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From Blueprint to Digital Model

**The Information Age, Archives and the Future
of Architectural History***

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The digital revolution has not only transformed the process of thinking and making architecture, but has also led to shifts for researchers in the field and the institutions that safeguard and interpret evidence of the architect's design process. As the rise of PowerPoint made it less cumbersome to view multiple images simultaneously, pioneering art historian Heinrich Wöfflin's more limited binary lantern slide presentation was effectively rendered obsolete. However, digital imaging and projection in the field brought risks as great as the new freedoms it afforded. The shift from a work environment dominated until recently by drawings on paper and architectural models (even as CAD was being implemented over the last 20 years) to one dominated by digital design and 3D modeling has irrevocably affected the ways contemporary architects produce and save their drawings as well as how they are stored and accessed in archives, how they are displayed, and how they are published. As technology has brought new horizons to the profession, the image of the architect has gone from the solitary scholar of Medieval architecture depicted by A. W. N. Pugin in 1841 to that of savvy manager overseeing large firms like Foster + Partners; the historian too has shed the image of recluse toiling in the bowels of a dusty archive or library.¹



Figure 1-2

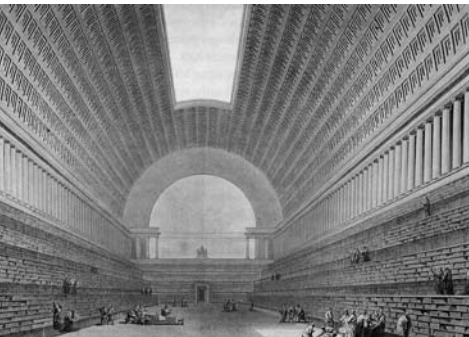


Figure 3-5



Figure 6-7

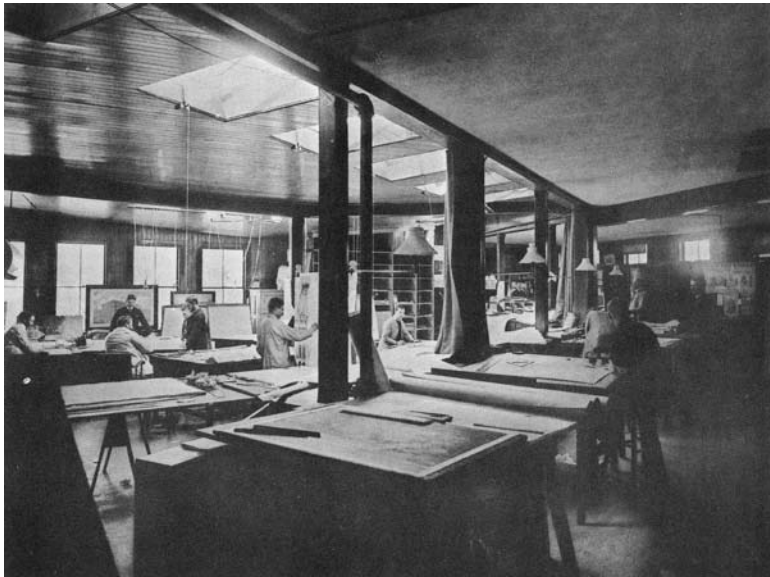


Figure 8-9



In the domain of the archive, paper-based catalogues have given way to powerful digital databases that allow greater access to more materials. This has transformed the way historians retrieve or access architects' conceptual studies, preliminary drawings, working drawings, and models, as well as photographs and works in other media. Remote access to databases and online resources has also modified the frequency with which historians need to occupy the physical space of libraries in order to carry out their research. What is gained by remote access is lost in terms of socialization, intellectual exchange, and appreciation for compelling public spaces. (figs. 3-5) A reliance on computers instead of the drawing board has further shaped interaction in the realm of professional practice as well as education.² Whereas photographs from the recent past show architects and students still bent over their drafting tables, many also show them collectively scrutinizing a computer screen.³ (figs. 6-7) What interests me in this regard is the impact on design and research that these changes in the process of design have effected.

