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*Other Things Visible on Paper:
Architectural Writing and Imaging Craftsmanship 1960-1987*

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Architecture

by

Sarah Aileen Hearne

2020

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ABSTRACT OF THE DISSERTATION

*Other Things Visible on Paper:
Architectural Writing and Imaging Craftsmanship 1960-1987*

by

Sarah Aileen Hearne
Doctor of Philosophy in Architecture
University of California, Los Angeles, 2020
Professor Sylvia Lavin, Chair

Between the more established media ‘epochs’ of mechanical drafting, on the one hand, and computerization on the other, there exists a short but decisive period during which architectural production was technologized in new and understudied ways. An array of graphic ‘supplies’ found their way onto the architects working surface, from the draftsman’s table to the principal’s desk. These supplies, neither instruments nor tools, were the temporal, replaceable and refillable items that joined the many other machines that came to typify the office landscape. Despite a growing literature on the architect’s toolkit, the graphic supplies chain of the postwar office remain overlooked because of their ephemerality and often gizmo scale. As such their omission risks maintaining the historical binaries between conceptual designers and technicians and autonomous and bureaucratic architectures, intrinsic to the introduction of computation. In order to refute these false oppositions and fill the historiographical gap they have produced I argue that the architect’s desk in this period must be recognized as a technologized theater of production.

This dissertation bridges the divide and examines how the toolkit became a theoretical problem of authorship, shaped by the longer distinctions between models of authorship and anonymity. Rather than focus on one to the exclusion of the other, this dissertation looks in between, and simultaneously examines one of the most formidably entrenched models of authorship of the period, the one constructed by Peter Eisenman, but also the great network of anonymous supplies, actions, and agents with which he is never associated. The dissertation reveals multiple points of contact between architectural drawing practices and a previously unrecognized network of material research laboratories, tool manufacturers and distributors, trade journals and advertising. Not only were these supplies intrinsic to the development and organization of the bureaucratic office as might be expected, but by the 1960s they also formed a substrate for the ideologies surrounding notions of personal expression and originality bound up in that period’s widespread if contradictory discourses on authorial critique. During this period, some architects explicitly foregrounded their drawing supplies and claimed them as essential components of individual authorial expression. Others rarely spoke of their drawing activities and used supplies that were designed to render personal expression invisible when reproduced. Regardless of their position toward the toolset, every architect was entangled in working their way through this unavoidable array of technological artifacts.

The dissertation of Sarah Aileen Hearne is approved.

Cristóbal Amunátegui

Michael Osman

Charles Rice

Mirko Zardini

Sylvia Lavin, Committee Chair

University of California, Los Angeles
2020

For my family

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Introduction

It seems to me that the most powerful explanations, that is those that generate the most out of the least, are the ones that take writing and imaging craftsmanship into account. They are both material and mundane, since they are so practical, so modest, so pervasive, so close to the hands and the eyes that they escape attention.¹

—Bruno Latour

Despite the proliferation of papers, films, inks, transfers, adhesives, and reprographic machines that filled the supplies cupboard and populated the desks of architectural offices in the last century, there is very little written to acknowledge the influence that these materials have had on architectural practice. Though they are often overlooked because of their ephemerality and gizmo scale, these supplies have played an important role in shaping the drawing procedures of architects and their work—particularly in the long 1960s.² In this dissertation, I examine the architect's work in relationship to the move from industrial to post-industrial labor paradigms in the mid-twentieth century, with architecture's output shifting increasingly toward activities such as publishing, research, exhibitions, and object design. Coincidentally, manufacturers produced increasingly relational graphic supplies that were interchangeable and shifted from a mandate of optimization to the spectacle of choice and variation. As architects found themselves more clearly caught in the technocratic bindings of postwar practice, the toolset was one of the ways that they could fashion a sense of authorial individuality. Just as the tools and supplies offered a constellation of shifting possibilities for their toolkit, the architect also worked in a far more precarious market of work opportunities. In particular, critical-conceptual architects, who claimed to work outside of the commercial realms of practice, staked, built, and expanded their careers on networks of academic prestige, grant funds, lecturing, and other forms of institutional

affiliations in the increasingly neoliberal markets by which architecture would reshape itself toward the end of the century.

This dissertation uses specific examples from the archive of Peter Eisenman in order to examine these transformations. In particular, I pay close attention to two of his early houses—II and IV—designed between 1967 and 1976. This is not a survey, a comprehensive statement about Eisenman’s work, or an engagement with his larger career trajectory. Rather, I examine this brief and discrete window of time in his office at the Institute for Architecture and Urban Studies (IAUS/Institute) to narrate an alternative scale of practices to recent historiography related to architectural authorship. Eisenman functions in this dissertation less as an author than as a means of understanding authorship at a critical moment in its reconfiguration. As an architect who claimed to work critically on the modernist terms of authorship, originality, and work, it has long been a curiosity that Eisenman appeared to reconstitute a dispersed and resilient pattern of institutional circulation and publishing that reinforced the singular author even as the figure was under question. Recent historiography has connected the Institute to the network of architectural discourse because of its connection to various Ivy League institutions, the Museum of Modern Art (MoMA), and other sources of funding, as well as its role in running journals and events. The archival items I examine in this dissertation, such as a single animated film, seem insignificant in the face of the broader institutional and discursive project of the IAUS. But this focus on the scale of overlooked and ostensibly minor objects serves as the primary basis of my analysis and argument. I argue that this scale affords an understanding of the way Eisenman oversaw private commissions from his desk, and that at times he did seek forms of independent funding.³ As an underexamined scale of operations emanating out of the office, it remains

important to understand how these practices nested into the broader networks of power at the Institute and beyond.

These phenomena were examined according to what Bruno Latour calls the *mobilization* of ideas that allows one to establish facts and influence discourse. According to this frame the inscriptions made and assembled on paper reveal the collective efforts that went into maintaining the border between what he considered conceptual and that related to the production of the building, and the obfuscation of the professional side of building that was still ultimately needed as a source of legitimization for architecture. More than this, however, one must examine the minor activities of production and organization in what Latour calls “paper shuffling,” which reveals the ways that categories of organization are decided and maintained in processes of sorting.⁴ Inscription, or the putting to records and memory items that were formerly ephemeral, is a question of power. At the same time, the drawing and publishing processes that Eisenman used in order to maintain this divide would inevitably link him to the technical world of supplies which were a less visible form of that which he sought to evade. Examining the ways that supplies influenced Eisenman’s architectural ideas in this time period is key for two reasons. First, Eisenman disavowed drawing production in favor of discourse around texts and diagrams. Second, he engaged with conceptual practices that were circulating around drawing production in order to rethink the management of work. In both cases, centering the material impact of supplies on Eisenman’s ideas unsettles the myth of architectural authorship that surrounds him in dominant narratives. This relocation of analysis requires an attention to the circulation of knowledge, its production, organization, storage, and dissemination—all of which are processes mediated by these institutions and technologies. In other words, one must focus on the processes rather than the objects of media.

Looking at the catalogs from graphic supply store Charrette, the drawing manuals, and the histories of drawing instruments, there seemed to be a fundamental gap of consideration about what I call “supplies.” The catalogs contained pages filled with items, gadgets, and innovations that an architect could purchase. Manuals breathily warned beginner architects of an impossible selection of constantly changing items and used this shifting terrain of options an excuse to not commit them in ink in their pages. But these items were mostly passed over in the histories of drawing instruments for the more stable and longstanding techniques of calculation and mastery embodied in the historical set of instruments. Supplies tended to be associated with the logistics that sustained the drafting room rather than being given space as shaping any form of authority. This is a postwar history of the things found on the architect’s desk, in their desk drawers, in the supply rooms and filing trays. To tell this history, I analyze drawings from the point of view of the materials and apply research around from trade literature and advertising, technical manuals, and manufacturing histories. The collective analysis of these archival objects and histories reveals the disintegration of the concept of the drawing as a stable entity, highlighting instead the various intermediary duplicates and processes around drawing production.

Rather than examine the singular crafted drawings—ones that were obviously valuable for gestures and expressions—I explored the documents that were clearly duplicative and perhaps bureaucratic, that were marked by reproduction and publishing. The reason for this interest in the secondary level of processing was that it tended to remove the drawing from any realm of private contemplation, yet it maintained other types of control such as annotation marks indicating enlargement percentages, crop lines, manufacturer tags, and watermarks. A closer study of these marks of communication also indicate something else: that the manufacturers of

the materials from which the drawings were made were also thinking about how their materials engaged with this space of communication. Materials were developed to accommodate the vital communication of post-production—for instance, the blue copying pen that did not show up in duplicates, the yellow-trace page that signposted its originality, or the Tippex that masked signs of alterations. These marks were most often made by technicians or interns, who were forever uncredited in the publication of the work. Perhaps the marks were made in printers' laboratories rather than in the office mapping the decentralization of production. These observations raise other questions related to the historiographical coverage of the hand and labor, or authorship.

The dissertation was initiated from a simple inquiry: why did the critique of authorship that entered architecture in the postwar period paradoxically take shape through drawings, which were the traditional site of authorial control and regulation? The influence of conceptual art on Eisenman and his attempts to import various aspects of these practices into architecture are well known.⁵ These earlier house projects in particular were seen as a retreat from the technical complexity, legislative regulation, and sociopolitical contexts of professional practice during the 1960s into smaller projects more under the architect's control. In other words, Eisenman's so-called conceptual architecture required an apparent retreat from the managerial and technocratic bindings of building coordination. At the same time, these narratives centralize his denunciation of the building-as-object in favor of the serial based process, which was a corollary of conceptual practice's denunciation of the object of art and prioritization of processes such as making and certifying.⁶ Rather than duplicating these observations here, I choose to unfold an alternative connection to the intersection of conceptual practices related to mechanical drawing or specifically to drafting and constructed graphic documents and their reproductions.

The image of the conceptual artist appeared alongside the office-worker in the postwar periods move from industrial production to post-industrial.⁷ These twin figures were structured out of the growing fields of communications and media, business, and advertising. These provided models for artistic practice by which to challenge the values of autonomous and original art by introducing the notion of repetition, circulation, and distribution rather than originals, place, and aura. Likewise, artists imagined themselves also as managers and administrators and required other languages in order to instruct the making of the work—namely, the various technical instruments of industry, including the mechanical drawing. Benjamin D. Buchloh describes as an ‘aesthetics of administration’ seen in work that was conceptually oriented for instance relating to the language of institutional bureaucracy and legalese, or in work that turned to graphic design formats such as books, or ephemera. Importantly for this dissertation, however, was the appearance of the mechanical drawing in various ways in conceptual practices. As an administrative and bureaucratic document of architectural management, the drawings entered practices as a mediating conduit between fabricators and artists. The drawings afforded other qualities, such as an affectless objectivity in the ruled lines, a legacy of mechanized and industrial production, and a relationship to repetition and commodity.⁸ And in their making, they were produced out of the types of supplies that were structured similarly out of the rationalization of work and the bureaucratic depersonalization of collaborative labor. It was these very qualities that Eisenman imported into his own drawing practices.

Architectural drawing instruments have always mediated and, in turn, been mediated by the relationship between architects and their work. Whether it be their representational appearance as iconic signs of humanistic mastery in hands or on desks, their collection and display in the Renaissance Studiolo, or their functional influence on the making of marks, writing, and drawing, architectural drawing instruments are key to understanding the work of architects. Historically, the instrument kits used by architects were exemplary interdisciplinary objects. The best-known drawing instruments described by scholars of the field, such as calipers, rulers, compasses, squares and pantographs, were historically never specific to any one field of knowledge and instead were shared by mathematics, military and civil engineering, and surveying.⁹ Despite this widespread usage across domains, instruments and tools served as icons in portraiture for particular fields of knowledge. Their important relationship to their operator was demonstrated in portraiture with careful positioning that meant that a set of dividers or a compass communicated the humanistic knowledge of mathematics and geometry.¹⁰ As James O’Gorman has pointed out, in “occupational portraits” of the mid-nineteenth century, architects were increasingly less identified in painted portraits or photographs with tools actively in use in their hands; instead, instruments were seen carefully positioned and staged on desks, emphasizing architects’ connection to contemplative knowledge rather than manual activity. This representative function of the image of instruments has meant they have also long been objects of collecting and display alongside their working function.¹¹ These often private exhibits of instruments tended to highlight the relationship symbolically to their collectors; alternatively, they fulfilled connoisseurial roles as exemplars of the craft of particular tool smiths or as symbols of a broader Nationalistic claim for expertise and domination. Instruments were already

functioning in dual ways either floating in portraits poised (rather than in-use per se) and collected in specially carved boxes, or in use as extensions of the hand.

I propose the term *supplies* in order to account for the underacknowledged and undefined materials that were considered neither tools nor instruments. However, it should be noted that there is also a distinction to be drawn between these two terms also. Though sometimes used interchangeably, the historiographical uses of the terms *tools* and *instruments* have different connotations. The most reductive distinction is that the term *tool* seems to be employed in situations where manual labor is present, especially where the work is perceived to be low-skilled and repetitive. Instruments have been most commonly used in discussing technical activities of calculation and designing. A clear example of this division between tools and instruments is found in Gerbino and Johnston's *Compass and Rule* exhibition catalog, in which they refer to both terms pointedly in relationship to specific contexts of use. They refer to drawing 'tools' in relationship to the twelfth century Gothic practices where drawings were not instructive but acted more as templates in construction uses. Their study switches to the term 'instruments' when looking at the seventeenth century context of amateur instrument makers and collectors, where instruments unified mathematics, natural form, astronomy, and architecture. In that period, the context of instrument workshops was seen not as a workmanly site but a site of 'intelligence,' or perhaps what we might call today technology transfer.¹² Likewise the use of these instruments by the polymath owners was seen as a type of delight in solving complex problems and writing theorems of proof, an important aspect of the instrument's elevation over tools and their connection to manual labor.

Writings on the nineteenth century refocus from the highly elaborate special-purpose instruments and delight to a more established repertoire of technical drawing instruments to serve the growing professional class of architects and surveyors.¹³ There appears to be an agreement across secondary sources that the term instrument was employed for a fairly stable set of items; compasses, rulers, triangles. The things that were considered instrumental to the geometry of the designs. In discussions particularly from the early twentieth century around drafting production tools seemed to apply to the more rudimentary items and in particular around the notion of drafting work which was considered to be repetitive and rote. The term was used for instance especially in the Bauhaus related to model making and graphic design in particular around discussions of craftsmanship.¹⁴ Curiously, the term ‘tools’ was cited more widely in usage during the 1960s in relation to computerization in America. This phenomenon was not simply a historiographical turn of phrase, but it can also be tracked in the return to tools in the counter-cultural context of the 1960s. For instance, the term ‘tool’ drove many projects, prominently for instance in Stewart Brand’s *Whole Earth Catalog: Access to Tools* where early ideas of communication networks, in this case catalogs of tools, developed alongside the fantasy of personal computing, as opposed to the centralized mainframe computing of the laboratory, as a distributed form of communication.

Up until the 1980s, there was very little historiographical coverage that comprehensively drew together the material world on the architect’s desk. This date is significant because the first surveys of drawing materials and instruments emerged around this time out of museums and archives that were seeking to establish protocols to understand the drawings that were being collected from architectural offices. That means that some of the first accounts were written as conservation guide books and catalogs by curators and conservators who wrote their publications

for their fields of conservation to address dearth of information outside of trade manuals and professional journals. While there was some attention being paid to instruments by the nascent field of history of science from around the 1960s on, the architectural use of the instruments had remained a scholarly blind spot. These surveys include Maya Hambly's *Drawing Instruments 1580-1980* (1987)¹⁵ and Louis Olcott Price's *Line, Shade, and Shadow* (2010)¹⁶ both which have been widely and consistently cited by the historiography of architectural practice in order to stand in for a discussion of the equipment and media but without extending their existing reach through closer attention to the instruments and materials in operation. Despite their wide referencing these two surveys both are thin in their coverage of the period between 1950-the 1980s. It is difficult to avoid seeing this paucity of coverage as a reflection of the gap between a tail end of mechanical drafting procedures established in the late nineteenth century in the rationalization of drafting rooms, and the arrival of personal computing that would enter some architectural offices by the end of that decade. Indeed Olcott Price reinforces this assumption and suggests that in the period after the 1860s, drafting materials and copying were refined but not innovated beyond already established protocols. Similarly, Hambly's survey of the humanistic genealogy of instruments describes a relative stability of the kit as the variety of dividers, compasses, and ruling pens, with the main refinements were the adjustments of joints to improve accuracy and new items largely served the same basic needs in slightly different ways.

By writing the period in this gap between the established histories of modernized mechanical drafting and computational practices, I resist relying on these entrenched 'epochs' that have been reinforced by the framing of monumental media. This periodization obscures the short-lived and novel media between two epochs that collectively reveal the conditions that shape and made them possible.¹⁷ Therefore, rather than emphasize these epochs or retrace the

work being done on the ‘proto’ digital tools such as early drawing software, computer screens, and styluses, I will examine the ways that drafting tools became drafting and image-making systems. I borrow methods from recent scholarship at the intersection of literature and media studies that focus on the technical and material aspects of creative work within their social and productive contexts. Focusing on the craft of material processes is a deflationary method of examining producers that shifts the guide from centralizing the emergence of creativity and intention from the author and externalizes these to activities and engagement with externalized processes or what Bernard Seigert calls “cultural techniques.”¹⁸ Seigert and Latour are part of a historiographical turn that is often linked to German media analysis from the 1990s but more specifically relates to a study of history that eschews the study of mass-media and the direct correlation to the enlightenment public sphere, and instead looks at a more broad definition of “technologies of knowledge” meaning that they would examine the “insignificant” technologies that were overlooked including the things involved in transmitting, communicating and signifying.¹⁹ This connection to media studies brings my research into contact with a recent undertaking by John May and Zeynep Celik Alexander with the founding of an ongoing project first titled the *Instruments Project* with a name change *Design Technics* that indicated a focus beyond the instruments.²⁰ This project is also drawing from a media history including Bernard Steigler and Galison’s discussion around technics in order remediate what is described as a lack of technical knowledge that leads to “phrases at war with themselves” such as the digital photograph.²¹

In thinking about tools, one must also consider the spaces of production in which one finds them and the architect who use them. As such, the second historiographical strand covers writing about architectural offices which has been the focus of critical focus in the past decade in

particular.²² Formations of lobby groups and other critical activities that examine ways contemporary architects were conducting their business have emerged coincidentally with a series of intertwined publications that feature historiographical examinations of the transformation of practice and the development of the specifically-American architectural profession most commonly focused around the turn of the 20th century and the development of the bureaucratic office. In particular these historiographies grow out of a particular focus on the offices that were, as Michael Kubo describes it, the larger team-based offices and conglomerates that were often disregarded in favor of more identifiable single author offices. These foci differ from, and respond to, the attention that was paid by authors who examined the history of professional practice in the 1980s and 90s who worked on dismantling the myths of singular heroic figures such as Frank Lloyd Wright or Le Corbusier. In order to do this work however the architect remained as a central name to be displaced by introducing a cast of agents who displaced or superseded their centrality.²³ Regardless of whether the head of an office was identifiable or simply a collection of unidentified partners, the recent historiography has favored a focus on the corporate offices leading to the authorial image of the architect-as-network.²⁴ In other words studies that cover the ways that work has been organized, where the architect is a manager, and one part of a vast complex of communication and media, such as Reinhold Martin's *Organizational Complex* (2003) which examines the landscapes (social and spatial) of the organizational complex of which the flexible office was an exemplar, yet does not scale in to the desk itself. These more recent studies of offices incorporate the infrastructures in the office that transformed what was an atelier system into a rationalized production line and later the influence of managerial layers.

