as architecture. Lipstadt argues that by the late 18th century, architecture as a system of representations entailed *figurations*, artifacts that produce the dual subjectivity of an architectural creator (designer) and an architectural user (viewer), in a sense mediating between them.¹¹ While Eisen’s frontis is similar to both Reveley’s and Semper’s composites, by not constituting a multi-image screen, it doesn’t mediate identically. It is as much a “figuration” as the other two, displaying architectural control of a certain sort for an educated audience, namely that of style, yet it isn’t quite



Left: Movie audience wearing special 3D glasses to view film *Bwana Devil*, Paramount Theater, Hollywood, California, November 26, 1952 (photograph by J.R. Eyerman); Center: cover, 1970 English language edition of Guy Debord's 1967 *Society of the Spectacle*; right: smartphone browser interface, Scout and Nimble website, 2020.

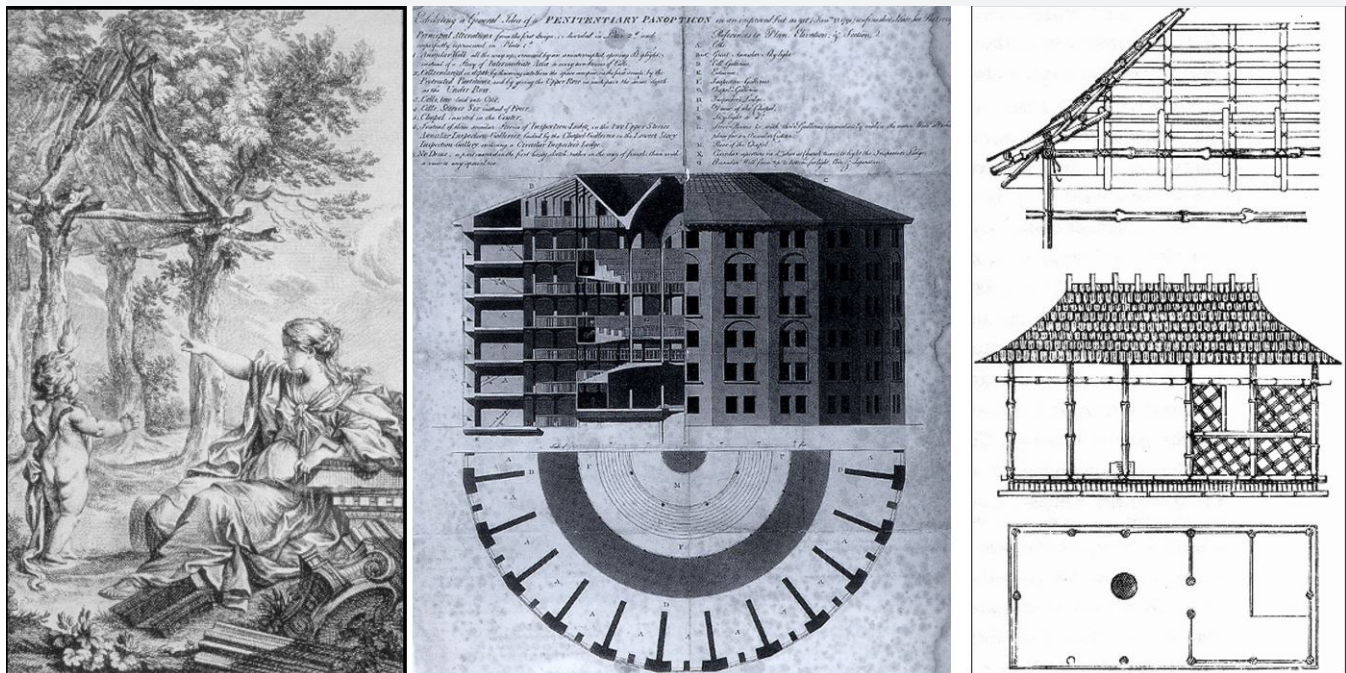
Figure 3. l. 3D movie audience at *Bwana Devil*, Paramount Theater, Hollywood, California, November 26, 1952 (photo by J.R. Eyerman); c. *Society of the Spectacle*, Guy Debord 1967 (cover English-language edition 1970); r. smartphone browser interface, Scout and Nimble website, 2020.

as invested in figuring society's control of the architectural. Its symbolic aestheticization—replete with a paradigmatic female body surrounded by cherubs, transporting the viewer away to an ideal environment—embraces figuration's mediation between maker, creation and user, yet fails to conjure quite the same modernity as that manifest by Bentham and Semper, or, for that matter, theorized by Foucault and Deleuze—by not engaging the viewer to scan its surfaces in quite the same way.