Histories of 20th-century architecture and urbanism have been greatly facilitated by access to architects' archives. These were initiated through the 20th-century by protagonists like Frank Lloyd Wright (1867–1959), Walter Gropius (1883–1969), Ludwig Mies van der Rohe (1886–1969), and Le Corbusier (1887–1965) who began to project their own legacies. The Frank Lloyd Wright Foundation at Taliesin West in Scottsdale (founded 1940), the Bauhaus Archive in Berlin (founded 1960), and the Fondation Le Corbusier in Paris (founded 1968) were established to offer researchers access to materials and to foster public awareness and understanding of the built domain. (figs. 8-9) Collections and research facilities at the Architectural Library of the Royal Institute of British Architects (RIBA) (founded in 1834), the German Architecture Museum in Frankfurt (DAM) (founded in 1977), the Canadian Centre for Architecture in Montréal (CCA) (founded 1979) and the Netherlands Architecture Institute in Rotterdam (NAI) (founded 1988), and to a slightly lesser extent the Museum of Modern Art in New York, and the Getty Center in Los Angeles (founded in 1982), made the archives of 20th-century architects available to researchers on a broader basis. Ready access to the contents of these archives and the abundance of secondary sources available in architectural libraries, such as the CCA and the Avery Library at Columbia University, have allowed researchers to study and analyze the production and contribution of individual architects, holding them up to scrutiny that would have been impossible when the architects were still alive and overseeing their own archives. On the model established by Andrea Palladio's *Quattro Libri* (1570) and Karl Friedrich Schinkel's *Sammlung Architektonischer Entwürfe* (Collection of Architectural Drawings) (1819–40) publications like Le Corbusier and Pierre Jeanneret's *Oeuvre complète*, a six-volume edition produced between 1930 and 1971, attest to the architect's desire for control over the professional image.

Once the archives become public, and the protagonists or their heirs are no longer in control of the "image," historians and critics can re-evaluate the work with greater freedom and override the choices inherent in the self-presentation and self-editing process. For example, the "discovery" of the formative years of Le Corbusier in La Chaux-de-Fonds by H. Allen Brooks brought

attention to works Le Corbusier himself disavowed, like his Villa Fallet (1905–07), Villa Stotzer (1908), and Villa Jacquemet (1908).⁴ (figs. 10-11) Brooks served as general editor for the monumental *Le Corbusier Archive* (a 32-volume publication produced between 1982 and 1985 by the Fondation Le Corbusier), which afforded scholars access to previously unknown projects and works. This new material, supported by Paul Turner's pioneering 1977 study of Le Corbusier's education, shed considerable light on his formative years.⁵ Today, the Fondation is in the process of preparing digital copies of their extensive holdings. As Beatriz Colomina asserted, "If the research into Loos is organized by the gaps in the archive, the research into Le Corbusier is organized by archival excesses."⁶ *The Le Corbusier Archive* was quickly followed by the 20-volume *Mies van der Rohe Archive* edited by Arthur Drexler (1986–92), and *Frank Lloyd Wright: An Index to the Taliesin Correspondence* in five volumes, edited by Anthony Alofsin (1988).

In the future, such paper-based encyclopedic publications will likely be rendered obsolete by access to vast online digital archives and powerful search engines via which scholars can retrieve relevant materials in a matter of seconds, free of the difficulties involved in physical catalogue searching. This boon to efficiency and breadth of inquiry notwithstanding, what is troubling about the new digital scenario for architectural research is the status of digital design records. William J. Mitchell observed that