Others have focused on the drafting room to tell social histories of labor and organization especially in regard to the development of American early corporate office structures. These studies examine the role of the drafter who was considered a technician and an apprentice rather than a university educated architect. Two examples of these are Mary N. Woods' *From Craft to Practice* (1991), and more recently George Barnett Johnston's *Drafting Cultures* (2008). Both publications examine the spaces of drafting production and the American history of professionalization of architecture and the effects of education and office organization on the drafting workforce. In both accounts, there is an overlap in the period of study: the period between the 1850s and 1950s, when the drafting room was considered the engine of the office. Woods examines the professionalization of drafting room practice. The ways that the architectural office was organized between those who drafted in the 'pit' and those who designed and led (named authors). The figure of the draftsman one that sits on the cusp of architecture and building, architecture and labor, and architecture and business.²⁵ There are few accounts, however, that grapple with the offices and material work of those who maintained smaller offices and worked across practice and teaching. I argue in this dissertation that this was an increasingly common model of practice from the 1970s onward and the entanglement of practice and project in the academy today suggests it is a model that persists.

Peter Eisenman has become a paradoxical figure; he is an architect who claimed to "de-author" his architecture, and yet his legacy casts an authoritative specter over the field today. Suggesting that operationally there are other external factors at play in the authorial transformation in this period meant that the name remained vital and valuable. More broadly, the monographic project has been under criticism precisely because the terms of the genre prioritize the characteristics around authorship that I seek to critique. As such, this dissertation opens up

the ways in which Eisenman's practice included other authorial contributions from the complex around material choices, the construction industry, and the institutional and economic structures around publishing and collecting. In this I hope to contribute to the historiography of architectural authorship that has largely allowed for the maintenance of authorial intention even when it unveiled the myths of originality and authorship. It should be foregrounded that there are complex questions of gender involved in the historiography of artistic and architectural authorship. While this often goes un-noted in the primary sources, an important aspect of the past 30 years of historiography has been unpacking the connotations and historical context around terminology related to authorship. Qualities like "heroicism," "genius," and "mastery," which are today understood to have been encoded with romantic ideals of Eurocentric masculinity, were constructed by the imaging of artists and their spaces of production or ateliers. These questions around creation and the atelier established the terms against which many postwar feminist artistic practices would then distinguish itself—for instance, in thinking about the work of maintenance over creativity and collaborative working methods over the individual.

Chapter Summaries

Chapter 1: Machines at the Desk

In the 1960s, architectural supplies were all over architectural offices. The copying of drawings and textual documents had reached a level of proliferation that led to the pathologizing of the sixties as 'copymania.' The technical infrastructures around instruments and supplies for the architectural studio and office included trade shows, internal supplies stores, and training

sessions by manufacturers. These supplies functioned often interrelatedly as ‘interchangeable parts,’ in the words of Reinhold Martin, though they were not modular they formed a constellation of rapidly transforming and varying options for drafters assembling their design ‘kit.’ Despite the clear technologization of these supplies, their commonplace presence and gizmo-stature meant that they were overlooked by historians and architects alike as such for the technological sublime of industry, scientific material research for building sites and the development of greater control from factory to building site. In these conversations around technology in the 1960s, there was a division between architects who were conceptual designers and those that were technicians. These were linked to figures who were interested in apprehending the increasingly technical and scientific world of what they understood as ‘technology’ and those that were ‘conceptual’ and were more likely to work in creative ways. I argue, however, that this distinction was ultimately a false one. It would become clear that, because of the development of technical systems around supplies, the shifting theater of architectural production from the construction site to the architect’s desk (the subject of this dissertation) would mean that the conceptual approach was as entangled as ever.

I examine three aspects of this technical world of supplies as they transformed three sites of architectural production; the hand, the page, and the toolkit. First, Rapidograph pens, which began from the intricate scale of a pen-tip and developed out to a drawing system and training that transformed the relationship of the *hand* to drawing for architects and engineers. Second, photographic manufacturers like Kodak and DuPont extended fantasies of automation intrinsic to bureaucratic management by promising to remove the hand entirely from graphic ‘industry’ including advertising, animation, and architecture. In this process, however, they also transformed definitions of originality by delaminating the single *page* into updatable windows of

information and thus moved from a logic of efficiency and repetition to versions, alternative orderings, and improvisation. Third, the landscape of supplies required new forms of informal education including emulation in studio, shopping in supplies stores. Within this context a sense of individuality and personalization was recuperated in the architect's selection and consumption of their *'toolkit.'*

Chapter 2: An Exploded Portrait

In 1960 Eisenman made an early observation of idea as machine that shifted the terms out of heavy industry and into the world of conceptual architecture and post-industrial paradigm that it was associated with. By 1967, as he established the Institute and his first private practice within, the terms of his practice became clearer. As others have argued, his houses were part of a retreat into theory, and this chapter will examine the ways that this retreat was still one that was managed by the organization of design production between what he considered to be a record of process that was linked to his theoretical writing, and a working process that unfolded in response to the professional pressures of clients, site constraints. I argue that one can begin to understand this management by examining his desk as a privileged site of work. The role of supplies in this was in the erasure and redirection of attention that was a form of control seen in works of conceptual art in this period in order to maintain the appearance of distancing of the hand even as they inserted influence in other managerial forms. These acts of control—about what information was erased and what was suppressed—emerged out of a bureaucratic logic of record keeping that had reappeared as an *'aesthetics of administration.'*²⁶

Within this context, I examine the engagement with House II in relation to the attempts of control that occurred between the desk and the building site. I argue that, in designing the house, Eisenman relied on material choices and formats in order to make visible very specific moments of processes that were previously not visible. For Eisenman, the attention was directed toward the ‘conceptual’ activities related to the production of serial drawings and a seeming lack of control of the building site that he was famous for neglecting as another form of evidence.

I argue that the organization and record keeping relied on technical systems of supplies that did not always abide by the divisions he hoped to maintain between the desk and the building site. Likewise attempts to manage the post-occupancy documentation conflated the enlargements of copy machines with aerial photography that both played a game of scale, legibility, and abstraction.

Chapter 3: The Endless House

Despite never being built, Eisenman’s own House (IV) has become one of the most prominently known of the House series via publishing. This chapter focuses primarily on (1) a set of duplicate drawings kept at MoMA, and (2) an un-examined animation film made in 1972 at Optical House Studio advised by experimental animator Martin Abramson. The duplicate drawings and the film attest to a division in thinking around production in this period. I argue that these projects reflect two competing pressures on drawing in the 1970s that in both cases prioritized drawings as signs of architectural thinking. The first of these pressures was the growth in research in academia and the imperatives for architects who worked in this world to have an ongoing line of research which was used to lecture, teach and legitimize their academic

positions. In this case, Eisenman's houses reflected an attempt to validate and account for a protracted form of design process. On the other hand, the burgeoning exhibition opportunities for drawing prioritized artistic valuations around originality and craft.

Film, or more specifically animation, introduced Eisenman to a wider set of figures working on individual techniques and the design of new tools of a smaller scale for a more experimental distribution, and engaged economic support contexts of funding grants and institutional visual aid libraries. Eisenman claimed that he chose to use film over computers for financial reasons; however, it is evident that there were other considerations influencing this decision. At a certain point, not only did Eisenman make the decision that the material of film was preferable to the flow of analytical data, but he that sometimes things ought to settle to accrue other forms of value. The museum was the locus between the two realms of collecting, on the one hand independent film and independent architecture both relied on the worlds of funding grants or patronage from museums such as MoMA. But at the same time, someone like Arthur Drexler would be soliciting teaching tools from Eisenman into the library, and some years later welcoming singular drawings into the collection.

¹ Bruno Latour, “Visualization and Cognition: Thinking with Eyes and Hands,” in Kuklick, Henrika, and Elizabeth Long, eds. *Knowledge and Society: Studies in the Sociology of Culture*. Vol. 6. (Greenwich, Conn: JAI Press, 1986): 3.

² For the purposes of this dissertation, I follow Fredric Jameson’s defining essay on the sixties. According to this periodic frame Jameson suggests that rather than a measure of ‘decades’ the sixties can be understood as ending around 1973 (between 1972 and 1974). According to his framing and this periodization, Eisenman’s first house and the establishment of the IAUS coincide with the tail end of the 1960s. See Fredric Jameson, “Periodizing the 1960s,” *Social Text*, no. 9/10 (1984): 178–209.

³ This is covered in chapter 3.

⁴ Bruno Latour, *Visualization and Cognition*, 26.

⁵ These efforts are best known via Eisenman’s own publishing, namely his 1970 *Design Quarterly* 78/79 contribution, “Notes on Conceptual Architecture” that I examine in Chapter 2. Mark Jarzombek revisited Eisenman’s early conceptual in “A Conceptual Introduction to Architecture,” *Thresholds*, no. 33 (Formalism, 2008):16-20.

⁶ In his definitive essay on conceptual art practices Benjamin Buchloh describes a shared origin in the assault on the object of art and the ways that it related to traditions of visibility, its commodity status and relatedly its distribution. See Benjamin D. Buchloh, “Conceptual Art 1962-1969: From the Aesthetic of Administration to the Critique of Institutions,” *October* 55 (Winter 1990): 107.

⁷ There is much literature on the ways that postwar conceptual art refashioned the idea of artistic work and centralized problems of labor as a form of critique. The idea of the artists as administrator is covered specifically in Benjamin H. D. Buchloh, *Conceptual Art 1962-1969*, 105. Julia Bryan-Wilson tracks four case studies in 1960s American art in relationship to the transformation relationship of artists to work. See Bryan-Wilson, Julia. *Art Workers: Radical Practice in the Vietnam War Era*. (Berkeley, Los Angeles: University of California Press, 2009).

⁸ Molly Nesbit traces the origins of mechanical drawing in conceptual art back via Marcel Duchamp’s interests in the industrial language drawing. French children from the late nineteenth century were taught the skill and literacy of industrial drawing to prepare them for careers in industry. Like the mass-produced items of industry that they would draw increasingly complex versions of in their notebooks Nesbit shows that the model of education was one based on repetition or “drills”. The mechanical drawing was linked to an idea of truth and objectivity, she called it a “language of industry”. Nesbit says that this model of repetition of consumption and mass production has “become the unwritten point of reference for all other definitions of the copy. These industrial drawings coincided with Duchamp’s interest in shopping for “readymade items” and as Nesbit demonstrates in her essay the exercises of mechanical drawing that Duchamp was trained within influenced his selection of ‘everyday’ objects for his ready mades (see Nesbitt pp61). Unsurprisingly this language of industry was also the language of patents which protected the intellectual property of objects designed for mass production. Nesbit concludes that ultimately Duchamp’s attempts to ‘seize’ control of industrial culture was a fantasy that ran in parallel with the unrelenting continuity industrial manufacturing. (this reminds me of Eisenman in chapter 3. His idea that he might take on and mine intuition was also a fantasy. His production then was the crafting of the appearances of an intellectual production. See Molly Nesbit, “Readymade Originals: The Duchamp Model,” *October* 37 (Summer 1986): 53.

⁹ Maya Hambly notes that in earlier records from the fifteenth century, these drawing instruments were referred to first as ‘mathematical instruments,’ with the emphasis on geometry of the period. It was during the 18th century that the professional classes of engineers, surveyors and architects expanded, and with it the demand for the instrument makers also grew. Alongside this demand, several drawing instrument manufacturers in Britain and Europe separated out from the broader umbrella of mathematical instrument manufacturers. See Maya Hambly, *Drawing*

Instruments, 1580–1980 (London: Sotheby’s Publications, 1987), 28.

¹⁰ James O’Gorman who was a significant interlocutor in the 1980s about architectural drawings and exhibitions wrote an essay on the history of tool display in the architect’s portrait. He describes the display of these instruments as an important aspect of the imaging of architecture as a liberal rather than manual practice. For more, see James F. O’Gorman, “Some Architects’ Portraits in Nineteenth Century America: Personifying the Evolving Profession,” in *Transactions of the American Philosophical Society* 103, no. 4 (2013): 1–94.

¹¹ It is worth noting that a surprising aspect of the exhibitionary culture around architectural drawings in the 1970s was that the drawing instruments and supplies also went on show not only with a reinterest in displaying tools as collectible items, but in the culture of trade show like exhibitions for drawing instrument suppliers. These “exhibitions” titled National Graphic Design and Drafting Exhibition, run by DOMMDA in London and other metropolitan areas in the UK between 1969-1982. These events were advertised and sponsored by schools like the Architectural Association and were an important site of research for architects. I touch on these latter exhibitions in Chapter 3.

¹² Anthony Gerbino and Stephen Johnston, *Compass and Rule: Architecture as Mathematical Practice in England, 1500–1750* (Oxford and New Haven: Museum of the History of Science, Yale University Press, and Yale Center for British Art, 2009), 114.

¹³ Gerbino and Johnston, *Compass and Rule*, 130.

¹⁴ For instance, the Bauhaus in particular incorporated pedagogical models around the workshop and laboratory and romanticized the medieval craft and the technologies of industry both historically aligned with different vectors of anonymity. In these contexts the term ‘tool’ reappeared as something that students would advance to after learning more direct forms of manual manipulation. The famous turn of the Bauhaus away from hand-drawing and toward model making, graphic design meant that there was a consideration of tools in the production of craft. For a discussion related to the workshop classes by Albers, see Josef Albers, “Creative Education,” in Hans Maria Wingler, *The Bauhaus: Weimar, Dessau, Berlin, Chicago*, ed. Joseph Stein, trans. Wolfgang Jabs and Basil Gilbert (Cambridge, MA: MIT Press, 1969), 142.

¹⁵ Maya Hambly was a practicing architect in London who was involved in curating a survey exhibition in 1982 at Heinz Gallery at the RIBA titled, *Drawing Instruments: their History, Purpose and Use for Architectural Drawings*. She published two associated texts alongside the exhibition in 1982 in the RIBA Journal *Transactions* (Vol1, No. 2) and an RIBA catalog. Some six years later Hambly published a larger publication catalog titled *Drawing Instruments 1580-1980*. This book is a companion to the exhibition that featured drawing instruments predominantly made for mathematical and scientific purposes, from the 17th Century to 1980, and drew attention to their manufacture and connection to collecting practices. For more see: Maya Hambly’s research papers on drawing instruments, drawing office stools and drawing storage at Sir John Soane’s Museum, 1984-1992, Maya Hambly Papers, Royal Institute of British Architects Archive. Other more recent instances of institutional interest in exhibiting tools include the acquisition of the Andrew Alpern Collection of Drawing Instruments in New York by the Avery Library in 2006. See Library, Avery Architectural and Fine Arts. Catalogue of the Andrew Alpern Collection of Drawing Instruments. First Edition. New York: Avery Architectural & Fine Arts Library, 2010. More recently an exhibition sponsored by Autodesk at the National Building Museum in Washington resulted in a book edited by Susan C. Piedmont-Palladino. See Susan C. Piedmont-Palladino, ed., *Tools of the Imagination: Drawing Tools and Technologies from the Eighteenth Century to the Present* (Princeton: Princeton Architectural Press, 2007). Alongside Hambly’s exhibition at the RIBA in 1982 or the collection or the much later Andrew Alpern Collection of drawing instruments in New York,

¹⁶ Louis Olcott Price cited similar motivations to Hambly to fill a knowledge gap with her research around architectural papers and reprographics. Beginning in the 1980s she build research supported by Robert J. Strauss (Director of Conservation) at the Conservation Center for Art and Historic Artifacts. This research would eventually

become the book *Line, Shade and Shadow*. For more, see Lois Olcott Price, *Line, Shade and Shadow: The Fabrication and Preservation of Architectural Drawings* (New Castle, DE: Oak Knoll Press, 2010), ix.

¹⁷ Lisa Gitelman describes the ways that media have been used to organize historiographies: “Media periodize, or media are periodized according to assumptions of discontinuity and difference: manuscripts differ from printed texts; scribal cultures differ from print cultures. The differences are technical, perpetual, epistemic, as well as importantly social.” Gitelman writes about periodization in Lisa Gitelman, “Ages, Epochs, Media,” in *On Periodization: Selected Essays from the English Institute*, ed. Virginia Jackson (Cambridge, MA: English Institute in collaboration with the American Council of Learned Societies, 2010).

¹⁸ Bernard Seigert, “White Spots and Hearts of Darkness: Drafting Projecting, and Designing as Cultural Techniques,” trans. Geoffrey Winthrop-Young, in *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real* (New York: Fordham University Press, 2015), 122.

¹⁹ Ibid.

²⁰ Alexander, Zeynep Çelik, and John May, eds. *Design Technics: Archaeologies of Architectural Practice*. (Minneapolis: University of Minnesota Press, 2020).

²¹ John May, *Signal Image Architecture* (New York: Columbia Books on Architecture and the City, 2019), 53.

²² The Office US at the 2014 Venice Architecture Biennale curated by Eva Franch, Ana Miljacki and Ashley Schafer put forward a ‘laboratory’ of research on American office models later published as an ‘Atlas’. The following year and founder of the Architecture Lobby (2013), Peggy Deamer’s edited collection *The Architect as Worker* (2015) suggests that it was the construction of architecture as art that required a parallel mythical maintenance that held the work done at the architect’s desk, things that have been described as immaterial labor designing, writing and administration, was not manual labor and as such was not held to scrutiny about how architects too were workers.

²³ This has been a common method particularly in the 1990s related to the deployment of post-structural and feminist theory in order to bring forward the suppressed contributions and influence of women in modernist architectural programs, for instance in reconsidering the importance of the client and collaboration. See for instance the work of Anne Friedman Friedman, Alice T. *Women and the Making of the Modern House: A Social and Architectural History*. New York: Abrams, 1998. Beatriz Colomina’s are another example of this strategy of deflation to modernist master authors. See for instance her discussion of the rivalry between Le Corbusier and Eileen Gray in Beatriz Colomina, “Battle Lines: E.1027.” in Diane Agrest, Patricia Conway, and Leslie Kanes Wiseman, eds., *The Sex of Architecture*, (New York: Harry N. Abrams, 1996), 167.

²⁴ Reinhold Martin, John Harwood, and Michael Kubo have sought to define the functions and meanings of the designation of the “corporate” in postwar architectural discourse. Harwood describes the term as producing an abstraction that functioned to allow a series of qualities of practice to gather underneath an organizational idea see; John Harwood, “Corporate Abstraction,” in *Perspecta* 46: Error (2013): 218-243.

²⁵ Woods, Mary N. *From Craft to Profession: The Practice of Architecture in Nineteenth-Century America*. (Berkeley: University of California Press, 1999).

²⁶ Later called this by Benjamin Buchloh in Buchloh, Benjamin H. D. “Conceptual Art 1962-1969: From the Aesthetic of Administration to the Critique of Institutions.” *October* 55 (1990): 105–43.