The closest architecture theory has gotten, in my estimation, to grasping the importance of this—which I will admit I am only barely articulating here, rather than fully theorizing—involves investigations of architecture's relation to publications (publicity) and their technological transformations in so-called “information society.”¹² Revisiting the contemporary WFH couple, they are clearly figured subjectivities, both psychically and socially, despite only existing in an illustration from an IKEA catalogue; as an image of publicity, though, it interests me that they are subjects of architecture and at least one is a potential architect, in the process of being primed to generate myriad figurations. Of course these subjects are captured by the images depicting them, but as both subjects and non-subjects, as images and as data.

THEORIES OF IMAGE PROCESSING

Lipstadt published her thoughts on figurations and publications in 1989, an auspicious year—the same year Tim Berners-Lee “initiated” the World Wide Web. In her understanding, a publication was ostensibly printed; in our time—the world Berners-Lee and others hath wrought—the term *publication* no longer holds quite the same meaning.¹³ Although “published on the web” has not become entirely normative, it is not the anomaly it once was; this points to what I think is escaping architectural theorization, namely that publicity is not an epistemology but an ontology, i.e., publications are not knowledge but processes. Traditionally, architecture culture published its figurations; yet increasingly architecture culture is captured by non-architectural means—like Instagram—rather than published through a process of self-control. To explain through an example already figured, Semper proposed that architecture displays the processes of how materials are assembled (knotted), and how architects control this process (design). Yet is design process the central focus of architecture, and should it be at the heart of the stories we tell? What of other processes: life, decay, evolution and, obviously, capture.



left: Frontispiece, *Essay on Architecture* 2nd edition, 1755, engraving by Charles Eisen; center: Panopticon prison, based on an idea of Jeremy Bentham 1791 drawing by Willey Reveley; right: the Caribbean Hut, illustration from *Style* vol. 2, 1863, Gottfried Semper

Figure 4. l. frontis, Abbe Laugier's *Essay on Architecture* 2nd edition, 1755 (engraving by Charles Eisen); c. panopticon prison, based on an idea of Jeremy Bentham's 1791 (drawing by Willey Reveley); r. Caribbean Hut, from Gottfried Semper, *Der Stile* Vol. 2, 1863.

If we take the primitive hut as a paradigmatic architectural origin, an argument about its architectural significance might go something like this: the Primitive Hut encloses an inside, which we call a room (space); if we see that room from the outside, we call that experience architecture; if we see that room from the inside, we might call it interior design (or interior architecture), or we might just call it home. The upshot is architecture is shaped—i.e., controlled—by putting rooms on display, by employing them to order and organize space; therefore the control of architecture boils down to the control of rooms. Yet what this leaves out, in my opinion, what it represses, is precisely what the images of Bentham's panopticon prison and Semper's Caribbean Hut capture: processing. Not design processes per se, but processes of capture: how the viewer captures the image's "figuration"; and how networks of power and of spatial distribution—of bodies, of institutions and of information—are subject to processes (natural or not) of their own devising as well as beyond their control. To take up the question of how the architectural is determined socially—how society's demand or need for architecture is determined, by collective subjectivity—gets at the crux of the question of processing: who is at the wheel? Eisen's Primitive Hut image, it seems to me, does depict a control room, while those of Reveley and Semper do; although they all image first principles, only the latter two activate a certain kind of image processing, in which the viewer has to scan what they see as discrete informational pockets (bundles?), in order to see both what the composite depicts and what it figures, i.e., how that depiction implicates its user.

Which brings me to my conclusion, a more precise definition of the control room. What a control room is NOT, most assuredly, is merely a camera obscura—age old apparatus for representing the world through a trick of optics, with or without mechanical enhancement. As Anthony Vidler posited, in reference to the camera obscura, "the form of the interior... comes at first from the outside," suggesting that if architecture is found in the view of a building's interior being orderly, that order comes from elsewhere—and importantly it networks the interior to what is beyond the building containing it.¹⁴ His further claims that the philosophical toy of the camera obscura hides a much more far-reaching, indeed obsessional intuition: such networked access to a world of information is both an erotic and a sinister prospect. It is also one that necessarily challenges precise location, which is not primarily in a space—or a place, meaning *inside* architecture—but instead in a place both inside the world beyond architectures, and encompassing it.