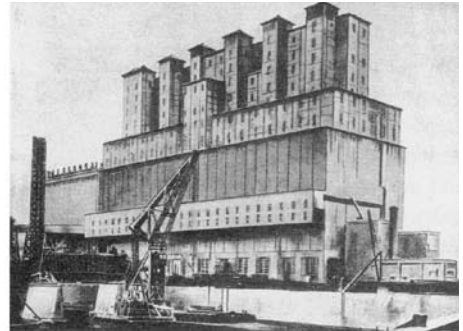
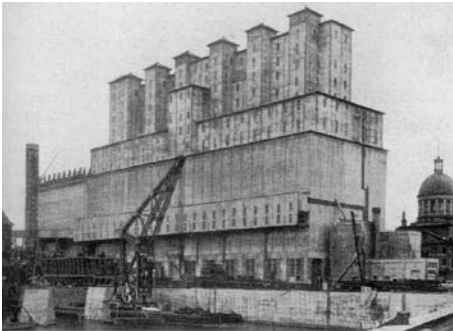
*As with records everywhere, more and more architectural records are being prepared in a digital format. Even though this format shift is taking place gradually due to the complex nature of programs used in architectural design, digital designs are quickly becoming the designs of record, especially those of three-dimensional models. The increased digital nature of architectural records, many of which are viewed as disposable by their creators, raises questions for archivists about the records' intellectual and artifactual values. In addition, archivists must deal with the vast amount of digital records, the instability of their storage media, and the short life span of most software and hardware products used to create architectural designs. Developing strategies to deal with these issues is essential to the survival of architectural records created in the late-twentieth century and by future generations.*⁷

Mitchell's comments point to the need for software and hardware "libraries" to preserve obsolete technology, and also the need for migrating time-based digital media to ever-new storage systems. Equally important are his observations about the "reconfigured eye" and "visual truth in the post-photographic era."⁸ Mitchell has also drawn attention to the manipulation of reality made possible by visual media, whether digital or photographic. With the rise of such transformative tools as Adobe Photoshop, the "new objectivity" previously associated with analog photography has been subverted. If what Walter Benjamin called the "age of mechanical reproduction" was based on the premise that photography objectively records reality, digital images force historians to sharpen their observation skills in order to distinguish between the real and the manipulated. Citing the example of Le Corbusier's *Towards a New Architecture* (1923), Mitchell draws attention to how he modified the grain elevators he claimed to admire, excising the classical pediments



Figure 10-11

Figure 12



from the photographs he published with the text of grain elevators in Montreal and Buenos Aires.⁹ (fig. 12) This is one of the instances in which Le Corbusier knowingly manipulated his subject matter to make a more compelling case for his theories of modern architecture and urbanism.

Historians mindful of the disparities between reality and fiction have used the archives to advantage. Unlike buildings, which can be visited and assessed on their own merits, images can conceal the truth behind ideologically biased interpretations. In his introduction to the new translation of Le Corbusier's 1923 text undertaken with the aid of archival materials available at the Fondation Le Corbusier, Jean-Louis Cohen wrote that

The manipulations made to the illustrations for "The Lesson of Rome" are perhaps the most striking. He uses prints by Alinari or Anderson, bought during his 1921 trip (see fig. 7, fig. 14). Besides the multiplication of images achieved by using two frames of the same photograph, he performs a subtraction, for instance by getting rid of half of an illustration of Saint Peter's, which is furthermore flipped (figs. 15, 16, and p. 204). He also proceeds by addition when grouping Beaux-Arts architecture images to produce an effect of saturation, repeated with 'The Rome of Horrors' (see fig. 14 and p. 215). Finally, his severe visual editing modernizes buildings such as the silos in Buenos Aires, as well as, most strikingly, the Roman church Santa Maria in Cosmedin, whose columns are carefully inked out (figs. 17, 18, and pp. 200-206).¹⁰

There are many such instances in which modern architects have strategically manipulated reality through the use of visual media. Walter Gropius and Kenzo Tange worked with the photographer Yasuhiro Ishimoto to "modernize" the Katsura Villa through strategic framing techniques.¹¹ (fig. 13) They encouraged (or instructed) Ishimoto to edit out the traditional pitched roofs of the villa in favor of an abstracted linearity that emphasized planar surfaces and structural clarity. The use of black and white photography contributed to the perception of the villa's stark structural purity. Dismissed by Manfredo Tafuri as "operative criticism" (criticism with an ulterior motive), this gesture finds parallels outside the realm of visual media and has been likened to the "sleeping beauty theory of nationalism" wherein the latent "modernity" of the historical building is activated.¹²