Chapter 1: Machines on the Desk

I Concepts and “Nuts and Bolts”

“But how, then, are we to identify the specific changes that prompted the emergence of *technology*—the concept, the word, the purported thing itself? My assumption is that those changes, whatever they were, created a semantic—indeed a conceptual—void, which is to say, an awareness of certain novel developments in society and culture for which no adequate name had yet become available.”¹

This chapter examines the ways in which the pedagogical milieu of the 1960s structured value in architecture by establishing distinctions between copyists and technicians on the one hand, and authors and conceptual designers on the other. Despite the apparent oppositions inferred by these pairings, these terms were bound up in a definition of technology that remained rooted in the mechanization of heavy industry. This focus on early 20th century models of technology obscured the growing number of unimposing yet specially designed items of everyday practice supplied to architects that were equally intrinsic to the rationalization of practice. These supplies—inks, pens, papers, films, erasers, lead cartridges, and tapes—were what I call “machines on the desk.”² Despite the various ways in which manufacturers invested in ideas of diversification and innovation, precision, and systematization, these items were not widely understood as technological objects. It was precisely the fact that they did not appear to be technological, however, that enabled them, under the neutral guise of supplies, to operate as important yet invisible actors in the structuring of architectural authors in the studio—students who became authors exactly because of their ability to operate these machines. This previously unrecognized potential was eventually understood by two students at the Harvard Graduate School of Design who marshaled this unwieldy landscape of graphic supplies into a technology

of discipline and a business. The result was the reclassification of tools such that they were no longer either items of craft used by drafters or instruments of technical and designerly expertise but consumer objects, an updating field of things for drawing production to be collected as a sign of individuation.

This chapter is divided into five sections that unpack the narrative of these “machines on the desk” and their unexpected role in structuring authorship in the postwar period that became evident in 1960 through various case studies. The distinctions between a technical and conceptual architect as managed in the structures of architecture schools were articulated at the American Institute of Architecture and American Collegiate Schools of Architecture (AIA-ACSA) conference that year, which was focused on the theme of “technology.” The theme was defined as the infrastructures of modernizing building materials and assemblies that were threatening the agency of conceptual designers. However, alongside the explosion of high-tech materials and systems that were the focus of discussions around technology, I argue that office and scientific management had also infiltrated the manufacturing and design of graphic “supplies” that were intricate, relationally designed, and requiring constant updating. I examine three aspects of this technical world as they transformed three scales of architectural production, including Rapidograph pens, which beginning from the intricate scale of a pen tip developed into a drawing system and training that transformed the relationship of the hand to drawing for architects and engineers; and photographic manufacturers like Kodak and DuPont, who extended fantasies of automation intrinsic to bureaucratic management by promising to remove the hand entirely from graphic industries including advertising, animation, and architecture. In this they also, however, transformed definitions of originality by delaminating the singular page into updatable windows of information and thus, moved from a logic of efficiency and repetition to

versions, alternative orderings, and improvisation. Technical systems around supplies required new forms of informal education including emulation in studio, manuals, catalogs, and shopping in supplies stores and trade shows. In this context, a sense of individuality and personalization was recuperated in the architect's selection and consumption of their toolkit. To this technical and authorial stage, I introduce a 1960 paper written by Eisenman while at Columbia University that begins to articulate his forming of a critical approach to the design process and the ways that he was inevitably shaped and structured by the moment of his individual entrance to the profession.

In the context of midcentury authorship and pedagogy in the United States, American students of architecture in 1960 were taught that only corporate practices could provide them with the new forms of expertise required by a growing complexity of technical systems.³ At the same time, they were also taught to venerate the individualized author and conceive of practices organized around such individuals as critical of the anonymizing and technocratic forces of the corporation. The invisible structures of education reinforced these options by on one hand, not providing the very technical expertise they also defined as necessary and on the other hand, inculcating veneration of the individual by developing review and grading systems that premiated work done alone.⁴ This chapter examines how exalting the individual was seen in 1960 as a salvaging of an architectural authorship that had been pulled into the anonymizing forces of corporate and technocratic architecture since the turn of the 20th century. These conflicts were part of the growing critique of authorial power that proliferated widely and across fields of knowledge. For example, critical theory entering America from continental Europe challenged the definitions and values held in relationship among publishers, literary authors, and readers. Similarly, in the sciences, there were claims in the other direction against a “war on

genius.”⁵ In both cases, the mission was to overturn the structures of value embedded in the institutions that controlled the production of authors.

In the period following World War II in America, the term “technology” had in architectural circles become a vague and ominous shorthand to describe perceived transformations to the profession of architecture, in particular in relationship to questions around authorship. The focus of these concerns was reflective of the broader reshaping of the U.S. economy and politics since at least the interwar period but rapidly becoming a topic of discussion and concern during the Cold War as the influence deepened from manufacturing to academia. During the 1960s, the term “military–industrial complex” emerged to describe the establishment and growth since the 1930s of the national armament industries that, together with the global expansion of U.S. military presence and funding, had radically reshaped America’s economic, social, and political landscape.⁶ Education, too, had become an industry under military and federal pressures that co-opted science, engineering, and social sciences and skewed actively in the content toward narrowing fields of expertise.⁷ These transformations were equally present and visible in architecture schools in America in this decade.

One of the clearest expressions of the technoscientific influences on the field was reflected in the discussions around the so-called “explosion” of materials that were available to architects when designing buildings.⁸ Research and development was introducing to architecture a growing array of engineered materials, composite panels, films, treatments, systems of communication wiring and piping for conditioned interiors, and industrial processes for optimizing design and construction. These materials reshaped architectural production in the ways that architects specified and prepared for construction. This deluge of options also

presented a problem for pedagogy, because it threatened the epistemological underpinnings by which architects related to material specification. It became impossible for students to learn or know all materials and to keep up with what was a rapidly transforming constellation of material options. The materials themselves also related to more specific subsets of engineering knowledge. Faced with the impossible task of teaching this expanding world of options, schools of architecture used ad hoc approaches of learning about essential materials.

All of these changes spurred conversations on the limits and scope of architectural knowledge and expertise in the face of specialization. The sheer number and continual evolution of options meant more reliance on and more working together with manufacturing companies, data and performance analysis, material libraries and samples, and mockups. In 1960, at least, it was understood that students would engage with this technoscientific world of manufacturing in practice, especially if they worked in a large office with access to these resources.

By 1960, the forming of a generational divide would be expressed by architects entering universities and observing the technocratic aspects of architecture creeping into, and transforming, the field. That year, the AIA-ACSA set its first thematic conference topic in June and selected the topic most pressing to pedagogy: “technology.” Members convened at Sagamore Lodge, a conference facility in a nineteenth-century timber-shingled nature recreation camp built by the Vanderbilt family in New York. As Charles Moore, the editor of the JSAH conference report, pointed out, the isolated Sagamore Lodge was a curiously nostalgic setting for a seminar focused on the status of technology in architecture. That the setting was not a university campus as was usual for these events, Moore argued, made the event appropriately “free of the dead hand of authority.” Instead, the facilities appeared to provide an atmosphere

representative of the milieu in which the participants approached the technoscientific encroachment of their field with “a grudging lack of conviction.”⁹ This was a lack of conviction seemingly born out of a confusion about what in the first place might be considered “technology” in architecture. The conference report painted a picture of a looming threat waiting for graduate architects down the pipeline when they moved into practice, a specter variously and vaguely described in the conference reports as “ominous” and “obscure.” Without a clear focus, the participants raised concerns primarily around the dominion over architectural knowledge as it expanded to include a rapidly complex set of building control systems, the codified and regulated parameters of building and engineering, and the radical expansion of materials emerging out of scientific research and design.

In navigating this technocratic landscape of architectural knowledge, Moore and others articulated a division between types of architects—conceptual designers and “nuts and bolts men”—that echoed British public intellectual and scientist C.P. Snow’s famous “Two Cultures” speech that was published, reprinted, and circulated widely between 1959 and 1961.¹⁰ Snow articulated a growing sense in academic institutions and corporate laboratories of a fundamental disconnection between science and mathematics and the literature and humanities. This division would rise to the fore throughout the 1960s in relation to the call to incorporate art and technology as a suture for the two worlds of thinking and importantly, funding. At Sagamore in 1960, the struggle for control over a widening expanse of increasingly specific sets of technical knowledge was the loss of creative agency required to coordinate the various specializations and stakeholders in building. Even if the definition of “technology” was never resolved and defined, whatever gathered under this concept and word had led, in the opinion of Moore, to the appearance of two distinct groups of architects: “From the beginning of the conference, though, a

gulf had opened up between the “conceptual designers” and the “nuts and bolts men.”¹¹ Moore articulated the appearance of a “conceptual” architect some 10 years prior to the most common histories of the term, which describe the influence from conceptual practices of art on thinking about architecture’s processes. The figure of the “conceptual architect” emerged in relationship to, and perhaps in opposition to, the figure of the technician. It was not only the figure of a “nuts and bolts” technician but also a “watts-and-bolts” that signaled Moore’s awareness that architecture existed in a mechanical and electrical production sphere.

However, this discussion at the Vanderbilt’s summer residence was reflective of a larger shifting focus related to where exactly the theater of architectural production was located. Another proliferation of technology that was less attended to related to the materials that would supply architects in the production of their drawings and documents was also underway, yet would not be fully articulated until the 1970s in relationship to the growing interest in and activities around drawing production. It is surely also significant that the site of technology was clearly understood to reflect the technocracy of the building systems, rather than any impending shift toward computer technologies that were in development and would transform the relationship between the office and the construction site decades later. In this decade of transition, however, I argue that it’s most important to look toward the unseen site of technology: the materials for design production that were found on the architect’s desk. Despite the efforts of Moore and others to frame a conceptual architect as an oppositional response to the technocratic and technical necessities of corporate architecture in this period, I argue that this conceptual designer was more entwined in technology than has been heretofore understood. In fact, I argue that it was precisely because the discourse around technology had not yet turned toward the supplies of design drawing that architects, knowingly or not, turned toward drawing tools that

seemed to mitigate these technocratic forces, yet as I will outline, they were themselves bound up in the same context.

At the conference at Sagamore, there were hints in the discussions of this other world of material that existed closer to the architect's desk. During a lament about no longer beginning architectural pedagogy through an intimacy with material behavior, one respondent contributed in retort, "Then we teach paper." This quip was delivered as a critique of architecture schools' perceived ivory tower-like resistance to the technical realities of construction. However, the comment equally reflected a growing awareness of the already conceptual nature of a "disciplinary" practice that was built and reinforced in drawing, rather than directly with the building. Given that this decade was known for the beginnings of a culture of artful drawings, it was clear that the material terrain of architecture was perhaps more likely to be found on the architect's desk. The respondent's comment, which almost facetiously presented paper as a type of "dumb" material, also missed that there were many other items manufactured for the production and reproduction of these drawing practices, that though small, were engaged in larger networks of manufacturing and material research and that perhaps paper was a part of a less observed system of organization dismissively referred to as office supplies.

II Office supplies

The tension between conceptual designers and technicians present at Sagamore was equally reflective of another divide that resulted from the longer tail of scientific management in the rationalization of practice and the ongoing authorial organization around the fantasy of the individual genius. In the background, the scale and complexity of practicing architecture made

forms of collaboration a necessity of larger architectural work. The division produced by Moore had been historiographically articulated some time earlier by American historian Henry-Russell Hitchcock, who described a choice between genius and bureaucracy as operational modes in 1947.¹² His essay indicated a longer development of business offices in America that were part of a growing corporatization of architectural practice since the turn of the century. These offices increasingly incorporated aspects of management into their environments, staffing, and most importantly here, in their drawing organization. Hitchcock's expression of choice was between two models of architectural organization: (a) practices that reflected the artistic expression of the individual architect, which produced offices organized around a nineteenth century romantic ideal of genius; and (b) the American invention of large-scale offices, which produced "pseudo-modernist" commercial buildings that were described as corporate. The division between the individual genius reflective of an artistic model of architecture and an anonymous team would be perpetuated in the historiography and shaping of Moore's own divisions at Sagamore. For Hitchcock, some semblance of genius was found in the design of a large yet efficient system of building delivery.¹³ In defining this, he cited the office of Detroit-based factory architect Albert Kahn, who had set up an office that succeeded even after the death of its founder because the organization produced a depersonalized architecture. The success of bureaucracy related to the ability to preserve the organization over expression, which called for the neutralization of individual expression.¹⁴ To weather this departure, Hitchcock argued, one needed to reduce the signs of personal expression to facilitate the smooth passage of information from the office to the building site and between the architects and draftsmen who worked in the office.

Whether he was aware of it, Hitchcock's distinction was already a belated expression of resistance to the past 40-odd years of influence and shaping by scientific management strategies

in the organization of American business since the late nineteenth century. This was part of the formation of larger sociotechnical systems and infrastructures of modernization.¹⁵ One of the most prominent features of these systems was the blurred boundaries between the machinery and hardware (or equipment) and the specially trained workforce that was required to manage them and also trained to work in mechanized ways related to a type of Taylorist principles of labor. In particular, this can be seen in the tighter binding among the activities of the architect, their equipment, and the time clock in the name of efficiency in this period. In particular in architecture, the discussion around bureaucracy and genius has passed through the discussion of drafting and drawing, which was the site of the mechanization of operations and where management also acted on “pools” of workers laboring over swaths of drawings as teams. Despite the fragmented organization of bureaucratic practice, the separated functions were coordinated by a flowing stream of paper and film varieties, ink, eraser fluids, carbon duplicates, various duplicating chemicals and treated papers. These seemingly insignificant items have been curiously underattended in historical accounts of architectural drawing instruments. Supplies were seen neither as instruments and tools nor as equipment. What are we to make of these items that required refilling and replenishment and existed in a different temporality than design instruments, whose collectable longevity were testament to long traditions of knowledge and expertise? Supplies, which were disposable and updateable, were as exchangeable in the bureaucratic apparatus as the anonymous drafters. The development of graphic supplies was an important part of the rationalization of architectural work, and yet this has been less attended to than other aspects of scientific management such as labor studies. I argue that the drawing supplies developed in lockstep with and influenced by the technologies of office management and the rationalization of labor were distinguishing features of modernizing practice since the

nineteenth century.¹⁶ The most significant development of drafting supplies during the 20th century broadly occurred with this feature of reducing deviation and idiosyncrasy, and producing sameness across all operators.

The historiography of this type of rationalization and the importation of Taylorism to the architectural office is one that has borrowed the literature and manuals from office rationalization that were instrumental to the rise of clerical and managerial work. Manuals such as William Henry Leffingwell's *Scientific Office Management*, first published in 1917, and Lee Galloway's *Office Management* in 1918 were cited by Michael Osman as examples of how the tasks of architecture were rationalized and isolated as "techniques of control" implemented in turn of the century practice.¹⁷ It was at this time that the ideas of scientific management were incorporated into architectural production or rather specifically here, drawing production. However, explorations of the ways that these ideas entered architectural practice often overlook the scale of the drawing instruments and materials, which were developed by manufacturers who were themselves influenced by the imperatives of efficiency and rationalization of the office. Consideration of this equipment paints a dynamic at play between what German sociologist Max Weber would later define in his canonical definition of modern bureaucracy as the "apparatus of material implements" administered by "subaltern officials," referring to those involved in the manual activities of clerical paperwork.¹⁸ Weber defined bureaucracy as the governance and organization of things, people, and environments through protocols, procedures, and institutions often minutely regulated. As such, I argue for examining the importance of architectural instruments and supplies as the mediators that linked these things together. In fact, the role of supplies was paramount in the way that inscription led to what Weber described as the dehumanization of workers in the bureaucratic systems of management. This was produced by

regulation and recordkeeping in the form of paperwork, receipts, and forms—what Bruno Latour would describe as the worker’s inscription into documents of control.¹⁹ Through inscribing activities, the bureaucratic apparatus compiles “facts,” i.e., number of hours worked in a day, and through accumulation, the bureaucratic apparatus builds a database of information to be optimized.²⁰ Weber suggested that dehumanization was a “virtue” of the system, removing the irrationality that follows human desires, ambitions, and intentions.²¹ As these ideas of rationalization entered and reorganized architectural practice, the bureaucratic apparatus was established to separate out those who were authors with markers of individuality and intentionality and those were carrying out the depersonalized activities of a drafter.

The very definition of graphic supply was contingent on understanding the management of these items in relationship to an economics of rationalized and managed practice. According to office management guides, one should think of tools with respect to the tabletop and their location and proximity in relationship to one another as important for efficient work. The important role of equipment in these management systems is demonstrated by the dedication of whole chapters in Leffingwell’s and Galloway’s manuals to equipment or “accessories” that were required because of the sheer variety of options and the adjustments that were necessary in response to rationalizing these various items.²² The scale and nature of these small and replaceable supplies required, as Galloway and Leffingwell noted, a different scale of management as well—that of the microscale of attention toward the use and surveillance of the materials. See, for instance, this suggestion for how to select materials:

The manufacturers of office supplies, moreover, by constructive methods of selling and advertising, force conservative managers and reluctant employees to select their equipment with minute care, and to try out new methods and new devices.²³

As the point of contact between the individual and management in a depersonalized system, supplies were an important part of the training used to socialize an employee into a company to “adjust him to his new environment.”²⁴ This training included the company rules and their work area and colleagues, and it allowed them to “acquire proper team spirit.”²⁵ The instruments, the items sitting on or by the desk for use in drawing production, alongside the education of “techniques,” were some of the ways in which workers were socialized into this conditioned corporate anonymization. Technique was a way of matching the seeming consistency of the supplies with the inconsistency of their operators.²⁶ Jacques Ellul described “technique” as the training that transformed “everything it touches into a machine.” For him, this was the root of dehumanization—not simply the tools but the training that worked together to produce “inhuman atmospheres”: “Think of our dehumanized factories, our unsatisfied senses, our working women, our estrangement from nature.”²⁷

Similarly, the Leffingwell guide also revealed the technical dynamic between individuals and tools. On one hand, the guide maintained a deeply empirical attitude toward explaining the organization of the office environment and seemed to focus more on the description of material, such as the tools and supplies themselves, rather than the “subaltern officials” and human motivations that were presumably less easy to standardize.²⁸ In the supplies, one can see the appearance of the individual’s resistance to these attempts to produce repetition. For instance, in an elaborate discussion of pens, Leffingwell suggested that they represented the last bastion of

idiosyncrasy in the office and that because of the variety of pens, it was likely that many would have a preference rather than accept a single option. Standardization in this scenario required several days for workers to become “accustomed”; their use of the tool became standardized in response to the pen.²⁹ This relationship of an individual faced with the tool was also clearly evident in “economy campaigns,” which strategized a war against wastage of supplies (Fig 1.1). The idea of such an effort was to use the camera as an “educator” to document evidence of the activities of those in the office, a form of surveillance that would present the careless waste of office supplies at the hands of their workers. In two photographic illustrations, the book showed examples: The first collected erasers from wastepaper baskets and typologically grouped them into categories of size when thrown away, matched to the cost per eraser calculated by material. The second example showed the lead pencil and the introduction of a metal holder that would standardize the use of pens for longer. Destined for the office noticeboard, the book proposed pinning a collection of pencils and erasers in a notice that showed the correct way to use both until they were “used up.” What both photographs showed, however, was a portrait of standards unraveled by the sheer variety of pencil sizes that reflect the differing definitions held by anonymous workers of “waste” and “freshness.”³⁰ Whether the tools were standard or not, the photograph seemed to suggest that the people who used them remained individuals who needed to be educated about techniques regarding the correct use of supplies.

The appearance and resistance of this individuality that the economy campaigns sought to train away was the subject of writing in the early 20th century by those like Siegfried Kracauer, who theorized about European industrial modernity, reflecting fundamental grappling with mass media, the development of mass production, and what it meant to be an individual in relationship to these anonymizing forces at play in everyday life and work.³¹ At the same time, World War II

irreparably tainted any consideration of mass and synchronous spectacles of bodies and machinery. According to Reinhold Martin, the “individual” was reasserted after 1945 with a slightly different valence toward a consideration of social science and attention, moving from a universal subject to one based not on the alienation of the early 20th century but on behavior and dynamics. This subject was at home in the technocratic bindings of American life, living under the social control of corporate conformity and hoodwinked into identifying as an individual based on consumption habits.³² The architectural subject shaped by this context was a consuming and specifying one. If consumption was, as Martin asserted, the technocratic response to fears of dehumanization that Kracauer had identified, then the postwar period was defined by couching this figure in a world of products that promised choice and distinction.³³ By 1960, these ideas would extend to the architectural supplies that were necessarily still technical objects but entrenched in systems of standardization and larger networks of production that required a high level of coordination and control.