The difference to me between a room from which control emanates and an architecture of the control room is precisely the question of processing. Catherine Ingraham suggests that recent experiments entailing innovative use of digital technologies in architecture "are evidence of the way in which any practice and discipline works out the complex territory of its meaning[,] ... the complex alliances and affiliations that are

simultaneously associated with being in the world of architecture and being in the world."¹⁵ This points to the difference between the two camera obscuras, "figured" by Athanasius Kircher and Abelardo Morell: the relative uncluttered nature (intellectually speaking) of the earlier one, and the almost claustrophobic character of the later one. Aside from nearly 350 years, what separates these two images? While the one on the left diagrams how a camera obscura works, the one on the right both depicts a camera obscura at work, and was made by one, i.e., the camera that captured the photograph. I have flipped vertically Abelardo Morell's photo of a room on the Grand Canal in Venice turned into a viewing device, to prove my point: with a flood of information from elsewhere, in looking at this image it is difficult to know whether one is inside a room, or outside, in the world, looking in, especially because the apparatus of the camera obscura inverts our relation to the world we inhabit. Clearly the point is both potentials are on display, simultaneously; captured, if you will, by the image, forcing viewers to process their simultaneity and struggle to see their connections.

I close with the precise definition promised at the start: a control room is not a space, per se, but a nearly anonymous figuration of how the innate duplicity of the world can—and does—display itself, making it available for capture in a variety of manners, often multiply at once. This display is a function of interiority but also a means of seeing beyond it, to take in interiority's architecture: as both a circumspect (designable) phenomena, and as the world's fundamental overwhelming nature; as quotidian (generative of life) and yet, ultimately, as unknowable.

While a control room is a kind of camera obscura, the apparatus of the camera obscura alone is not, since it doesn't necessarily venture to display how, in our contemporary world, control captures. Morell's photograph was made in order to get its viewer to see these things in it—and in the world. The control room is thus that event by which the image of a space's capacity as prescriptive interiority (an internal process) is made visible, i.e., externalized, as a place within a network from which knowledge of the world *through that network* both delineates the world *and* delimits it. Returning to roughly where I started—the Eames multiscreen environment at the 1964 World's Fair—did they know how prescient their vision would be? Nowadays, as more and more everyday spaces are filled with multiple screens—our homes, our classrooms, café's, subway cars and even the streets—it is not so unusual for multiple moving images to be playing all around us, all at once, representations replete with layers of representations within them. In the IBM presentation, the information was on display for viewers to see; yet was it Saarinen's theater that made this possible, or the Eames' multi-screen presentation? It was obviously both; yet are we architects guaranteed this will always be the case? If we don't theorize the interiority of architecture's knowledge of interiority, which is I think what

a theory of the control room constitutes, will we be the ones called upon to make the control rooms of the future?

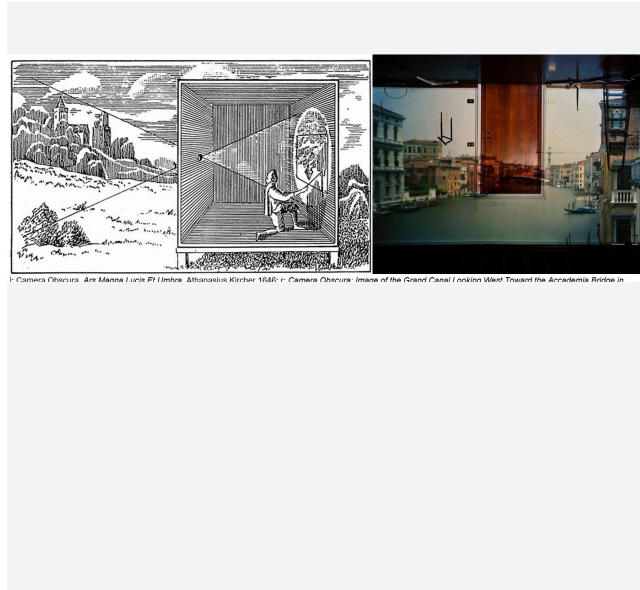


Figure 5: l. camera obscura, *Ars Magna Lucis Et Umbra* Athanasius Kircher 1646; r. *Camera Obscura: Image of the Grand Canal Looking West Toward the Accademia Bridge in Palazzo Room Under Construction*, Venice, 2007 Abelardo Morell (image is UPSIDE DOWN).