Sketches, collages, and photomontages are critical in enabling researchers to penetrate the design process.¹³ Comparing the commonly used techniques of collage or photomontage (recall for example Super Studio's *The Continuous Monument* of 1969 or Stanley Tigerman's notorious attack on Mies entitled *The Titanic* of 1978) with animations used by architects of the blob and fold generation like Greg Lynn, the shift is substantial. (fig. 14) Three-dimensional visualizations dynamically and analytically enhance the static two-dimensionality of the paper-based collage. Such speculative sketches as the fantastic sand-dune-inspired drawings of Eric Mendelsohn or Hermann Finsterlin's *Formspiels*, as well as working and travel sketches, have also helped historians understand the architect's design process. (fig. 15) In particular, travel sketches and journals taken together with personal photographs of buildings seen while touring have aided

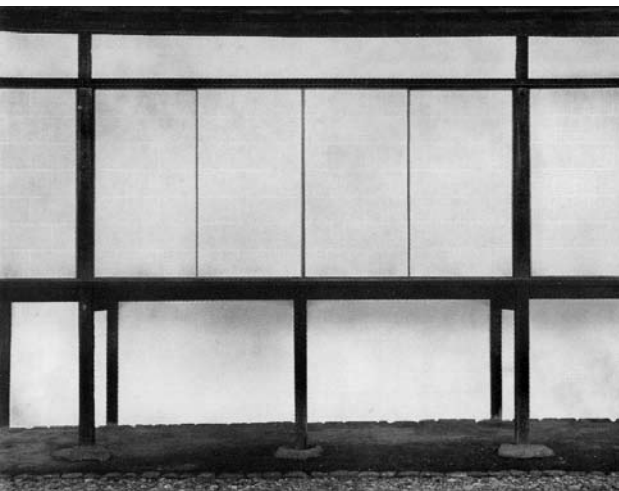


Figure 13



Figure 14

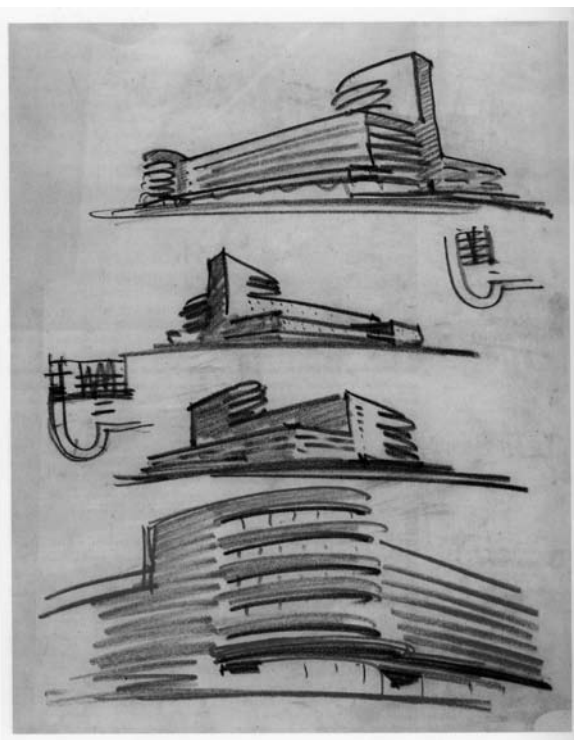


Figure 15



Figure 16

historians in understanding the genesis of projects by figures like Le Corbusier, whose *Voyage d'Orient Carnets*, revealed his interest in the vernacular.¹⁴

The web sites of architecture firms, which typically function as self-promotional tools as well as archives, offer a selection of past and current work. These, too, are carefully crafted and edited. The work that architects choose to display on their web sites is strategically self-selected and edited, and access to photography commissioned by the architect or studio further influences the reception of the built work. The researcher whose task it is to critically assess the process and the finished work is not always able to extract it from so controlled a context. Even though the devices of design have changed, the task of the critic remains the same: to avoid being seduced by the blandishments of flattering representations whether these stem from self-editing for strategic, promotional objectives or simply reflect poetic license.