Drawing supplies were highly technical and technological objects. As Andrew Feenberg has noted, the development of technologies in this period was negotiated by many partners:

The design process is the place where the various social actors interested in developing technology first gain a hearing. Owners of businesses, technicians, customers, political leaders, government bureaucrats, etc., all qualify as actors. Their variety guarantees that design represents many interests. They wield their influence by proffering or withholding resources, defining the purposes of the devices they require, fitting them into existing technical arrangements to their own benefit, imposing new directions on technical means, and so on. Technologies are social expressions of these actors.³⁴

A large part of these efforts around technological research and design was inevitably tied up with the militarism of research more broadly as companies sought to profit from and produce new markets by demilitarizing materials to use in the “home front” economy.³⁵ This changed the nature and language around tools, which were described most often in advertising rhetoric as something that was “tested” and proved in a market of innovations. Often, this attention to the scientific aspects of tools related also to the imbrication of scientific management on the ways that supplies were understood to operate. Advertising for tools from the midcentury on often demonstrated the logic of parceling of activities and equating them with time in architecture journals, attesting to the influence also in the design and manufacturing of drafting tools and supplies. Qualities of measurement either in the control or amount of materials and other promises of innovation were used to argue for economic savings. Many of the companies’ manufacturing graphic supplies were already involved in other forms of research, including military research and innovations that crossed departments in the company such that architectural tools were developed in tandem with many graphic and information technologies.

By the 1960s, photographic documentation pioneered by Frank and Lillian Gilbreth had become so ubiquitous as an image that translated gestures of work into an image of productivity. Hyungmin Pai discusses the ways that Lillian Gilbreth’s cyclograph “micromotion studies” influenced other time and motion studies and developed an architecture that shifted away from the scientific management origins toward diagrammatic language and artistic expression. The photographic tests pioneered by Gilbreth tracked posture, time, and energy spent in performing tasks.³⁶ They entered architectural historiography through Siegfried Giedion’s *Mechanization Takes Command* in 1948. He associated them with “line production,” a contraction of assembly line production, wherein the line was the trajectory of production as it moved materials in a

rational sequence of assembly to product. These images entered advertising, for instance, in a Brunning advert published in *Progressive Architecture* in 1966 for the Equipoise Drawing Machine (Fig 1.2).³⁷ The ad borrowed the visual language of scientific management experiments to give technical legitimacy to the efficiency of the drafting arm compared to the inefficiency of working without one and a simple parallel rule. The ad showed a side-by-side comparison of two drafters only visible by the remnants of lights attached to their arm, captured in the creation of what the ad described as a “simple drawing” by open-exposure photograph. The “proof” that the photo claimed to attest to was a savings of 40 minutes. Given the ubiquity of this type of imagery, time-lapse photographs were likely familiar and understandable—fewer glowing lines equaled fewer gestures, which equaled less effort. It is the mention of the “simple drawing” in this context that is more telling of a shift in systems of measurement. The simple drawing was never shown. Even though it was the material evidence of the experiment, it was seemingly irrelevant to the proof. However, it was clear that a parallel measure on the page of ink of a specific width, ink flow regulation drawn across a paper surface, was also emerging as a place of design and control. Two image planes emerged from this particular photograph: the time-lapse photograph shown in the advert and the “simple drawing” made as part of the test that was discarded as irrelevant to an argument of efficiency. The advert made visible the delamination of these two systems of measurement that in other contexts had been collapsed together—wherein the understanding of measures in tool manufacturing related to material measures spent over time was related once again to the hand and the operator of the instrument.

More recent historiographies that focused on the abstraction of measures of time into data in scientific management obscure another rhetoric of measure that is evident when examining that of tool manufacturing: advertising. Their measure was also indexed in the length of an ink

pen's lines. In other words, there was another material economy in the office that was embedded in the amount of ink that was delivered to the drawings themselves that became an important rhetorical feature of the manufacturers. Companies advertised their products related to measures of lines and prints per minutes. The Brunning advert was tested at the United States Testing Company laboratory, an institution established for commercial and industrial products to run tests often cited in advertising like this one. The laboratory also became an important location for manufacturers to "verify" the promise of their tools by bringing them into the laboratory environment and claiming a level of scientific control around their use. This was part of a larger industrial research and development process established around companies dedicated to graphics and architecture. Companies like this testing laboratory provided an important chapter in the massive infrastructure behind tool invention and manufacturing that entered architectural culture in the postwar period.

The technologization of supply items and the ways that they became increasingly interdependent can be seen in the example of the Rapidograph pen, a single office item that was developed into a drawing system with training. The Rapidograph pen is an instance of an unacknowledged "machine on the desk" of architects and engineers. It is also an example of what Reinhold Martin has described as the transformation from a product logic of mass production and standardization to "interchangeable elements in standardized formats."³⁸ The American Rapidograph technical pen represented one of the many products distributed by companies that were driven by research and development into releasing more products and services. The company's consistent output of items and attention to innovation and diversification that expanded its offerings meant that what was a technical pen set developed into what I would describe as drafting systems of interrelated parts of increasing complexity. The

Rapidograph pen did not simply work more systematically, but the company itself imagined and described the product as a drafting system—one that would increasingly hybridize in relationship to the developments of computer drafting. Significantly, however, the Rapidograph pen and the Rapiddraw system that it grew into both represent technical responses to the problems identified by Leffingwell's economy campaign, which is to say that the pens overrode areas of idiosyncrasy and waste of the human body by removing activities of maintenance sharpening that plagued the calculations of those managing office labor and even in removing the problem of the weight of the hand by producing a spectrum of line weights delivered by a nib so fine that it required a lightness of the hand to maintain.

The Rapidograph began its life as a German drafting pen patented in 1931 and manufactured by Rotring as a capillary ink flow system and specialized drawing point. Rotring, which was the German name referring to the color banding around the pen neck, later became a color coding system that indicated the line width of the pen for identification as a palette of options. The pens gained the name of Rapidograph, already evoking an additional sense of urgent productivity in the title marketing, when they first entered the United States and were distributed by American company Koh-I-Noor in 1954. Koh-I-Noor, like many other companies, had a research-and-design program, and Rapidograph ran on constant research and development in house with regular patenting and continuous release of amendments and additions until the company had built an architecture around the drawing board—from the scale of the pen point (in three metal materials) to humidifier environments for the pens (Fig. 1.3).³⁹ The pens were intrinsic to high-accuracy areas of production from engineering to architecture and were designed to work with reprographics, such that the Rapidograph would become synonymous

with affectless linework and later connected to plotters in the incorporation of computers into wireframe drafting.⁴⁰

The Rapiddraw system—the collection of Rapidograph pens and associated holders, inks, and erasing fluids—was not only measured in relation to performance on standardized paper formats but also calculated against graphite to remove the time wasted for maintaining a stable line. The pen was more a system of production and maintenance, and the individual items themselves were often described in ways that were relational. In fact, they were often optimized to work together:

Among the four primary drawing sizes specified by Government standards—8 ½ x 11, 11 x 17, 17 x 22 and 22 x 34—it was found that the smallest size took less time to produce by ink on film than by pencil on vellum. This size has a greater proportion of lettering to actual line drawing than the larger sizes, and lettering is accomplished faster with ink because there is no downtime for pencil sharpening. The middle-sized drawings averaged about the same time to produce in comparison. The largest drawings took a little longer in ink. The time overall for drafting operations, therefore, is approximately the same for pencil on vellum as for ink on film. The “Rapiddraw” system completely eliminates the production time lost for graphite point sharpening as in pencil drawing. In pencil work the draftsman must constantly maintain a point that will closely achieve desired uniform line width and density.⁴¹

The pens were not only a closed system of products but also were designed in coordination with systems of standardized government paper sizes to ensure smooth coordination of paperwork from one place to the next. The control promised by the pen related not only to a legacy of labor

rationalization and scientific management of manufacturing but also to the growing importance of technical translation in which the landscape of communication media was increasingly a coded landscape of measure and compatibility and where productive objects were quantified for management.⁴²

Tools such as Rapidograph pens boasted of the “generational” persistence of their inks and recommended matching mylars that would best maintain this ink when duplicating. Manufacturing companies often also formed partnerships across products; for instance, the Rapiddraw system was most commonly advertised as a partner to DuPont’s drafting film, Mylar™, a film developed by the research department. In an advert from 1960s, a sidebar image displaying a magnifying glass over the patented “Jewel Point” tip of the Rapidograph pen promised that when used in concert with a surface like DuPont’s Registered TM Mylar, one could draw for more than a mile (Fig 1.4). Once again, this material-mark-as-measure provided a promised and controlled output. Mylar was developed in the DuPont Dacron department in 1952 and then commercialized.⁴³ Described as multipurpose material in the drawing room, Mylar was seen as a stable drawing surface and one that provided the optimum surface for Rapidograph pens. The archival quality of Mylar was not only applied to drawing films seen to capture and hold linear information, but also commonly used as a magnetic tape for audio recording. Thus Mylar film produced a significant intersection between the recording of live events for replay and the recording of architectural instruction of what has been called the “culture of iteration.”⁴⁴ The multiple uses of Mylar also meant that it signified one of the many synthetic material inventions produced in this period in America, the result of corporate research and produced in the laboratory, another “American miracle” for America’s soft-power demonstrations that were an important strategy in the Cold War.⁴⁵ Mylar thus provided another unexamined trajectory that

connects the theater of drawing production with the history of Cold War materials. It is well known that the Cold War period left behind a multitude of “artifacts” of plastic and aluminum goods, sometimes emerging from the war effort and then demilitarized and retooled to serve as the signs of the American lifestyle of choice and consumption in the ongoing image war with the Soviet Union.⁴⁶

The pens were soon joined by storage systems, including the Rapidograph Humidified Revolving Selector (HRS) advertised in 1967 in *Progressive Architecture*.⁴⁷ The cylindrical holster featured 12 pens clipped to the drawing board in a visual display, almost like a palette of options highlighting the color coding of all tools. The holder was also air conditioned with add-on liquid humectant and a hygrometer that would measure the climate in which the nibs were held. Adverts for the HRS system published in *Progressive Architecture* show the use of militarized language and imagery in relationship to the tools sets. One ad announced proudly that Koh-I-Noor had “exploded their new idea (Fig. 1.5).” The declaration was featured alongside a vertically exploded axonometric showing the system of pens and the HRS. The overlay of the demilitarized axonometric view produced a sense of transparency and technicity that promised the user could understand every small working element. The Rapidograph holder appeared almost as the loaded cartridges of weaponry, an association that was encouraged by another ad with the tag line “Quick Draw (Fig. 1.6).” In 1976, the Rapidograph “Dry Clamp Selector” DCS returned to single-pen storage that locked up and down as an opening mechanism and was advertised as “instant start up,” taking on the terminology of electronic machines that were slowly encroaching on the drafting room.

The importance of building the appearance of a media system to compete with the impending introduction of computation also involved a service for office training.⁴⁸ Collectively, the Rapiddraw system promised to transform the drawing board. With growing attention to the holders that attached to the desk, the system promised a variety of pens close at hand, primed for use, and color coded for easy visibility. More than simply providing a set of pens erasers and other implements, however, Koh-I-Noor ran on-request office training sessions, sending representatives into larger engineering and architectural companies to “train” the staff in the proper use of the products. Slide sets from this period show that the seminars covered subsets of pens in the system, the thicknesses of the pen tips, and correct usage and storage (Fig. 1.7). The Rapiddraw system was claimed to simplify technique through the use of “modern materials, instruments and a system for training draftsman”—the company promised a type of infrastructure when deployed in a large office:

An entire drafting department can rapidly switch over to Rapiddraw with no disruptions. Using Rapiddraw system a growing number of major corporations have gained greater efficiency in producing engineering drawings of top quality which require no redrawing, no restoration and which provide reliable, highly legible reproductions.⁴⁹

Much like the transformations in material systems shifted the authority of educating and training architects from academia to industry, tool manufacturers also ran seminars and training sessions to shift the locus of technical epistemology. Rapidograph, for instance, held Rapiddraw System seminars in 1973 at the annual American Institute for Design & Drafting Conference during National Drafting Week. These events produced a sense that the tools were a suite that required specific training and knowledge to operate. These aspects of the Rapidograph system reflect an

early and pre-computation example of what Andrew Feenberg described as the technocratic utopia proposed by the information age, in which computer interfaces promised menus of options and choices while simultaneously making invisible that despite an appearance of freedom and promise of optimization, options were preselected.⁵⁰ Although the architect's toolset seemed more systematic, one could "buy" a sense of freedom in the choices that were available, not simply in the sheer variety of tools but in a single tool, such as the radiograph pen. From the Rapiddraw system one could then select from a range of settings, such as color or line thickness. The attention then paid by the manufacturers of tools to design humidifier holders that displayed the pens and attach them to the desk also began to make the table into a working interface that would later become enclosed in the computer (Fig. 1.8). Figure 1.8 shows the ways that the company promoted an office where the Rapiddraw system had been installed across several desks. The photo also reveals the ways that the 'system' of the various items, assembled together, were also producing an interchangeable infrastructure at the scale of the office. In particular the way that the drafting tables appear cinched together by the cleaning system. This simple connector from one desk to another, where the two 'nuts and bolts' technicians can share the one cleaning unit, is a reminder that these discrete units were designed to attach in various ways and produce an infrastructure, something beyond the looseness of supplies but coming together to form a working set of interrelated parts. Koh-I-Noor imagined itself as the producer of highly technical, complex, and integrated items. Their ads show a fixation with a type of technical transparency in the minutiae of the exploded axonometric, the extreme-zoomed cross sections through pen nibs, and the language of metrics and data.

In 1965 when writing about 'gizmos', which these supplies ostensibly were, Reyner Banham observed that one of their fundamental features was the lack of serious attention that

these everyday items were given in academia.⁵¹ And yet, he noted, in many ways from the foundational settler myths of the U.S to the then contemporaneous imperialist activities in Africa, Asia and South America, the gizmo was a quintessential reflection of U.S ideology of freedom and self reliance. They reflected to him the fantasy of anti-technocratic form of technology and of living ‘off the grid’.⁵² As such the momentum of his critique was firstly that these items were not receiving critical attention and relatedly the lament as they lost their sense of independence of operation. As gizmos were engaged with communications and electronic-media they became complicated in their operations and lost their simple machine-like connection to their user. One could read Banham’s critique as yet another symptom of the growing sense of technology as a black box, something that required engineering, programming, and specialist operators. Indeed Banham’s description of gizmos offers an explanation into why those who sought to escape the technocracy of corporate practice would turn toward drawing supplies as a seemingly non-technologized set of seemingly insignificant items in the turn toward the drawing culture that I will examine in the coming chapters related to Eisenman’s critical drawing practices.

III “Draw the line once”

The waves of interchanging paper will surge endlessly back and forth, filling the cabinets, the desks, the floor, yea, the very egg box skyscrapers themselves. The streets will slowly fill with seventh copies of seventh copies, tornadoes of paper will build up and blow around the Earth. Paper-snow will cover all, paper drifts and paper avalanches will take their toll, and the Last Man on Earth will finally go down to suffocation under the myriad copies of his Last Message to posterity. Proliferation of nuclear bombs may be the big bogey but the proliferation of copying machines will do the job just as well. This is the way the world ends, not with a bang, but smothered in bumph.⁵³

The growing conflict around architectural authorship in the 1960s coincided with this splintering of modernist nomenclature in this period: “originality.” This section examines the pressure of technical systems of copying that transformed the notion of the page from a single sheet into a system of intermediary states of duplication and recombination. The primary product of twentieth century office work was, as media theorist Lisa Gitelman argued, the document, or the single unit of paperwork.⁵⁴ Increasingly complicated building systems designed by specialists and consultants required larger, more information-heavy drawing sets. These were produced in drafting rooms by technicians with drawing tools and duplicated to serve the various audiences involved in building production. Any definition, then, of a modernizing office is one linked to technologies of duplication that were part of the bureaucratic apparatus—just as any document was affirmed as a document rather than marks on paper by copying, distributing, and filing.⁵⁵

Although the introduction of blueprinting had long ago drawn paper and drawing instruments closer together in the ways that they worked, the mark of the line now needed to make it through the reprographic process unfaded. However, this logic of transmission had by the 1960s led to a myriad of specialized pens and paper types that would work in concert to maintain the line across multiple “generations” of prints. Of concern here are the ways that these reprographic imperatives alongside the more standard aspects of mechanical drafting influenced the working procedures of architectural drawing and authorship. More accessible from the 1950s on, these reproduction technologies problematized the notion of original in new ways related to intermediary states of information transfer, creating master files that were neither copies nor originals.⁵⁶ And likewise, these intercepting drawing copies were also described with an early logic of iteration familiar to digitality related to their improvisational potential.⁵⁷ The potential for improvisation was given by the idea of the “intermediate master” drawing, replacing the idea

of singular drawings with the concept of a “reproducible reproduction” from which multiple copies could “become new originals” to generate more and reduce the preciousness invested in the singular notion of an original set. The notion of the drawing was entirely destabilized into the logic of versions.

British popular science magazine *New Scientist* diagnosed the societal pathology of the period as “copymania,” or the overrun of duplication in administration and office work. The article significantly linked the generic “egg box” curtainwall modernist skyscrapers to the coincident proliferation of duplicated paperwork as leitmotifs of corporate life. The modern office was imagined as a microcosm of the world, an environment where paper flows were rendered as ecological forces driven by a legal and operational infrastructure required for company communications. The tone of the article, reflecting the doomsday tensions of the Cold War, struck a tone of not only ecological and biological preservation, but most significantly here, preservation of information. Copying machines were sold as preservation apparatuses that would perpetuate the “generations” of information from page to page, thereby rendering paper conceptually fragile, temporary, and unstable (Fig. 1.10). This led to a paradoxical state where the importance placed on the value of information worked against the artistic value of originality.⁵⁸ The ink printed on the page was seen to be of more importance than the paper itself, which was considered unstable and easy to lose or damage, and this value meant that to preserve it, one must make multiples. In this way, the document delaminated into information and substrate. The relationship of bureaucracy, preservation, and paperwork was already written into the early and definitive guide to office organization by William Henry Leffingwell, who defined the office as not simply the coordination of activities but also and in parallel, the

recording of them for preservation and planning data⁵⁹; or the accumulation, circulation, and storage of paper.

In this section, I examine a specific vector of technical procedures in the modernized architectural office related to the ubiquity of photography's imbrication on drawing processes. Alongside supplies like the Rapiddraw system and Mylar film, technologies of photographic reproduction worked together as a system of invisible structuring that transformed both the architectural author and originality. In the case of authorship, the technology of photography initially promised to erase the hand entirely with early promises of automation. At the same time, a spectrum of other material agents, from graphic fields such as animation or advertising, introduced to architecture invisible tapes, photographic papers, yellow trace, and pens that were designed to disappear and flatten when copied. Regarding originality, these material buildups led to intermediary drawing formats that splintered the concept of the singular drawing and introduced new chains of versions and organization and promised the creative window of improvisation.