ENDNOTES

1. Architectural theory encompasses two primary strains: an instrumental theory of how to make architecture and a more experimental, speculative one, addressing what constitutes architecture; although overlapping, these categories entail decidedly different types of questions and investigations. Although Aldo Rossi suggested that for him, these two pursuits are one and the same, he admitted they do not necessarily coincide for every member of society. See Aldo Rossi, "Architettura per i musei," *Teoria della progettazione architettonica*, ed. Giuseppe Samona (Bari, Italy: Dedalo, 1968), 122-37.
2. I am referring specifically to Norbert Weiner, *Cybernetics: Or Control and Communication in the Animal and the Machine* (Cambridge, MIT Press, 1948), James Beniger, 1989 *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge: Harvard University Press, 1989), and Seb Franklin, *Control: Digitality as Cultural Logic* (Cambridge: MIT Press, 2015), among numerous others.
3. Although there are quite a few authors that come to mind as concerned about these matters—Christian Girard, Christopher Hight, Camilo Andrés Cifuentes Quin, Mario Campo, and others—there are few primary texts. Among them, see Catherine Ingraham, *Architecture, Animal, Human: The Asymmetrical Condition* (New York: Routledge, 2005); Douglas Spencer, *The Architecture of Neoliberalism: How Contemporary Architecture Became an Instrument of Control and Compliance* (London: Bloomsbury Academic, 2016); and Reinhold Martin, "Media Organize: Persons," in *Organize*, Timon Beyes, Lisa Conrad, and Reinhold Martin (Minneapolis: University of Minnesota Press, 2019).
4. Control mechanisms range from the infrastructural (trade routes, telephone lines, the internet, etc.) to the infinitesimal (cells, servomechanisms, microchips, etc.), but they all primarily control the behavior of organic and inorganic agents that take part in processes within systems.
5. I would even go as far as to suggest it was in fact a digital one, perhaps before the fact, due to its clearly parametric logic.
6. Philip R. Agre, "Surveillance and capture: Two models of privacy," *The Information Society* 10, no. 2 *The Digital Individual* (Apr., 1994): 101-27.
7. Guy Debord, *The Society of the Spectacle*, translated by Donald Nicholson-Smith (Cambridge: Zone Books, 1994), 12.
8. The comment is Evans' gloss on the Reveley drawing; see Robin Evans, "Bentham's Panopticon: An Incident in the Social History of Architecture," *Architectural Association Quarterly* 3 (Spring 1977): 12-37; the quote appears on 22.
9. Arindam Dutta, ed., *A Second Modernism: MIT, Architecture and the "Techno-Social" Moment* (Cambridge: MIT Press, 2013).
10. While clearly such composite images are millennials old, prior to the 17th century their physical manifestation in book form—as a site for accessing multiple images simultaneously, rather than sequentially—was relatively uncommon. Architectural treatises had first been unillustrated; following the invention of the printing press, hand-drawn illustrations, woodcuts and etchings had to be meticulously inserted into bound and folded folios, as in one of the earliest such publications, Aldus Manutius' 1499 *Hypnerotomachia Poliphili*. The illustrated architectural treatise thus only became relatively common over the course of the 16th and 17th centuries. See Mario Carpo, "The making of the typographical architect," in *Paper Palaces: The Rise of the Renaissance architectural Treatise*, ed. Vaughan Hart with Peter Hicks (New Haven: Yale University Press, 1998), 158-69.
11. The term is Jacques Guillerme's, appearing in his *Figuration graphique en architecture*, fasc. 2 of *Le théâtre de la figuration* (Paris: Area, 1976), 148-56. Lipstadt claims creating figurations as well as viewing them constitutes "a psycho-social activity that produces the maker and the object, and thus encapsulates the process and its product." She further suggests that architectural representations that are figurations and "that [also] circulate as (relatively) pure cultural goods outside the building process, [i.e.,] that have 'gone public,' are publications." See Helene Lipstadt, "Architectural Publications, Competitions, and Exhibitions," in *Architecture and its Image: Four Centuries of Representation*, works from the Collection of the Canadian Centre for Architecture, ed. Eve Blau and Edward Kaufman (Montreal: Canadian Centre for Architecture, 1989), 109-36; first quote appears on 110, second on 111.
12. Colomina and Lipstadt have undertaken such investigations, although of course they are not the only two to have done so. See Beatriz Colomina, *X-Ray Architecture* (Lars Müller Publishers, 2019), and 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: Harry N. Abrams, 2005), 151-75.
13. In "Architectural Publications" (see note xi), Lipstadt argues the making public (publicity) of figurations also entailed two relatively new practices as of the 17th century, which did not always result in distributed goods: exhibitions and competitions. Indeed, the novelty of her essay is how it offers a sophisticated means to consider these two types of publicity alongside publication of travel sketchbooks and other books, as endemic of a systemic transformation to architecture as a practice. The Internet, unlike books and print periodicals, can basically republish anything that has already been published, making it appear like it was just published; it can also take something that has never been published—say, fake news—and make it look to many like it had already been published elsewhere, often.
14. Anthony Vidler, "Outside In/Inside Out: A Short History of (Modern) Interiority," in *After Taste: Expanded Practice in Interior Design*, eds. Kent Kleinman, Joanna Merwood-Salisbury, and Lois Weinthal (New York: Princeton Architectural Press, 2012), 54-77; quote appears on 67.
15. The claim appears in a chapter appropriately entitled "Processing." See Catherine Ingraham, *Asymmetrical Condition*, 314.