The rise of Building Information Modeling (BIM), in which software like Revit is used to create a detailed three-dimensional computer model of the entire building and its systems, has made it possible for technical consultants (structural, mechanical, and HVAC, for example) to perform their services from the beginning of the design process. It is likely that in the future, contractors will be able to bring a laptop with interactive designs to the building site instead of the traditional printed construction drawings. Not only are the materials at the disposal of architectural historians increasingly “active,” but the environments in which they are stored are changing. Whereas Wright’s and Le Corbusier’s archives were stored in buildings they designed, such as Taliesin West and Villas Jeanneret and La Roche, the data stored on servers are not subject to constraints of place and can be accessed remotely; for the moment, only servers need to be hosted in real physical spaces.

The fact that storage media and the devices used to read and record them become obsolete technologically means that future access is a major consideration. The list of media that are already obsolete is staggering. To preserve examples, and to continually migrate the data to current forms of media and reading devices has become a fundamental challenge of archives and museums who collect time-based media in general. Not surprisingly, our new information age has generated a new architectural type: the mediatheque. Toyo Ito’s Mediatheque in Sendai was completed in 2001 and have functioned as a center for traditional and non-traditional media. (fig. 16) The need to digitize everything from books to slides and photographs to drawings and manuscripts has challenged the resources of collecting institutions with the mission to increase accessibility of their resources. Whereas implementation is time- and labor-intensive (scanning, for example), the benefits (e.g., mobility of images and the elimination of physical sorting and refilling) are clear.

Issues of authenticity and authorship are involved in the effort to archive digital design data. Aldo Rossi’s distinctive hand drawings of the 1970s and 1980s make an apt comparison with Hani Rashid and Lise Anne Couture’s computer generated Guggenheim Virtual Museum (1999), in

which Rossi's surreal, child-like drawings reveal his fascination with the city and memory and Asymptote's drawings express, perhaps, more about their vision but offer less evidence of the architect's hand. In moving from Rossi's hand drawings to digital renderings, the researcher inevitably experiences a disorienting, disembodied interface with the computer. Although the issue of individual versus collective contribution to a given project did not have much relevance for Walter Gropius, the digital design process and work environment present new problems for the researcher interested in identifying the creative forces at work. The computer operator is not easily recognizable as the author of a hand drawing. Even though draftspeople were largely responsible for executing drawings until the early 1980s, hand drawings and sketches by architects (distinct from their office staffs) constituted the primary means of documenting and thus understanding the design process.

The unstable balance between the advantages and disadvantages of conventional design media such as paper and digital data that relies on memory support systems is also a factor in the domain of architectural models. The roles played by new software and laser-cutting technologies applied to modelmaking cause earlier practices to appear quite rudimentary. The low-tech quality of the wood and paper model of Frank Gehry's Santa Monica residence (1977-78; 1991-94) stands in stark contrast to the intricacy of the 3-D wireframe computer-generated drawings produced by his studio for the Guggenheim Museum in Bilbao (1991-97). (figs. 17-18) A comparison of the early and more recent works of Frank Gehry (b. 1929) and Peter Eisenman (b. 1932) – both of whom were trained to make hand drawings – reveals the role 3D modeling programs such as CATIA played in the production of more complex drawings and thus buildings. What enables their work to take on greater complexity in the historic context of the profession is their reliance on the overlap of traditional and innovative tools of production. Unfortunately, no one has really assessed the difference between figures who were trained to draw by hand and do not operate digital design software themselves but "direct" its use in their offices, and those who themselves operate using exclusively digital design tools.