This section does not cover the art history of photography that is often told, which recounts how the scientific and industrial invention of the camera disrupted the traditions of artistic authorship and originality through its mechanized documentation of the "real."⁶⁰ Nor does it review the architectural history of using photography as a general and vague signifier of technology in a discussion of the modernizing processes that transformed architecture into media.⁶¹ These histories, however, have left unexamined one crucial intersection of photography and architecture: the rarely attended photographic materials and techniques involved in drawing production, courtesy of industrial manufacturers like Kodak-Eastman and DuPont. The two

famous photographic manufacturing rivals developed reprodrafting “systems” that linked the manual practices of drafting on paper together with treated photographic papers and films that allowed for stable registration of information across drawings. This seemingly unartful, often outsourced aspect of photography in the drafting room has left it unremarked on or studied.⁶² Photography’s role in documenting or duplicating architectural drawings, templates, or mechanical pasteups is rarely discussed because its agency in the design process has been heretofore considered negligible. They have been understood to have been merely passive devices documenting existing pages of information to duplicate for multiple audiences, or later with reprodrafting, to duplicate to make drawing work more efficient by removing the work of drawing repetitive elements over again. Reprodrafting is described as the “substitution” of photographic reproductions in place of hand drawings with five main types: restoration meant simply duplicating a drawing that had aged to maintain the information in the linework if the paper was deteriorating; pasteup drafting meant using an existing reproduction as the basis for a new drawing; scissor drafting meant replacing windows of drawings with reprographic swatches, photo drawing meant using a photograph to draw over the top of; and overlay drafting meant producing drawings in layers of information on acetate held together by pins and then reproduced (Fig. 1.12).

DuPont had established a photo products department in 1912 and held a long-standing competition with Kodak-Eastman Co. In the 1970s, both companies marketed drafting systems to architects in *Progressive Architecture*. The DuPont photo products department began as one of the smallest in DuPont but grew alongside the burgeoning “image forming technology” with production of x-ray and medical imaging, advertising, and commercial uses.⁶³ Following their work to develop films, they started developing sensitized papers in the 1940s and around the

same time, polyester films that came out of their work with Rayon fabric. It was noted at the time that the primary quality of these films was their “dimensional stability,” which led the company to recommend their use as a “graphic arts film,” particularly with color printing where a stable film would allow for more exact repetition of images with color registration when layering in offset printing uses. Mylar was an intermedia supply that underpinned the seemingly rapidly unifying category of graphic arts from animation, film, advertising, illustrating, and architectural drafting.

The engagement of photographic reproduction in the architect’s office in this period was divided between working drawing reproduction, and the preparation of presentation drawings for reproduction. The former was more often considered to be an instructional drawing made for communicating with building personnel and therefore, more aligned with the technical modes of drafters and without excessive or expressive elements. The latter was considered part of the published record and therefore, the public presentation of work aligned more with the production of an authorial expression. But despite the distinctions, both forms of drawing merged in realm of architectural reproduction in that moment. In the case of working drawings, photography entered the process in the form of specialized duplication papers, or reprodrafting techniques, that promised to make the drawing process both more efficient and more accurate. On the presentation side of architectural practice, the growing forums for presentation drawings included growing exhibition opportunities and publishing journals like *Progressive Architecture*, which often published unbuilt work and competitions, and the appearance of publishing and research venues for architect critics. This meant many architects worked with mechanical documents and pasteup drawing techniques that would be flatted by photography into publishable images.

At the same time, the corporations behind the various drawing surfaces and instruments were engaged in researching technologies that promised to, in part, automate production. A wartime advert for Kodak Photomechanical Transfer (PMT) paper in 1943 published in *Life* magazine showed the way that Kodak paper was used in the military production of the U.S. Army. The ad poetically opened with the tagline: “The human hand may err, or the mind may wander. But a photograph allows no mistakes. The hand, in transferring a tedious, detailed mechanical drawing is slow—while a photograph is quickly made.” This reflected a familiar aspect of photography written some years earlier by Walter Benjamin, who equally observed the issue of time between the hand and mind:

For the first time in the process of pictorial reproduction, photography freed the hand of the most important artistic functions and henceforth devolved only upon the eye looking into a lens. Since the eye perceives more swiftly than the hand can draw, the process of pictorial reproduction was accelerated so enormously that it could keep pace with speech.

The idea of a “built” graphic surface was at work in the 20th century across industrial arts such as graphic design, animation, and architectural drafting.⁶⁴ Famously, cel animation with layers of acetate and a delaminated “foreground” and “background” and interchangeable parts allowed for the work of cartooning to be parceled into tasks and teams. Animation became industrialized through these material innovations, and much like drafting, this required a distinction between activities that were seen to be creative and those that were not (Fig. 1.11).⁶⁵ The materials and methods by which one might distance the “erring” human hand became more elaborately mediated, transforming, for instance, the logic of paper tracing to one of overlays with the production of acetate films preregistered with marks for instant coordination among pages.

Writing in 1963, Walter T. Johns, the marketing manager of the Charles Brunning Company, described the various forms of “copying technology.”⁶⁶ The article referred to the past ten years of “ingenious development of a wide assortment of tapes, templates, dyes, and other accessories” that worked together with reprographics. This assortment of materials and the idea of a built graphic surface were most interesting because the items were designed to disappear in reproduction. So their very presence, which attested to the manual efforts of image making, errors, amendments, and at times, instructions, was designed to be made invisible.

By the early 1960s, the language around graphic supplies for reprographics transformed to acknowledge the breakdown of sheer repetition to increasing levels of flexibility, erasure, and recombination that were possible, with the supplies made to work in concert in the production of reprographic drawings. Part of the reason that the important presence of photography in drafting materials has long been neglected also relates to the terminological problems among the various manufacturers, who used various terms and introduced terminological crises in their descriptions of how to handle the varied and hybrid versions of drawings that were appearing in drafting offices from the 1960s to 1980s. These terminologies obscured the foundational relationship with the industrial form that slowly reached a status of acceptance as a creative practice during the 20th century. These drafting tools promised infinite amendments and alterations:

An endless variety of combinations, extensions, and revisions facilitated by cutting away areas of film, combining elements from diverse sources, and copying with film used as an overlay.

These material and assembly techniques were variously titled; for instance, Kodak developed what it marketed as “scissor drafting,” a process developed in its reproduction systems

department (Fig. 1.9). This drafting method involved operations on existing drawings and copies, including corrections and updates made on “patches” of photographic paper that could be attached and printed again to merge the layers into one. In an ad for Kodakgraph films in *Progressive Architecture* in 1969, the company promises: “Draw less. Let photography handle your repeat drafting chores.” The method relied on the idea that one would only “draw a line once” and use reprographics for the duplication of any repetitive lines.⁶⁷ In the accompanying advertising photograph, a hand rests on several multiples of what appears to be a bathroom plan, each cut exactly to the outlines of the wall as though one could now place whole rooms around the building as a ready-made applique. Other Kodak ads in the same year and journal promised increased production: “Cut out the unchanged portions (often much of your drawing), mount them on a new drawing form, have a second original made on KODAGRAPH Film and make your revisions on that.”⁶⁸ The original was a floating concept related to the most up-to-date drawing, a constantly shifting terrain of versions rather than a valued singular item. Reprodrafting reflected a sense that the drawing was no longer conceptually considered to be isolated on a single sheet, but rather was part of a system of intermediary copies and processes of duplication that was important to communication. The combinatory techniques of reprodrafting systems compartmentalized the drawing surface into updatable “windows” of information.⁶⁹ A drawing now potentially could be updated in isolated areas and reproduced. This conceptual fragmenting of the single surface of a page was a state of updating and substitution that perhaps reflects an early logic of what Lev Manovich has described in relationship to digitization as “the shift from documents to performance,” meaning the state of information is constantly in piecemeal states of updating.⁷⁰

A primary aspect of the industrialization of architecture was found in the management and organizations of activities that were seen to be creative and authored and those seen to be technical and informational. The “machines on the desk,” the small items that aggregated into relational systems, operated among these divisions. Copying technologies that were introduced to simply replace repetitive tasks, creating the same outcome each time, introduced unintended effects including limits on the potential of variation and improvisation. These transformations had bearings on the values placed on concepts such as “copying” and “originality,” both of which were undermined by the material processes that undergirded their construction.

IV Shopping for Supplies

The same year that the AIA-ACSA was debating technology at Camp Sagamore, two architecture students at the Harvard Graduate School of Design observed in 1960 that their studio peers constituted a market of consumers for graphic supplies. The culture around drawing that would develop in the 1970s would be largely located in architecture schools, with students seeing exhibitions, emulating their studio peers, and going to charrette. Those involved in research based drawing production who were not students tended to be teachers or affiliated with pedagogy. The founding of a supply store that would later become Charette, by architecture students in an architecture school reflected the important position of selecting tools in the architectural pedagogy. Even as this store was allocated space within an architecture school it was not considered a part of the academic infrastructure. Informally, however Charrette stores were one of the places that architects learned about technical drafting systems and other tools. This section examines the way that the founding of Charrette coincided with and shaped a

transforming idea of the architectural author as one who curated a set of items into a personalized “toolkit” as a way to reflect individuality.

An ad for Eagle Turquoise graphite pencils (Fig. 1.13) placed regularly in the pages of drafting journal *Progressive Architecture* during the 1960s stated in a bold headline, “To Hell with Individuality,” followed in smaller type with: “Individuality is for people not pencils. When you open a box of Eagle Turquoise 2H you expect—and get—exactly the same shading quality. Pencil after pencil. Today or next year.” The ad shows a line of four 2H pencil ends, one of them snapped in half and sitting skewed on the table, almost as though it were snapped in a hot-headed moment by one of the creative individuals it claimed as its audience. The advert attests to the drawing material culture of this moment in several ways. First, it shows that tools in this period were standardized, managed, measured, and controlled in their manufacture such that the companies could claim a consistency in the line and drawing set. More significantly, however, the ad appealed to an audience that fancied itself as made up of individuals rather than “organizational men,” a distinction that sought to produce difference based on consumption.⁷¹ Reinhold Martin described the stakes of the individual in this period, considered a consumer, as a “technocratic response” to the fundamental crisis of the modernist mass articulated at the turn of the 20th century. The fantasy of choice in that sense about what people consumed and how they constructed their individuality was met by the surrounding systems of production that were growing to accommodate more option, variety, and flexibility in the things they consumed.⁷² Finally, the Turquoise ad touched on the growing importance that supplies held in the constitution of architectural authorship from modernism to postmodernism, when instruments were no longer personal extensions of the architect’s hand. Instead, through the constitution of their equipment collection, architects sought out their distinctive visual language and contributed

to the growing commodity fetishism around the toolset. In doing so, architects selected their equipment often based on, knowingly or not, the authorial ideologies embodied in the supplies—and the ways that a pen or invisible tape were designed to repress the hand or a pencil produced signatures through color choices.⁷³

From the 1950s on there was a common sense among drawing manuals that architectural tools and supplies had become overwhelming in their array. This was not only a simple observation of the variety of things available to buy but also the number of products that would diversify and redevelop versions and options available under a single technical drafting item, as seen with the Rapiddraw system. While educators like Charles Moore were wringing their hands in 1960 about the explosion of materials for constructing architecture there was an equally explosive development around the products on the architect's desk. It wasn't in academic or discursive circles however that one would find a discussion of how architects could know and manage this unwieldy landscape of products but in the drawing manuals. Many of the drawing manuals on the other hand did observe this epistemic challenge especially in the late 1970s and early 80s. Leslie Martin described a "bewildered" beginner encountering the variety of equipment at the dealer in 1962.⁷⁴ By 1977 Frank R. Dagostino's description of the same encounter was more challenging and more of a spectacle: "It is almost impossible for the beginning student to select the proper materials from the dazzling array of drafting equipment available"⁷⁵. These quotes from different manuals reflect the shocking amount and variety of equipment was posed as a sort of "impossible" encounter for a beginning architect, who was ill equipped to know the "proper" from that which was presumably not. In further manual descriptions, the education of the architect was mapped alongside the ability to navigate and make selections from this expanding palette of options. To manage this commodity onslaught,

many manuals recommended a similar approach that centralized the design studio and tool collecting as a process of socialization. A common suggestion across most manuals was that students start with a basic kit first, without succumbing to the purchase of unnecessary gadgets. Expertise over drawing tools was seen as gained during the architect's education and shaped in part by the types of tools that were required by studio instructors or learned from peers: "Every designer will eventually arrive at a personal and individual roster of tools and materials to suit his or her ways of working."⁷⁶

The variety of supplies had expanded in options, but and new or "improved" items were continuously "appearing":

The purchasing sequence may take quite a number of years. In fact, as a piece of equipment is acquired or replaced, it should be in the back of the draftsman's head to improve his tools. A basic rule is to buy the best quality one can afford at any given time. Fortunately, or unfortunately, new equipment is constantly appearing on the scene. These tools are improvements on older items or are new items for new situations. Again, every draftsman does not need every piece of new equipment, but it is to his own benefit to watch for the latest improvement and to buy if it will help him in his work.⁷⁷

This "rule of thumb" to start with the best quality one can afford at the time is common among all drawing manuals consulted from this period. The implicit assumption was that as experience increased, so would salary, and one could then begin to purchase tools of higher quality.

At the same time, the diversification of items and "innovations" constantly introduced in the toolkit of the architect by drawing tool manufacturers meant that the source of up-to-date information transferred from the drawing manuals to the temporality of the sales catalog. This

meant that much knowledge about tools was directly received from manufacturers, rather than through any disciplinary or academic route (Fig. 1.14). Catalogs, which were released more often, had to be consulted regularly according to some manuals:

Industry is constantly bringing innovations on to the market nowadays. Although they facilitate our work, detailed descriptions tend to date all too quickly. For this reason it is to be recommended that the reader should keep himself up-to-date on the latest equipment and materials available through trade prospects and catalogues.⁷⁸

Learning about tools, then, was not part of the academic curriculum but was seen as outside of professional pedagogy and transmitted by alternative means. Selecting from these catalogs, too, became almost a militaristic operation:

The tools of drafted drawing need to be described—there are many, with a legion of choice. If you don't already own the tools, you should plan carefully how to proceed. Get yourself a general drafting supplies catalog and study it.⁷⁹

This expansive distribution of tool manufacturers was noticed as a striking niche to be centralized, in the same year that Eisenman wrote his paper on collaboration, by two students of architecture at Harvard University: Lionel Spiro and John Dyer later joined by Blair Brown.⁸⁰ These students observed that to stock their desk, they needed to go to as many as 13 locations (blue printers for printing and technical drafting tools, art supply stores, model railroad stores, lumber yards, florists to get lichen and trees, hardware stores for thin metals, plastic distributors for plexiglass), which they hoped to bring together in one place. Their plan was to collectivize the access of their peers in the school with a one-stop drafting supply shop that would later become a model emulated by other architecture schools, including Yale University.⁸¹

The initial order was researched by the pair through a survey of their classmates. A sheet of gridded notebook paper was sent throughout the student body, on it a matrix listing the possible materials they might need and asking them to “please place X thus if you intend to purchase item now”. This document suggests that the students were already playing a role not only in their own selecting of tools, but in the shaping of the palette that would be offered schoolwide to their peers. With the assistance of the dean, José Luis Sert, Spiro and Dwyer initially set up a “shop” in one of the basement storerooms in the Graduate School of Design building and operated for 2 hours a day, including weekends.⁸² The store was initially called simply *The Harvard Graduate School of Design Supplies*.⁸³ Adding “supplies” to the existing name of the faculty, Spiro and Blair unwittingly produced another reading; that it was a graduate school was dedicated to the study of design supplies, which in many ways it was.

Spiro and Dyer not only opened a store but also designed a technology of discipline based on an understanding of the informal conditioning of the design studio. They would later name their first store Charrette, a name likely taken from colloquial use in American architecture schools by then for any form of fixed-deadline design exercise but which had etymological origins in the regulation of romantic singular authorship that Eisenman would critique in his paper.⁸⁴ The term “charrette,” referred to a tradition of the French Ecole des Beaux-Arts architectural schooling system. The school was renowned for its regulation and production of singular author model architects through the technologies of its assignment system and regulation of the working conditions of students to manage the authors and other student contributors working on projects.⁸⁵ The charrette referred to the wagon that would be collectively pushed by the student and their atelier peers to meet the deadline for evaluation by the school. Spiro and Dyer, in naming their company with this term, engaged a legacy of a

pedagogical tradition that linked creativity to industriousness. This link was a key point of distinction for Charrette from other forms of office suppliers. Implicit from the beginning was an awareness of a market in the architecture school. Students produced drawings and models in limited timeframes in response to assignments. They constituted a market that required constant supply of architectural tools and material supplies. The inconsistency of what they needed in part related also to the culture of drawing that tended toward more novelty and attention to the drawings, meaning the selection of drawing materials was also self-conscious and designed.⁸⁶

The nascent market that Spiro identified and developed in the student body was also acutely susceptible to the novelties of an expanding palette of materials.⁸⁷ The range of the store that began quite simply with Kuhlman drafting machines and Luxo lamps soon grew with input from the students and faculty. An early letter from Margaret M. Eskridge, who ran an architectural rendering company and taught drawing to second-year landscape architecture students, outlined the requirements of students in her class. Her extensive list of specific Eagle Prismacolor pencils and crayons, Deitzen 1000Hrag paper, and yellow trace paper demonstrates the increasingly specific manner in which the equipment of the architect was disseminated through pedagogy and linked to tool manufacturers:

Since the standard box assortments carry a lot of colors they don't need, I have made a list of the colors which I think most useful to them, and they could be purchased by you by the dozen, and we can make them up into our own sets.⁸⁸

Their first stock list was collected to sell to their peers and related to direct needs of the design studios for presentation drawings and models.⁸⁹

Though the initial impetus for Charrette was to centralize all materials into a one-stop store, there was a parallel approach to distribute tools across the city. The model of distribution that began in earnest in the early sixties and developed into a larger aspect of the company reflective of the influence of the countercultural formations toward the end of the 1960s including Stewart Brand's *Whole Earth Catalog* that Spiro much admired and the broader impulses tied up in the concept of accessing tools. The first catalog was a simple spiral-bound list of items published in Fall 1964, it was mimeographed into 300 copies and distributed locally. By 1969 the catalog grew to double the size and showed more attention to the graphic form of display (Fig. 1.15-1.16). By the 1970s an entire team worked full time on designing these circulating store-windows. Internally, the company described themselves as stocking the "complete line of architectural supplies" and that Charrette was "established to serve architects and the architect only."⁹⁰ This specialization toward the architect would eventually expand as the company grew and Charrette served the postindustrial creative, advertising, communications, and entertainment industries.

While the design and distribution of the catalog slowly grew in ambitions, Spiro and Blair were keen to assert the primacy of the store display over the catalog: It is important to stress that many of the products shown [in the catalog] had never before been promoted in any other way other than in-store display or word of mouth.⁹¹ The insistence here was on the store as an exclusive place that produced a cult like interior of those in the know who recommended products.⁹² In this way, the students became active agents in shaping the stock of Charrette and thereby influencing the "dazzling" of new students who had not yet been acculturated into architecture. Similarly, Charrette and other graphic suppliers in the U.S and Britain took part in "exhibitions" of tools—large technical trade shows that traveled to major cities where

manufacturers promoted directly to architecture students and architects (Fig. 1.17-1.21).⁹³ Their intentions however were clear when labeling these large-scale events as exhibitions. The store layouts, tradeshow and catalog spreads were three of the ways that tools unexpectedly went on display at the same time that drawings did in the 1970s and 80s.