In order to tap into the cultural implications of this technological revolution and its relation to traditional means of representation, researchers in the field, architectural historians and critics, must be mindful of these changes in the production of architecture. So, too, must curators and museums of architecture address the fact that time-based digital artifacts pose entirely different display conditions and requirements than paper-based or analog design artifacts. Increasingly, architectural exhibitions are comprised of virtual models or animations rather than handmade drawings and physical models. This does not imply that interest in analog artifacts has been eclipsed. According to the text of the official web site for the exhibition *Herzog & de Meuron: Archaeology of the Mind*, held at the CCA in 2003: "The exhibition encompasses several hundred of the architects' working models, many of them very small and some (the full-scale material models) enormous. The latter, which are crucial to the architects' design process and have never before been exhibited, 'loom over the installation like the monumental fragments in archaeological museums,' says Philip Ursprung, 'helping to suggest a history of the architects'

Figure 17

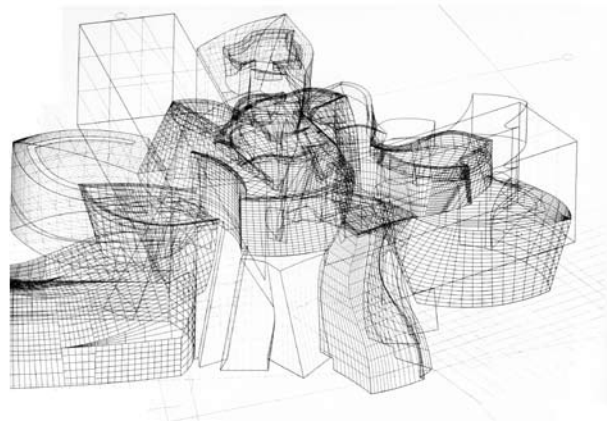
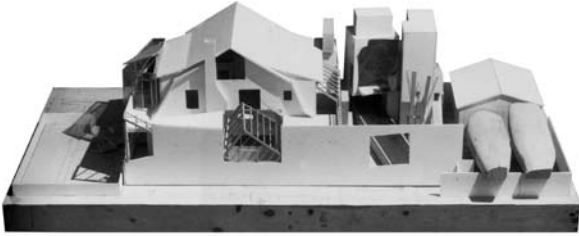


Figure 18

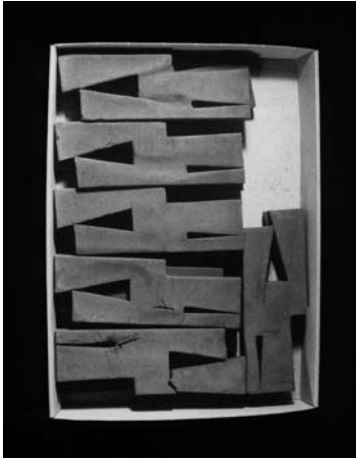


Figure 19

work.” The surprisingly few drawings displayed in the context of the Herzog & de Meuron exhibition was indicative of a shift toward emphasis on process that is both sensual and disembodied from the act of drawing. (fig. 19)

As Richard Sennett pointed out in his recent book *The Craftsman* (2008), “The argument I’ve presented in this book is that the craft of making physical things provides insight into the techniques of experience that can shape our dealings with others. Both the difficulties and the possibilities of making things well apply to making human relationships.”¹⁵ As the practice of design rapidly changes, it is incumbent on architectural historians to find new cues for reconstructing and evaluating design processes. Rather than mourn what has been lost, historians must respond to new challenges of archiving and interpreting the work of contemporary and future generations in service of the discipline of historiography in our Information Age.

Biographical note

Michelangelo Sabatino is an Assistant Professor at the Gerald D. Hines College of Architecture, University of Houston. He has contributed widely to journals and co-edited publications in the field. His forthcoming books include *The Politics of Ordinary Things: Italian Modernism and the Vernacular* (University of Toronto Press), and a co-edited volume of essays entitled *Modern Architecture and the Mediterranean Ideal: Migrations & Dialogues / Contested Identities* (Routledge).

List of illustrations

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- 3) Etienne-Louis Boullée, Reading room, Royal Library (1785)
- 4) Alvar Aalto, Reading room, Viipuri City Library, Vyborg (1927-35) (photo courtesy of MoMA)
- 5) Erik Gunnar Asplund, Stockholm City Library, Stockholm (1918-27) (photo courtesy of KW Architect, Dortmund)
- 6) Offices of H. H. Richardson (from Mariana Griswold Van Rensselaer, *Henry Hobson Richardson and His Works*, 1888) (photo courtesy of Harvard University)
- 7) Ludwig Mies van der Rohe and Fourth Year Studio students, 1939 (photo courtesy of IIT)
- 8) Frank Lloyd Wright, Taliesin West, Scottsdale, Arizona (photo courtesy of Michelangelo Sabatino)
- 9) TAC (The Architects Collaborative Inc.), The Bauhaus Archive, West Berlin, Germany (1979) (from: TAC: *The Heritage of Walter Gropius*, Process: Architecture 19, 1980), 29.
- 10) Le Corbusier, Villa Fallet, La Chaux-de-Fonds, 1905-07 (courtesy H. Allen Brooks)
- 11) Le Corbusier, Villa Stotzer, La Chaux-de-Fonds, 1908 (courtesy H. Allen Brooks)
- 12) Le Corbusier, *Vers une architecture* (1923) (from W. J. Mitchell (1992), 203)
- 13) Yasuhiro Ishimoto, Detail of east front of the New Goten, Katsura Villa (from Kenzo Tange, Walter Gropius, Yasuhiro Ishimoto, *Katsura - Tradition and Creation in Japanese Architecture*, 1960)
- 14) Superstudio, *The Continuous Monument: New York* (1969) (Courtesy of MoMA)
- 15) Eric Mendelsohn, Schocken Department stores, sketch (1927-28) (courtesy of Staatliche Museen zu Berlin)
- 16) Toyo Ito, Sendai mediatheque, Sendai (2001) (photo courtesy of Hiro Sakaguchi)
- 17) Frank O. Gehry, Gehry Residence, Santa Monica, California (1977-78; 1991-94) (courtesy of Gehry Partners)
- 18) Frank O. Gehry, Guggenheim Museum Bilbao, computer drawings (1991-97) (courtesy of Gehry Partners)
- 19) Herzog & de Meuron, 164_008M Foam, 27 x 8 x 2 cm (from: Philip Ursprung ed., *Herzog & De Meuron - Natural History* (2002-05), 336).

Notes

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- 1 On the image of the architect see Jeffrey T. Schnapp, "The Face of the Modern Architect" *Grey Room* 33 (Fall 2008): 7-25; Andrew Saint, *The Image of the Architect* (New Haven and London: Yale University Press, 1983).
- 2 James S. Ackerman, "The Conventions and Rhetoric of Architectural Drawing," *Origins, Imitation, Conventions: Representation in the Visual Arts* (Cambridge, Mass.: The MIT Press, 2002), 293-317.
- 3 On the history of the architectural profession, see Dana Cuff, *Architecture: The Story of Practice* (Cambridge: Mass.: The MIT Press, 1991); see also Spiro Kostof ed., *The Architect* (New York and Oxford: Oxford University Press, 1977).
- 4 H. Allen Brooks, *Le Corbusier's Formative Years: Charles-Edouard Jeanneret at La Chaux-de-Fonds* (Chicago: University of Chicago Press, 1997).

- 5 Paul Venable Turner, *The Education of Le Corbusier* (New York: Garland, Pub., 1977).
- 6 Beatriz Colomina, *Privacy and Publicity – Modern Architecture as Mass Media* (Cambridge, Mass.: The MIT Press, 1992), 3.
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- 8 William J. Mitchell, *The Reconfigured Eye – Visual Truth in the Post-Photographic Era* (Cambridge, Mass.: The MIT Press, 1992).
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- 10 Le Corbusier, *Toward an Architecture*, intro. Jean-Louis Cohen, trans. John Goodman (Los Angeles: Getty Research Institute, 2007), 30.
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- 15 Richard Sennett, *The Craftsman* (New Haven & London: Yale University Press, 2008), 289.