Likewise, the descriptions of selecting architectural instruments changed in tenor when faced with choosing supplies. This idea of assembling a kit had long been an important aspect of the constitution of architectural authorship. The heady consumption of supplies changed the familiarity and permanence that was often used to describe the relationship of an architect or drafter with their instruments. Consider the description of the draftsman and his tools in Eugene Clute's 1928 *Drafting Room Practice* manual:

To the man who has never experienced the satisfaction from the feel of his pencil on the paper may seem untrue, but even the right "bite" of the pen on the cloth in making a tracing gives certain satisfaction to the man whose hand is trained to the work. The draftsman's feeling for his media and the degree to which he is able to make his pens, pencils and other more or less mechanical means of expression respond to his intention are important elements to his success. His pen or pencil should be, in a very real sense, a part of himself, an extension of his hand. One of the first things a draftsman should seek to acquire is an acute sense of the feel of his pen or pencil on the paper, a delicacy of touch that is not unlike that of the skilled surgeon who is said to almost "see" with fingertips.⁹⁴

For Clute, the drudgery of the drafting room and the repetition of tasks at hand required a rhetoric of craftsmanship to give meaning and motivation. Knowledge and unity with the tools were seen to provide this sense of meaning and connection to the means of production.

This intimate knowledge of the instrument and its craft would shift with the description of supplies. Even in the field of seemingly neutral supplies, the monolithic idea would begin to sort at Charrette, as evidenced by this letter from Tom Salomon regarding the early store in New York. He described the way that architectural offices organized their tool purchasing into two distinct camps of shoppers:

The system most generally used in Architectural, Engineering offices here seems to be this: Bulk supplies such as paper, pencils, etc. are bought from time to time in regular quantities by the office manager or plan file desk clerk. Other, more exotic supplies are usually bought by the designers and draftsmen (or in the case of agencies) artists.

Apparently [sic] they do not regard this as a chore but rather a “kick” to get out of the office for an hour or so and go shopping. Generally this is out of petty cash but it is not uncommon to find these people have paid out of pocket for these purchases. Or more simply picking up the phone to call Charrette would not be as much fun.⁹⁵

The corporate offices continued their monopoly and organization of supplies, and designers and artists visited Charrette as a leisure and pleasure experience to exercise their consumeristic individuality and separate themselves as individuals via consumption.

By the 1970s, with the buildup of interest in drawings as intricate items and a returning interest in the elaborate and artful drawings of the Ecole des Beaux Arts, the rhetoric around the

architect, too, had transformed. The sentiment contained in the Clute quote had transformed from a tactile love affair to a fetish of consumption:

If you can see romance in the well-sharpened pencil; find joy in the right shade of green marker; delight in the clean scrub of an electric eraser; happiness in blueprint paper with the right heft, silkiness, and resistance to the line—stop at Charrette.⁹⁶

Unlike Clute's lyrical description of the symbiosis of the draftsman and their pens and paper, this review of Charrette painted a field of free-floating tools and a drafter overwhelmed and alienated from them, grasping at the catalog to determine which tool might be the most relevant to their practice. The review of the Charrette supplies store suggested that one must also have a pencil, green marker, electric eraser, and hefted blueprint paper. In other words, satisfaction by the 1970s had expanded beyond the pen and the hand into a broader constellation of materials that included the reprographic world of blueprints.

V Individual Entrances

To the usual coordinates fixing the individual's position—his temperament and his training—there is also the moment of his entrance. . . . Without a good entrance, he is in danger of wasting his time as a copyist regardless of the temperament and training.

—George Kubler⁹⁷

Returning to 1960—the year of the Sagamore conference and founding of Harvard Graphic Supplies—Peter Eisenman responded to a paper assignment while a student at Columbia University. His response, titled *Collaboration in Architecture as a Derivative of the Ideas of Walter Gropius*, reflected an awareness of the fundamental crisis in architectural education

articulated in this chapter related to competing and contradictory models of authorship. Whether it was Hitchcock's belated choice between bureaucrats and geniuses in 1947 or Charles Moore's conceptual designers and technicians in 1960, the dichotomy persisted between those who were seen as technical and anonymous and those viewed as individualistic and creative. Eisenman observed in his paper a conflict between Walter Gropius' prewar writings and what he considered to be "derivative" commercial buildings he made with The Architect's Collaborative (TAC), where Eisenman worked the previous summer.⁹⁸ Because of TAC's alignment with Gropius and its model of collaboration, Eisenman had seen it as an office with "ideals" that promised a mode of working at the scale of a larger office and on complex buildings.⁹⁹ It was an office where a graduate with an interest in rejecting the heroic master architect model might go to work without losing the cachet provided by associating with an institution like Gropius (Fig. 1.22).¹⁰⁰

The significance of the pedagogical context was a conditioning one, given the paper was a response to a proposed assignment rather than an originating set of thoughts.¹⁰¹ Eisenman identified collaboration as a necessity to meet the technical context of the moment. A single architect could not compete, he argued, with the flexible manpower, technical resources, and specialization of firms like SOM and Harrison Abramovitz. Despite Gropius' ideals of teamwork, it was the scale of TAC's office as it expanded to compete with such firms that led to the necessity of including specialist departments that left the office in much the same working state.¹⁰² Notably, though, Eisenman's disregard for what he considered "corporate" architecture in 1960 reflected a common oversight: The term "corporate" was never discursively defined. Instead it was used repeatedly, effectively producing an abstraction that was filled with various threats to the architect's autonomy.¹⁰³ The term "corporation" came to stand for a broader set of

transformations around the modernization of industry, incorporation of technologies of organization and attendant complexity of production, and growing complexity of architectural projects.

Eisenman’s definition of “derivative” related to being nonoriginal, poorly imitative, and homogeneous—these qualities were seen more broadly as symptomatic of a corporate office structure.¹⁰⁴ When architectural Historian Sybil Moholy-Nagy reviewed TAC as an office producing repetitive buildings, she described the company as “dutifully turning its pencils into the same groove of a stuck conceptual record.”¹⁰⁵ Moholy-Nagy’s mixed-media imagery likely referred to the ways that bureaucratic offices were set up with human and technical infrastructures that allowed for preservation of “conceptual grooves,” as this chapter has shown. However, seen in another light, her quip unintentionally reinforced the ways that conceptual projects would emerge and convert these same aesthetic impulses.¹⁰⁶

The solution to the mindless copying that Eisenman proposed in his paper was to recuperate the critical value of Gropius’ early ideas of collaboration—more specifically, to heroically call for a “new architect” as a figure of survival, evading the advancing front of corporate “giants”¹⁰⁷ and “advancing technology and mechanization.” This new architect, however, had a significant amendment to the model of collaboration, as he interpreted Gropius¹⁰⁸:

When Gropius spoke of order, it was a standardization that was to accept the machine, to become its master, and to use it as an instrument for the improvement of the social framework. A *logical* acceptance of the machine would provide a basis for *a sequence of thought*, that would give order to our architecture. ... The totality would dictate to its

parts rather than a patchwork resulting from individual ideas. This is the essence of collaboration. The building would evolve from a process rather than a development by an individual. The individual would be subordinate to the *idea* [emphasis added].¹⁰⁹

Eisenman's reading of Gropius produced a definition of a "machine" as the object of heavy industry and manufacturing. This interpretation was likely based on Gropius' well-known acceptance of this machine, which itself was based in a belief in the radical potential of mass production to democratize good design. Significantly Eisenman's use of Gropius in 1960 reflected the postindustrial moment, as he went on to shift the context out of the factory, from mechanized activities to sequences of thought and intellectual processes. Eisenman turned Gropius' machine of modernism's industrial production into "an idea machine" befitting the valuing of ideas and knowledge as the fruits of production.¹¹⁰ The ideas in this paper could be traced to his critical project some ten years later, in which Eisenman claimed to separate architecture from the technical and technocratic world of building construction toward the "autonomy" of drawing production as the primary site of architecture's intellectual project. I argue, however, that the antitechnocratic turn was not an anti-technological one, but rather one that depended on instruments like the drafting supplies examined in this chapter that appeared to be less embedded in prevailing systems of power. Eisenman would become famous for drawings that suppressed the sign of tools and the hand that held them as part of his attempts to rationalize and automate design via conceptual practices. In that way, his work would reveal the ways that supplies had already collapsed the distinction between "conceptual designers" and "technicians" simply because they were all reliant on the same substrates with shared bureaucratic origins. His conceptual design process would rely on the historical lineage of depersonalizing embodied in the substrates of his pen and page. He equally engaged with items manufactured in the same

technocratic contexts he sought to resist. Yet this overlap was obscured by the divisions imposed and reinforced around the distinctions between those who were copyists and those who were seen to be authors (Fig. 1.23).

¹ Leo Marx, “Technology: The Emergence of a Hazardous Concept,” *Technology and Culture* 51, no. 3 (July 2010): 561-577.

² Here I reference the 1964 publication “The Machine in the Garden,” whereby Leo Marx looked at nineteenth century American literature and argued that the figure of the garden was framed as a space between the pastoral and the technological sublime of American industry. This middle space Marx identified was a technological landscape. I use this reference to consider what it meant for discussion around the implements used by architects that seemed to nostalgically return to the “instruments” of geometry and calculation shared with science and mathematics as a sign of intellectual work. The items that I refer to as supplies were part of everyday practice for drawing production by drafters and thereby, seen as mechanized and less valued. And yet these supplies were used by all. Leo Marx, *The Machine in the Garden; Technology and the Pastoral Ideal in America* (New York: Oxford University Press, 1964).

³ Recent studies of American architecture schools in this period include a recent survey edited by IAUS fellow Joan Ockman and Rebecca Williams in a compendium on the architecture school, see: Joan Ockman and Rebecca Williamson, eds., *Architecture School: Three Centuries of Educating Architects in North America* (Cambridge and Washington, DC: MIT Press, 2012). Primary sources that relate to this are found in discussions during combined events of the American Institute of Architects and American Collegiate Schools of Architecture, and also in the Architect at Mid-Century survey led by Turpin Bannister that sought to understand the status of the profession and the roles architecture schools were playing in preparing students for professional careers. I refer to this survey throughout this dissertation. See American Institute of Architects: Turpin C. Bannister and Francis Rufus Bellamy, eds., *The Architect at Mid-Century: Report* (New York: Reinhold, 1954).

⁴ The conflict between the individual and collective in architectural pedagogy has been observed in the historiography of architectural authorship in this inter- and postwar period in America. The discussion tends to examine the competing ideologies of the Ecole des Beaux Arts and later the Bauhaus that influenced the curriculum and structures of evaluation at American schools in different ways. For example, see Mark Donchin and Gilbert Herbert, *The Collaborators: Interactions in the Architectural Design Process* (London: Ashgate, 2013).

⁵ “War on genius” is a phrase from William Whyte Jr.’s 1956 blockbuster, *Organizational Man*. The “war” Whyte observed was fought in postwar scientific research laboratories against individuality and genius linked to the realm of art leading to the homogenization and mediocrity produced by overregulated and managed environments to produce optimized teamwork and outputs. I examine in Chapter 3 the ways that this fight against genius was counteracted with corporate programming by 1970 that attempted to introduce artists-in-residence to fill the void of risk and creativity that Whyte lamented was missing in scientific laboratories. For more, see William H. Whyte, *The Organizational Man* (New York: Simon and Schuster, 1956).

⁶ There is a wide body of literature on the influence of the federal military on reshaping American life and politics in the interwar period and beyond. One of the widely cited first statements on this is the 1961 farewell address of President Eisenhower, who described the complex as engulfing and structurally transformative: “Our toil, resources, and livelihood are all involved; so is the very structure of our society.” In this state of ubiquity and invisibility, he warned of the possibility of “unwarranted influence” and “misplaced power” that threatened to undermine American democracy and liberty by the unexpected power of the American military–industrial complex. This essay is included in an important compendium of writing on the complex; see Dwight D. Eisenhower, “The Problem Stated,” in Herbert I. Schiller and Joseph D. Phillips, eds., *Superstate: Readings in the Military Industrial Complex* (Urbana: University of Illinois Press, 1970: 31). By 1967, what would later be labeled the “military–industrial–academic complex” was—at least in appearance—being traced in the writing of Paul Goodman, who wrote about research and development and described the financial and structural intervention in university education. Goodman’s writing reiterated the sentiments of Eisenhower, suggesting that the intellectual project of scientific discovery had been replaced with the imperatives of government contracts and military projects. Paul Goodman, “A Causerie at the Military Industrial,” *New York Review* 9, no. 9 (November 23, 1967): 14-19.

⁷ Of primary importance to this complex was the importance of large corporately sponsored laboratories in the university and partnerships with external corporate laboratories. The type of science practiced in these laboratories also changed, relative to the equipment that only these larger, well-funded laboratories could afford—what Peter Galison (after Alvin Weinberg) called “big science.” See Peter Galison, *Big Science: The Growth of Large-Scale Research* (Stanford: Stanford University Press, 1992). The research coming out of these alliances and partnerships was largely related to advanced technology, including computation and processing, and on the other hand, material research and development. As Stewart Leslie has written, these laboratories in academia were often interdepartmental and important centers that not only trained experts but also produced published research including textbooks. See Stuart W. Leslie, *The Cold War and American Science: The Military-Industrial-Academic Complex at MIT and Stanford* (New York: Columbia University Press, 1993).

⁸ Already by the midcentury, the remnants of the Bauhaus total design ideals of the centralized architect with intimate knowledge of materials and industry was covered by a new corporate logic of the office filled with specialists and relatedly, the architect in this environment as coordinator. See Joan Ockman, *Architectural Culture*, 16. This particular use of the term “explosion” in this year is attributed to Dean Sargent; see Frank Freyburgh, “Materials,” *Journal of Architectural Education* 16, no. 10.2 (Summer, 1961).

⁹ Charles Moore, “Sagamore,” *Journal of Architectural Education* 16, no. 10.2 (Summer, 1961).

¹⁰ C. P. Snow, *The Two Cultures and Scientific Revolution: The Rede Lecture* (New York: Cambridge University Press, 1961). I discuss the influence of this lecture and publication in Chapter 3 because it shaped an intermedia and new media response in art practices during the 1960s. For the historical and political context of Snow’s lecture, see the introductory statement by Stefan Colloni, “Introduction: Reactions and Controversies,” in C. P. Snow, *The Two Cultures* (Cambridge: Cambridge University Press, 1998) and John De la Mothe, *C.P. Snow and the Struggle of Modernity* (Austin: University of Texas Press, 1992). Peter Galison examined the effects of the two cultures in the development of scientific departments in American universities; see Peter Galison, “The Americanization of Unity,” *Daedalus* 127, no. 1 (Winter, 1998): 45-71.

¹¹ Charles Moore, “Sagamore,” *Journal of Architectural Education* 16, no. 10.2 (Summer, 1961).

¹² See H. R. Hitchcock, “The Architecture of Bureaucracy & The Architecture of Genius,” *The Architectural Review* (January 1947). This essay has been centralized in the recent historiography of American business practice and corporate architecture. It stands for the tension between an individualistic romantic model of architectural authorship and the seeming anonymizing practices of large offices. For an overview in context, see Philip Goad, “Genius and Bureaucracy: Hitchcock, Summerson and Post-war Modern Architecture,” in *Summerson and Hitchcock: Centenary Essays on Architectural Historiography* (New Haven: Yale University Press, 2006). More recently, see Michael Kubo’s reading of this essay in relationship to questions of midcentury corporate practice in his dissertation:

Michael Kubo, “Architecture Incorporated: Authorship, Anonymity, and Collaboration in Postwar Modernism” (Thesis, Massachusetts Institute of Technology, 2018). Kubo has also published an essay, “The Concept of the Architectural Corporation,” in the Office US Atlas. Eva Franch i Gilabert, Ana Miljački, Ashley Schafer, and Michael Kubo, eds. *Office US: Atlas* (Zürich: Lars Müller Publishers, 2015).

¹³ Claire Zimmerman has written several texts about Albert Kahn’s office in the “Second Industrial Revolution.” She dates a shift in building, or what she calls the “second industrial revolution,” to 1890, when the industrial logics of factory manufacturing entered architecture and as she shows, entered in a direct way with figures like Albert Kahn, who not only designed factories for the likes of Ford Motors, but also incorporated many similar ideas around the production assembly line in the drawing room and office setup. In fact, Zimmerman argued that Kahn’s significance lay in his understanding of the design of office procedures. See Claire Zimmerman, “Albert Kahn in the Second Industrial Revolution,” *AA Files 75* (December 2017: Architectural Association, London), 28-44. Michael Osman has most recently written about the organization and regulation of architectural offices in the early 20th century and established the terms of analysis and stakes of paperwork in the early corporate office, see Michael Osman, *Modernism’s Visible Hand: Architecture and Regulation in America* (Minneapolis: University of Minnesota Press, 2018).

¹⁴ For Hitchcock, the very definition of bureaucratic architecture was not necessarily related to government buildings designed by public servants, nor was it about simply regulation. The definition instead lay precisely in the design of an organization that coordinated a systematic architecture from factory to building site. Citing Detroit architect Albert Kahn’s architecture as the exemplar of “bureaucratic” architecture, Hitchcock stated: “By bureaucratic architecture I mean all building that is the product of large scale architectural organizations, from which personal expression is absent. Indeed the type of bureaucratic architecture par excellence is not that of government ministries. but the production of such an architectural firm as Albert Kahn, Inc., in Detroit, where the anonymity is more obvious now that Albert Kahn, the founder, is dead.” See H. R. Hitchcock, “The Architecture of Bureaucracy & The Architecture of Genius,” *The Architectural Review* (January 1947). The above “death of the author”, to cite Roland Barthes foreshadowed the rise of critical theory in the American Academy in the 1960s that would ask similar questions about the institutional regulation of authorship in relationship to personality. See Roland Barthes, “The Death of the Author,” *Aspen* 5+6 (1967).

¹⁵ Leo Marx connected the ways that the rationalization and scientific management of office work and development of large American business was a part of a larger establishment of sociotechnical systems, including communications infrastructure and what we’d call mass media such as telegraph and telephone, but also civil infrastructures of waste and water. He pointed out that blurring the borders between these networks was a key feature of this development: “notably the boundary separating the artifactual equipment (the machinery or hardware) and the rest: the reservoir of technical—scientific knowledge; the specially trained workforce; the financial apparatus; and the means for acquiring raw materials.” Leo Marx, “Technology: The Emergence of a Hazardous Concept,” *Technology and Culture* 51, no. 3 (July 2010): 568.

¹⁶ Even if it went unnoted in the literature and articles in journals, the “supplies room” appeared drawn in the floor plans featured in the copious articles published in the late nineteenth century in professional journals that documented the American architecture office as a space of business and creativity. Mary Woods included a survey of offices in this period in “Forms and Settings of Practice,” in Mary N. Woods, *From Craft to Profession: The Practice of Architecture in Nineteenth-Century America* (Berkeley: University of California Press, 1999), 82-137.

¹⁷ These particular office manuals are described by Michael Osman in a chapter on paperwork, where he described the rise of the managerial paradigm of corporate architecture. See “Regulation through Paperwork in Architectural Practice” in Michael Osman, *Modernism’s Visible Hand: Architecture and Regulation in America* (Minneapolis: University of Minnesota Press, 2018):165-184.

¹⁸ The idea of instruments and equipment were intrinsic to the Weber’s formative studies of the hierarchies and organization of bureaucratic institutions. He linked the project of bureaucracy with modernization, traversing scales of empire, economy, and business. The study theorized on the role of documents or files: “The management of the modern office is based upon written documents (the “files”), which are preserved in their original or draft form, and

upon a staff of subaltern officials and scribes of all sorts. The body of officials working in an agency along with the respective apparatus of material implements and the files make up a bureau.” Max Weber, “Bureaucracy,” in *Economy and Society: An Outline of Interpretive Sociology* (Berkeley: University of California Press, 1978), 957.

¹⁹ Bureaucratic documents and organizations would emerge as objects of critique and what Benjamin Buchloh describes as an “aesthetic of administration” in the 1960s art practices that sought to structure the artist as a manager rather than a creative genius. See Benjamin H. D. Buchloh, “Conceptual Art 1962-1969: From the Aesthetic of Administration to the Critique of Institutions,” *October* 55 (Winter, 1990): 105-143. Also, by the end of the 1960s, Michel Foucault would extend Weber’s observations in order to produce a theory of literary authorship that was held apart from the banality and anonymity imposed by bureaucratic structures. He noted that bureaucratic documents were not considered to hold author function in a literary paradigm. In his famous critique of the literary and artistic notion of an author’s “work,” he stated that one didn’t consider the author function of the inscriptions outside of the published text, things like handwritten drafts or addresses or laundry lists, even if they were made by the very same hand. For Foucault, the issue here was not simply the issue of classification but also the idea that relinquishing the specific into “texts” involved the erasure of the personhood of the author and the regulation of the publishing industry, which was involved also in the definitions and limits of authorship. Many now-expanding histories of literary media accommodate the “prose” of these paper-bound inscriptions. See Michel Foucault’s 1969 lecture and later essay, “What Is an Author?” in Michel Foucault, *Language, Counter-Memory, Practice*, edited by Donald F. Bouchard (Ithaca: Cornell University press, 1977), 113-138.

²⁰ Osman *Modernism’s Visible Hand*, 173.

²¹ Max Weber, *Economy and Society*, 975.

²² “How closely the adjustment of material to the various needs has been studied is shown in the case of one manufacturer who makes 350 different types and weights of carbon paper. *This is typical of all office appliances and accessories* [emphasis added].” in Lee Galloway, *Office Management, Its Principles and Practice: Covering Organization, Arrangement, and Operation with Special Consideration of the Employment, Training, and Payment of Office Workers* (New York: Ronald Press, 1919), 77.

²³ Lee Galloway, *Office Management*, 78.

²⁴ Lee Galloway, *Office Management*, 464.

²⁵ Ibid.

²⁶ Ellul on technique: “Technique transforms everything it touches into a machine.” See Jacques Ellul, *The Technological Society* (New York: Vintage Books, 1964), 4. One might think more recently of Bernhard Siegert’s definition of “cultural techniques” that focuses on the operations of activities rather than considering the media discretely; see Bernhard Siegert and Geoffrey Winthrop-Young, *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real* (New York: Fordham University Press, 2015).

²⁷ Jacques Ellul, *The Technological Society*, 4-5.

²⁸ The approach toward office organization sciences shifted gradually from an industrial research based model primarily directed toward productivity, time management, fatigue avoidance, and incentivization—to an understanding not simply of the individual laborer and their singular motivations and sense of morality but also the network of laborers working together; the “human relations” of the working group. See Peter M. Blau and W. Richard Scott, *Formal Organizations: A Comparative Approach* (San Francisco: Chandler, 1962), 87.

²⁹ “In nearly all offices there will usually be found a large collection of pens, bought to suit the idiosyncrasies of certain clerks who feel that they can write with only one style of pen. If a person becomes accustomed to one style it

is difficult readily to use another, but this difficulty disappears within a few days. The size and shape of the penholder should also be carefully studied and standardized.” William Henry Leffingwell, *Scientific Office Management* (Chicago: A.W. Shaw Company, 1917), 20.

³⁰ Leffingwell divided his method into the categories of observe, record, standardize, setting tasks, and teaching. These economy campaigns were examples of the teaching section in which one would educate the workers on how to participate in the office standards.

³¹ Kraucauer wrote of the dissolution of the individual into the mass as the industrial formations of factory Taylorism also transformed the aesthetic forms of popular culture with spectacles. Dehumanization and depersonalization were at stake in the rationalization of everyday life, and especially in the workings of capitalist production process. See Siegfried Kracauer and Thomas Y. Levin, *The Mass Ornament: Weimer Essays* (Cambridge, Mass: Harvard University Press, 1995).

³² The subjects produced by postwar American collectivization were a part of a growing mainstream critique of the midcentury conformism of middle-class America. For instance, the editor of popular *Fortune Magazine*, William H. Whyte Jr., popularized the figure of the “organization man” in 1956 as a critique against the burgeoning numbers of American workers who were not simply employed at but “belonged” to corporate culture. Their belonging, according to Whyte, was not the alienation of the industrial factory worker, but one who “bought in” to the company, who associated themselves with brands and navigated consumer society in America. Not simply to be found in the corporate environs, Whyte’s organization man was a broader elaboration of the growing complexity and scale of the institutional apparatus around individuals and the management models that were introduced to regulate and manage—from church hierarchies to government-sponsored university or corporate laboratories. See also Reinhold Martin, who introduced these ideas to architecture in Reinhold Martin, *The Organizational Complex: Architecture, Media, and Corporate Space* (Cambridge: MIT Press, 2003).

³³ Reinhold Martin, *The Organizational Complex: Architecture, Media, and Corporate Space* (Cambridge: MIT Press, 2003), 4.

³⁴ Andrew Feenberg, *Alternative Modernity: The Technical Turn in Philosophy and Social Theory* (Berkeley: University of California Press, 1995), 9.

³⁵ Stewart Leslie discussed the “so-called war profiteers” and the relationship of research and development in the military-industrial-academic complex in Stewart Leslie, *The Cold War and American Science: The Military-Industrial-Academic Complex at MIT and Stanford* (New York: Columbia University Press, 1993), 5. See also David A. Hounshell and John K. Smith, *Science and Corporate Strategy: Du Pont R&D, 1902-1980* (New York: Cambridge University Press, 1988).

³⁶ Hyöng-min Pae, *The Portfolio and the Diagram: Architecture, Discourse, and Modernity in America* (Cambridge: MIT Press, 2002), 175.

³⁷ Progressive Architecture (March 1963):16.

³⁸ Reinhold Martin, *The Organizational Complex: Architecture, Media, and Corporate Space* (Cambridge: MIT Press, 2003), 4-5.

³⁹ This is based on my survey of tool adverts in architecture and engineering journals in the 1960s–70s and shows that the language overwhelmingly refers to manufactured problems that new tool designs were to overcome, and these problems were most common when the tool confronted another material system—for instance, the production of the “jewel point” nib by Rapidograph to answer the problem of wear when the stainless steel nibs encountered the surface of the drafting film. This jewel point was a self-polishing synthetic sapphire supposedly lasting 100 times longer than steel.

⁴⁰ See Robert Bruegmann, “The Pencil and the Electronic Sketchboard: Architectural Representation and the Computer,” in *Architecture and Its Image: Five Centuries of Architectural Representation: works from the Collection of the Canadian Center for Architecture*, edited by Eve Blau and Edward Kaufman (Cambridge: MIT Press, 1989)138-155.

⁴¹ *Engineering Graphics* (August 1969): 13.

⁴² Lyotard argued that following the World War II reconstruction at the end of the 1950s, marked the passage into the postindustrial phase. In this postindustrial society, the primary concerns related to the problem of translation. For Lyotard, this related to the introduction of computation that has reshaped the landscape of communication into a coded landscape of compatibility and virtuality. Likewise, he argued that educational paradigms required transmission of information “in quantities”. Lyotard emphasized the performative power of language in the constitution of knowledge and power—authority now established via declarative statements, orders and commands See Jean François Lyotard, *The Postmodern Condition: A Report on Knowledge* (Minneapolis: University of Minnesota Press, 1984).

⁴³ Edward R. Caffrey, Polyester Fiber and Film. *The Analysts Journal*, Vol. 9, No. 1 (Feb., 1953):69-70.

⁴⁴ Janet Kraynack suggested the 1960s and 70s reflected a “culture of iteration or replication” that may be linked to these technologies of recording, duplication, and circulation. Janet Kraynak, *Nauman Reiterated* (Minneapolis: University of Minnesota Press, 2014), 8.

⁴⁵ Anna McCarthy observed that DuPont’s advertising for Mylar in the 1950s used image and rhetoric that merged the domestic interior with the research laboratory. Adverts featuring a woman modelling a mylar dress, which McCarthy says executives at DuPont hoped would allow a more personal projection with the product and ideas that the company promised. Because of the flexibility of uses for Mylar McCarthy suggests it was a useful emblem of the optimism of the post war economy. For more see Anna McCarthy, *The Citizen Machine: Governing by Television in 1950s America* (New York: New Press, 2010), 49.

⁴⁶ For more, see Beatriz Colomina, Annmarie Brennan, and Jeannie Kim, eds. *Cold War Hothouses: Inventing Postwar Culture, from Cockpit to Playboy* (New York: Princeton Architectural Press, 2004).

⁴⁷ “[L]atest breakthrough for instantaneous start-up is the new cap with dry, airtight, double seal. Koh-I-Noor’s research proved this as actually far superior to a humidified cap on which Koh-I-Noor had the original U.S patent several years ago, No. 3,475,103 (1969). In the light of the double seal breakthrough Koh-I-Noor recommends humidification only for temporary storage during work intervals in the Humidified Revolving Selector (HRS), US. Patent No 3,428,380 (1969).” *Engineering Graphics* (1973).

⁴⁸ Service and training were integral aspects of office technologies, such as copying machines and later, computers. For more on this, see: James W. Cortada, *Before the Computer: IBM, NCR, Burroughs, and Remington Rand and the Industry They Created 1865-1956* (Princeton: Princeton University Press, 1993), 269.

⁴⁹ *Engineering Graphics* (August 1969): 12.

⁵⁰ “At the microlevel these assumptions are at work in the traditional computer interface, with its neat hierarchies of menus consisting of one-word descriptors of ‘options.’ A logical space consisting of such alternatives correlates with an individual “user” engaged in a personal strategy of optimization. Projected onto society as a whole in the form of a public information service, this approach implies a world in which “freedom is the more or less informed choice among preselected options defined by a universal instance such as a technocratic authority.” Andrew Feenberg, *Alternative Modernity*, 157.

⁵¹ Reyner Banham, “The Great Gizmo,” *Industrial Design*, 12 (September 1965) reprinted in Banham, Reyner, and Mary Banham. *A Critic Writes: Essays by Reyner Banham*. Berkeley, (Calif: University of California Press, 1996)

108-114. Reyner Banham's 1965 essay offers a suggestion about the oversight of considering the materials on the desk from the technologies of architectural production.

⁵² Banham's definition and description of the gizmos provides a way to intersect this discussion on technocracy and the idea of a resistance through critical practice with other forms of resistance that occurred during this period to the same forces. For instance see Felicity Scott's writing on the counter culture and tools and media; Scott, Felicity Dale Elliston. *Architecture or Techno-Utopia: Politics after Modernism*. Cambridge, Mass: MIT Press, 2007.

⁵³ The article was presented at the Drawing Office Materials Manufacturers' and Dealers' Association (DOMMDA) convention, Eastborne, October 1965, in a talk by P. Garner called "Economic Aspects of Commercial Copying Processes." Further research into the quote suggests that Garner found it in *New Scientist* 27 (1965): 435. However, the quote was also falsely attributed to the United States by the Postmaster General O'Brien's lecture at McAlester Post Office Dedication ceremony, suggesting that the quote's appeal and distribution was widespread. See Congressional Record: Proceedings and Debates of the Congress, 112, Part 27: Appendix. The archive for DOMMDA is held at Warwick University and has largely been overlooked in the historiography of drawing tools and procedures. *Drawing Office Materials Manufacturers' and Dealers' Association, 1917-1999* (Modern Records Centre, University of Warwick, GB 152 DOM).

⁵⁴ To return to the quote at the beginning of this chapter, the relationship of bureaucracy, preservation, and paperwork was already written into the early and definitive guide to office organization by William Henry Leffingwell, who defined the office as not simply the coordination of activities but also and in parallel to the recording of them for preservation and planning data in the definition of "office." *Scientific Office Management*, 3.

⁵⁵ In writing about paperwork, Lisa Gitelman described the very definition of a document is based on its reproducibility. Gitelman tracked the ways that paper has shaped and been shaped by the impulse to document and record. She noted the paradox of paper: more ephemeral than stone, and yet portability that allows for circulation and storage that is part of administration. See Lisa Gitelman, *Paper Knowledge Toward a Media History of Documents* (Durham, North Carolina: Duke University Press, 2014), 1-3.

⁵⁶ Mark Wigley argued that the ubiquitous and seemingly born-digital look of the white line on black background of CAD software environments emerged somewhat earlier as a condition of photographic reproduction's ability to invert the drawing into a negative. What is perhaps most interesting about this claim is that he noted that the eye was trained to stare "through the black" of these negatives; thus, the line was decoupled from the black backdrop. Though he didn't state it as such, Wigley also noted the decoupling of the information in the linework and the support surface or background. He presented in 2004 at an early colloquium titled "The Devices of Design," a collaboration between the Foundation Llangois and the Canadian Center for Architecture, bringing together various contributors for a discussion that would ultimately lead to the Archeology of the Digital project some years later. Recently this paper was published as "Black Screens: The Architect's Vision in a Digital Age," in Goodhouse, Andrew, and Centre canadien d'architecture, eds. *When Is the Digital in Architecture?* (Montréal, Québec : Berlin: Canadian Centre for Architecture ; Sternberg Press, 2017):177-192.

⁵⁷ "the intermediate master or reproducible copy encourages improvisation. The designer can make any number of duplicates, plans, elevations, and can sketch alternative suggestions on these." Walter T. Johns Brunning Company, *Copying Technology, Practicing Architecture Section* (July 1963): 145.

⁵⁸ John Brooks, "Xerox Xerox Xerox," *New Yorker* (April 1, 1967), 46. I was made aware of this article in the context of media discourse via Lisa Gitelman, *Paper Knowledge Toward a Media History of Documents* (Durham: Duke University Press, 2014), 92.

⁵⁹ "The office is that part of an enterprise devoted to the direction and coordination of its various activities. It is characterized by the gathering, classification, and preservation of all kinds of records; the analysis and utilization of these data, in planning, executing, and determining the results of operation; the preparation, issuing and preservation of instructions and orders; the composition, copying, and filing of written messages." See definition of "office" in

Leffingwell, *Scientific Office Management*, 3.

⁶⁰ Historiography of photography registers the contested relationship to questions of artistic authorship and the uneasy relationship to notions of creativity, provenance, and value that this mechanical and industrial media introduced to the field of art. One of the canonical essays in that regard is Walter Benjamin's *The Work of Art in the Age of Mechanical Reproduction* from 1935, in which he outlines the fundamental transformations that photography presented. Key to this text was the concept of the singular auratic work of art was connected to the time and space of its production. Technologies of reproduction like photography made these objects accessible to new audiences then via recordings and documentation, transforming objects and scenes into representations. In short, photography opened the possibility of a condition of circulation of photographic images that the singular auratic originals and the institutional regulations around their provenance would not allow. See Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in *Illuminations*. Edited by Hannah Arendt. Translated by Harry Zohn. (New York: Harcourt, Brace & World, Inc., 1968): 219-254.

⁶¹ There is much scholarship on the role of photography in the construction of modernist architecture, the image of the architect related to certain practices of imaging buildings and people and disseminating these via journals and magazines, and later television and screens, see for instance Colomina, Zimmerman, Cohen). More recent scholarship includes Craig Buckley on the collage work of presentation drawing that in many ways still relates to this earlier legacy of historiography. However, there is one crucial intersection of photography and architecture that is not yet well known; we rarely think about the replication produced in drawing production courtesy of industrial manufacturers like Kodak-Eastman, Du Pont, or Koh-I-Noor, which were all important producers of drafting room supplies that later culminated in Reprodrafting systems that linked the treated papers of photography, the films that allowed for stable registration of information across drawings. In particular, these companies can be found from the 1950s.

⁶² Historian of film and photography Hannah Frank pointed out that photography's suppressed relationship to another medium, that of animation film, means that it has never been treated seriously in that field in the way it was in the historiography of photography, which examines such issues. See Hannah Frank, Daniel Morgan, and Tom Gunning, *Frame by Frame: A Materialist Aesthetics of Animated Cartoons* (Oakland: University of California Press, 2019).

⁶³ For an excellent account of DuPont's development of photographic papers including the rivalry with Kodak, see David A. Hounshell and John K. Smith, *Science and Corporate Strategy: Du Pont R&D, 1902-1980* (New York: Cambridge University Press, 1988), 541.

⁶⁴ Overlay drafting using specialized binding pins to register the paper layers was a technique that entered architecture from cartography and animation. As a method overlay drafting introduced multiple layers into the production each potentially containing separate drafted material on acetate sheets. These layers could then be recomposed in various orders and combinations to merge the information of their layers and be reproduced on a flatbed or through photographing of each layer and recombining the negatives. As an early information management system, overlay drafting allowed consultants to work on layers over the architectural drawings.

⁶⁵ Historian of animation Hannah Frank proposed not to watch films in their run but to study the single frames one after the next. Each individual animation cel used layers of acetate and printing to layer the background and actors in the scene. These layers of acetate allowed for an industrial organization of the animating process, such as standardizing a single backdrop or allowing for an assembly line like division of the animation workforce between linework and coloring. I discuss Frank's analytical frame more in depth in Chapter 3. See Frank, Hannah, Daniel Morgan, and Tom Gunning. *Frame by Frame: A Materialist Aesthetics of Animated Cartoons*. (Oakland, California: University of California Press, 2019).

⁶⁶ Walter T. Johns, *Copying Technology*, 145.

⁶⁷ The repetitive act of tracing over one drawing to the next was seen as one way that a trainee draftsman or architect became more attuned to their drafting tools. These jobs in the early modernizing offices were bound in a cost competition with the blueprint machine according to Mary N. Woods. Drafting jobs had as she argues were often distinguished from architectural ones based along racial and class distinctions about who was given access to architectural education and who worked as a technical drafter. A so called rational office in the post war period was one in which a line was only drawn once and where the repetition of the reprographic machine would allow for all repetition to be removed to save time for the so-called creative work instead. So the idea of reprographic was the idea of automation to free up the time for creative acts, yet at the same time, there was a sense that the reprographics could become improvisational as well; the 1960s' reprographics and Xerox were seen as an everyman's brain picker. See for instance Technics: Reproducting, "Draw the Line Once," in *Progressive Architecture* (August, 1976): 74.

⁶⁸ Kodagraph Advert, *Progressive Architecture* (October 1970), 165.

⁶⁹ Margarete Pratschke has spoken about the development of the computer interface as a layering of windows as a design problem of "graphic organization". This iconic window imagery was developed during the 1970s at the Xerox PARC headquarters in Palo Alto in its development of computerized offices. The Learning Research Group led by Alan Kay in the early 1970s designed a graphic concept for the computer screen interface that replicated the idea of the office desk and the papers layered on top in the program Smalltalk. Pratschke made the comparison of the overlapping windows of the interface, in their churning at the user's behest, to the tableau for survey where one lays out various images on a horizontal surface, which was importantly creating a juxtaposition of "constructivist collage" with mobile interactivity and participation. see Margarete Pratschke, Interacting with Images—Toward a History of the Digital Image: The Case of Graphical Use Interfaces in *Technical Images*, 48.

⁷⁰ Lev Manovich discusses the shift from documents to performances that accompanies digitization and software platforms. Here, the logic of communication in a digitized world is one in which there is great instability in the "bits" of information. So although he suggests that during the 1970s, communication theory—either that of cultural theorists such as Stewart Hall or classical communication theory such as Claude Shannon—built its understanding on an assumption that one would watch the entirety of a film, read the entirety of a book, etc., in a complete form; with digitization, one must understand that computer programs are constantly being updated in a piecemeal fashion. As such digital media does not exist as a stable document anymore. See Lev Manovich. *Software Takes Command. International Texts in Critical Media Aesthetics*, volume 5. (New York, NY, USA: Bloomsbury Academic, 2013):35.

⁷¹ Whyte, *Organizational Man*, 3.

⁷² Reinhold Martin, *The Organizational Complex*, 5.

⁷³ Sylvia Lavin discusses the negotiation between choice and signature and technical constraints in relationship to color selection of pencils and pantones, see Lavin, Sylvia. *Architecture Itself and Other Postmodernization Effects*. (Leipzig: Spector Books, 2020).

⁷⁴ "The beginning draftsman may be bewildered by the variety of equipment which he sees in the display cases and on the shelves of the dealer." See Leslie C. Martin, *Design Graphics* (New York: Macmillan, 1962), 2.

⁷⁵ Frank R. Dagostino. Contemporary architectural drawing. Reston Publishing Co. Inc. 1977. pp3

⁷⁶ Norman Diekman and John Pile, *Drawing Interior Architecture* (New York: Whitney Library of Design, 1983), 21.

⁷⁷ Ralph W. Liebing and Mimi Ford Paul, *Architectural Working Drawings* (New York: John Wiley & Sons, 1977), 5.

⁷⁸ Prenzel Werner, *Working and Design Drawings* (New York: Van Nostrand Reinhold, 1980), 7.

⁷⁹ Alexander Ratensky, *Drawing and Modelmaking* (New York: Whitney Library of Design, 1983), 10.

⁸⁰ Although Charrette's official company history most commonly notes that the company was founded by Lionel Spiro and Blaire Brown, there is a letter to Cardinell Products dated September 17, 1962, in which Spiro outlines this account of the 1960 founding with John Dwyer. Subseries A: Administrative. Box 1 Folder 26. Lionel Spiro Papers, Wyner Family Jewish Heritage Center.

⁸¹ Letter from Student Council at Yale School of Architecture inquiring about the model of the Harvard Graduate School of Design Supplies dated April 17, 1962. Subseries A: Administrative. Box 1 Folder 32. Lionel Spiro Papers, Wyner Family Jewish Heritage Center.

⁸² The model set up by Spiro and Dwyer gained some attention from the Yale School of Architecture, where student Charles Hosford inquired in April 1962: "In response to the interest of the student body and with the sanction of the school administration, we feel it is an opportune time to initiate a store of this kind." See letter from Charles Hosford to President of the Student Council. Subseries A: Administrative. Box 1 Folder 32. Lionel Spiro Papers, Wyner Family Jewish Heritage Center.

⁸³ Template letter from Lionel Spiro announcing the expansion of the HGSDS dated September 10, 1962. Jewish Heritage Center. Lionel Spiro Papers. Subseries A: Administrative. Box 1 Folder 26. Lionel Spiro Papers, Wyner Family Jewish Heritage Center.

⁸⁴ Louise Pelletier suggested in 2007 that it was during the romantic period of early modernism that the concept of authorship in architecture transformed from an idea of responsibility and supervision to issues of individual creativity and expression. Louise Pelletier, "Genius, Fiction and the Author in Architecture," in Tim Anstey, Katja Grillner, and Rolf Gullström-Hughes, eds., *Architecture and Authorship* (London: Black Dog Publishing, 2007).

⁸⁵ For accounts of this pedagogical system as it was introduced in America by individuals studying in France see a first person memoir Jean Paul Carlhian, "The Ecole des Beaux-Arts: Modes and Manners," *JAE*, Vol33, No.2, Beginnings (Nov., 1979) 7-17. See also Joan Draper, "The Ecole des Beaux-Arts and the Architectural Profession in the United States: The Case of John Galen Howard," in Kostof, Spiro, ed. *The Architect: Chapters in the History of the Profession*. New York: Oxford University Press, 1977) 209-237.

⁸⁶ Unsurprisingly, this attention to artful drawings has been described as reaching its apotheosis in the 1975 MoMA exhibition about the Ecole des Beaux Arts drawings. Some historians at the time noted that this exhibition was equally influential in producing a fetishistic culture around artful drawings that I argue fueled the importance of supply choices at stores like Charrette. For instance Robert Stern observed in 1977 of the exhibition *200 Years of American Architectural Drawing*: "White cardboard models, isolated on a broom-clean datum plane, encased in a glass or plastic display box, and raised off the floor on a pedestal, idealized and miniaturized the new architecture; the weightless cubism of the canonical International Style and the kind of models that could be easily fabricated in a university draughting room or an architect's office formed a perfect marriage of form, intention and production capabilities." In *Stern Drawing Toward a More Modern Architecture*, AD Profile 6, *AmericanNow* (1977): 383.

⁸⁷ Spiro and Dyer's observation that the student body was also a market would shape their broader ambition for Charrette to produce and cater to a post-industrial class of leisure artists: "The trend [sic] toward increased leisure time should add to the attractiveness of marketing "artists" materials to the middle class public. Charrette has developed staff and capabilities which make the company an attractive source for all products sold in a store's art department." See *Charrette: History, Present Condition and Forecast* (July 1970). Subseries A: Administrative. Box 1 Folder 6. Lionel Spiro Papers, Wyner Family Jewish Heritage Center

⁸⁸ Letter from Margaret M. Eskridge to Lionel Spiro dated September 17, 1963. Subseries A: Administrative. Box 1, Folder 26. Lionel Spiro Papers, Wyner Family Jewish Heritage Center

⁸⁹ Letter from B.L. Makepeace Drafting Materials dated September 20, 1960. Subseries A: Administrative. Box 1, Folder 31. Lionel Spiro Papers, Wyner Family Jewish Heritage Center

⁹⁰ Charrette announcement, Subseries 3: Catalogs and PR, Box 2, Folder 26. Lionel Spiro Papers, Wyner Family Jewish Heritage Center

⁹¹ Charrette: History, Present Condition and Forecast (July 1970). Subseries A: Administrative. Box 1, Folder 6. Lionel Spiro Papers, Wyner Family Jewish Heritage Center

⁹² A long tradition exists of stores as an important site of learning about instruments. See James A. Bennett, "Shopping for Instruments in Paris and London," in *Merchants and Marvels: Commerce, Science, Art in Early Modern Europe*, edited by Pamela H. Smith and Paula Findlen (New York: Routledge, 2002), 370-399.

⁹³ This is part of an early research I undertook in the Drawing Office Material Manufacturers and Dealers Association Archive following some leads regarding "exhibitions" of architectural supplies in the 1970s. I was curious to understand why drawings and tools went on display at the same moment in the 1970s. DOMMDA Papers, Warwick University.

⁹⁴ Eugene Clute, *Drafting Room Practice*, 133.

⁹⁵ Correspondence from Tom Salmon to Stewart Feinsig of Charrette Corp. 13 Feb. 1969. Subseries D: Charrette New York, 1960-1984. Box 3, Folder 3. Lionel Spiro Papers, Wyner Family Jewish Heritage Center

⁹⁶ Jane Holtz Kay, "Architecture The Shape of Things," *Boston Sunday Globe* (November 14, 1971).

⁹⁷ See Yale art historian George Kubler, whose 1962 publication *The Shape of Time* challenged the structuring of histories of art around concepts of biography, and originality. Yet even he, somewhat paradoxically, appeared to maintain the distinction of the "copyist" in his formation of the "individual's entrance." For Kubler, histories of art focused on the measuring unit of the artists' biography and tracked an evolution of the artist's intention in this durational bracket of a lifetime. Such a focus, he argued, imposed a false limit on the understanding of art that eclipsed the possibility of continuity in the history of art. Artistic problems and their various solutions, rather than originating with the individual artist, were part of a longer set of impulses that could be traced back to his speculation around the "first stone tools" as a primary form of human invention. In this structural framing, the individual was only useful to understanding a set of conditions of possibility that would precede and follow the artist's entrance to the field. The conditions of possibility and the timing of the artists' entrance could intersect to "shift" traditions, but even if one understood that there were no longer singular acts of genius and instead a series of formal solutions, the problem of the copyist remained in his understanding of timing. The sign of a poorly timed entrance was one in which the individual did not meet with a context that allowed them to take advantage of their sociopolitical or technological context. See George Kubler, *The Shape of Time: Remarks on the History of Things* (New Haven: Yale University Press, 2008), 6.

⁹⁸ Eisenman's own critique of a marked distinction between pre- and postwar Gropius was shared more widely in this period. A good example is provided by a response by Paul Zucker published in 1955 as a review of Siegfried Giedion's publication *Walter Gropius: Work and Teamwork*, in which Zucker noted the problem being blind faith in mechanization following the violence of mass warfare that continued: "their [TAC] collectivistic depersonalization contradicts any possibility of individualistic artistic expression, and shows a glorification of the machine which we are no longer able to share. We are no longer as over-awed by the machine and the possibilities of standardization as Giedion believes. He should at least have discussed the revolt against the principles taught by the Bauhaus and later Harvard School of Design. He missed the chance to give the book a critical balance of this specific epoch in the history of architecture." See Paul Zucker, "Review of Walter Gropius: Work and Teamwork by Siegfried Giedion," *The Journal of Aesthetics and Art Criticism* 14, no. 2 (December 1955), 276. A more recent historiographical take on this period and view of Gropius in the aftermath of World War II is provided by Michael Kubo, who suggested that this turn against Gropius reflected parallel myths of the loss of the social utopic project and at the same time, the

appearance that during his time in the United States, Gropius had become a sellout to market capitalism. Kubo's analysis of this period established a similar tension between the Ecole des Beaux Arts model of individualistic pedagogy and the depersonalized architecture of corporate office organizations and collaboration. For more see Michael Kubo, "Architecture Incorporated: Authorship, Anonymity, and Collaboration in Postwar Modernism" (Thesis, Massachusetts Institute of Technology, 2018).

⁹⁹ "The idea of the team producing architecture, today, seems more valid than it was thirty years ago. How can the individual stand against the giants that have grown out of our contemporary society: Skidmore Owings, Merrill, and Harrison and Abramovitz? These firms have great manpower and technical resources. Why should the individual stand against the power of these organizations." See Student Papers 1960-1963. DR1999:0379. Peter Eisenman, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

¹⁰⁰ "It should be emphasized that this kind of teamwork (SOM) in no way resembled the ideal enunciated by Gropius." Bernard Michael Boyle, "Architectural Practice in America, 1865-1965—Ideal and Reality," in *The Architect: Chapters in the History of the Profession*, edited by Spiro Kostof (New York: Oxford University Press, 1977), 329.

¹⁰¹ The influence of the studio, syllabus, assignments, but also the informal aspects in which a student learned about drawing practice via emulation of peers in the studio. I refer to the voluminous writings of and about Michel Foucault's theories of discipline in relationship to pedagogical institutions as a theoretical frame. For a historiographical survey, see Joan Ockman's recent publication on American architecture schools: Joan Ockman and Rebecca Williamson, eds., *Architecture School: Three Centuries of Educating Architects in North America* (Cambridge and Washington, DC: MIT Press, 2012).

¹⁰² This was a criticism made by Eisenman in his paper, and a letter dated September 1960 from former Cornell classmate (class of '54) and colleague at TAC Earl R. Flansburgh sheds some light on critique of the collaborative framework in operation at TAC. Flansburgh, who was working under John "Chip" Harkness, described a recent "novel twist" in relationship to the design for a new geochemical research building at Harvard: "I presented it to the partners at TAC. They not the client thought it was too strong for the building it was adjoining. So we changed it. They call the architect a professional man because he protects his client from misfortune do [sic] to irresponsible acts on the part of others, who in this world protects the client from the architect. As a result of the Partner Design meeting Chip [John C. Harkness, project architect for the design described] requested that we water the design," Letter from Earl R. Flansburgh to Peter Eisenman, September 1960. Student Papers 1960-1963. DR1999:0379. Peter Eisenman, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

¹⁰³ See John Harwood, "Corporate Abstraction," *Perspecta* 46 (2013): 218.

¹⁰⁴ The implementation of Gropius's early theories of collaboration and teamwork in the architectural office of TAC had, by 1960, led to buildings that Eisenman described as "crass commercial stuff"; cited from Peter Eisenman in conversation with Thomas Weaver. Thomas Weaver and Peter Eisenman, AA Files, No. 74 (2017), 150-172.

¹⁰⁵ Sibyl Moholy Nagy, "Hitler's Revenge," in *Art in America* (September/October 1968). This quote in reference to TAC was found in Michael Kubo's dissertation at MIT. I use it specifically in the context of her invoking a metaphor related to media and tools.

¹⁰⁶ Benjamin H. D. Buchloh, "Conceptual Art 1962-1969: From the Aesthetic of Administration to the Critique of Institutions," *October* 55 (Winter, 1990): 105-143.

¹⁰⁷ It is important here to note John Harwood's argument that the term "corporation" when used in an architectural context produced an abstraction, standing in for a broader set of transformations around industrialization and the

perceived threat this held for architecture specifically. See John Harwood. "Corporate Abstraction," *Perspecta* 46 (2013): 218-243.

¹⁰⁸ More recent reviews of collaboration, even in the earlier days of the Bauhaus, have been less complimentary of Gropius' legacy. For instance, Charles Jencks noted the transformation in the late 1970s as historians gained access to the Bauhaus archive and other collaborators involved in the establishment of the school became clear and began revising his role as an important singular and heroic figure. See Charles Jencks, "Gropius, Wright and the Collapse into Formalism," in *Modern Movements in Architecture* (Middlesex: Penguin, 1977). More recently, Kathleen James-Chakraborty noted that Gropius' theory of collaboration did not extend to crediting, particularly in the case of crediting women's contributions. For more, see "Beyond Cold War Interpretations: Shaping a New Bauhaus Heritage," *New German Critique* no. 116 (Summer 2012): 11-24.

¹⁰⁹ Student Papers 1960-1963. DR1999:0379. Peter Eisenman, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

¹¹⁰ Sol Lewitt, "Paragraphs on Conceptual Art," *Artforum* (June 1967), 80.

Chapter 2: An Exploded View of House II

What is a work? What is this curious unity which we designate as a work? Of what elements is it composed? Is it not what an author has written? Difficulties appear immediately. If an individual were not an author, could we say that what he wrote, said, left behind in his papers, or what has been collected of his remarks, could be called a "work"?¹

—Michel Foucault

The house that Florence and Richard Falk commissioned as their writing retreat was situated on a leveled hill on a rural plot in Hardwick, Vermont. Designed by Peter Eisenman, the house is most famous for its orthogonal layered tangle of white painted walls with cutouts and columns that held parapets and enclosed courtyards. Following the Barenholz Pavilion in 1967, the Falk House—or House II—was Eisenman’s second independent design. As such, it initiated the series that would retrospectively be titled the “cardboard houses,” designed between 1967 and 1980.² One of the most famous of the American so-called neo-avant-garde, it is an impersonal house by design and one of the best known of Eisenman’s series. But this “knowledge” of the Falk House is almost entirely dependent on the published writing and drawing, staged photographs, and recorded anecdotes provided and circulated by Eisenman himself and others after him. Something as simple and self-evident as the name of the house reveals the limitations imposed on historical knowledge when critics rely on this sort of authored evidence. Eisenman eliminated the role of the Falks in the history of the house when he famously substituted their name with a number, changing the title from Falk House to House II. Although this adjustment to the historical record constitutes a form of evidence in itself, serving as a testimony of Eisenman’s efforts to insert the house within a series, it also belongs to a set of careful framings orchestrated by Eisenman to obfuscate an expansive design and construction

process that brought together a network of people, materials, tools, events, within and against the political and social context of the long 1960s.

This chapter attempts to treat House II as just that—a commissioned home, designed and built between 1969 and 1971. Examining this single house refutes Eisenman’s own framing that it was one in a continuous set of theoretical explorations. Instead of perpetuating this account I insist on understanding the house as a singular historical artefact. It is the culmination of a series of planned and unplanned activities by various contributors, as well as instructions relayed between Eisenman’s office in New York and the construction site in Vermont. I am reconnecting the sites of production—the office and the construction site—that Eisenman sought to keep separate in the documentary records, including those that were published, those that remained unpublished, and even those that were erased. The continuous theoretical explorations that crossed from house to house were the writing and presentation ‘diagrams,’ or mechanical drafted views, intended in some way for publication. What is less well understood is the secondary sets of production documents related to the more banal and compromised aspects of practice. Examining the narrative of the house’s construction reveals a different scale of work: a more collaborative negotiation with the construction team involving models, phone calls, measured codes and set outs, and copious discrete details delivered on the fly. When faced with these ultimately uncontrollable pressures that arose in everyday domestic construction, Eisenman turned to drawing production to fabricate an alternative account of a controlled virtual and dematerialized design process.

As chapter 01 established, architectural drafting and administration shared the overlapping concept of graphic supplies, papers, and reprographics that sustained the

bureaucratic necessities of paperwork and record keeping. In the 1960s, drafting and mechanical drawings were a procedural overlap between artists working with conceptual practices and architects. House II is one of the first instantiations of what Eisenman would call conceptual architecture, borrowing the term from the conceptualism of the 1960s. This critical approach was one of the ways through which Eisenman attempted to craft a critical authorial position out of the false choice between being a conceptual designer or a technician that he and others faced in 1960. As I argued previously, the conceptual model of those like Eisenman, who sought out a critical position in drawing for drawing's sake, unwittingly invited technocratic entanglements into their drawing and publishing activities. Far from being conceptually removed from the material and the technical, the proliferation of drawings detached from building production signaled a shift in the theater of production as architecture increasingly engaged with other forms of cultural production, such as academic research, exhibitions, and teaching.

Methodologically, this chapter expands on the official traces, statements, and archived documents to incorporate photographs, interviews with external contributors to the Falk House, and a socio-technical analysis of the materials used to build, design, and construct the house. The resulting authority that Eisenman established in this period extends the known historiography related to architects and their retreat into theory.³ This retreat has been variously written in ways that maintain the basis of dematerialization of architecture into systems of signification. Building on these arguments, I demonstrate that an important part of this retreat was a material strategy of erasure and redirection that manifests textually in his early conceptual work but also functioned unexpectedly in the formation of his office, building site, and post-occupancy documentation. These activities were related to attempt to control of visibility and to maintain the difference between drawing and building production. This chapter examines how the supplies of drawing

production, including those for annotation, editing, and xerography, afforded an image making approach that paralleled the politics around dematerialization and conceptualism in the 1960s. As the privileged site of inscribing and record keeping, paper was also the place where an architect demonstrated their professionalism and knowledge of administration, legality, and coordination.

I Office

“A new fledgling seems to be quietly taking its place among the variety of specialized building types we have today.. more and more architects are stealing time to apply their theories and logic to the housing of their own firms.”⁴

I begin this chapter by defining what it meant to coincidentally establish an office during the 1960s, in a historical moment renowned for a transformation in the value and hierarchy of traditional institutions—including conventional notions of authorship but also ideas around material values, the value of a drawing, and the value of a house. Rather than setting up an independent office, Eisenman founded the Institute of Architecture and Urban Studies (IAUS, hereafter “the Institute”) and, within this building and institution, ran a private practice from which he administered the houses.

Like the artist’s studio, the architect’s office has long been a place of mythical representation of “work” and authorship.⁵ A robust body of scholarship on the importance of constructing the image of the architect’s workplace can be found in American architectural journals during moments when the image of the architect was under transition. For instance, between 1870 and 1920, a series of articles featured exemplars of modernizing business practices

through office portraits.⁶ As Mary N. Woods has described, the careful imaging of the office in this period was a part of managing the transition from the atelier model and the artistic aspects inherited from the French Ecole des Beaux-Arts academic system to the modernized business aspects of management and efficiency that transformed the American drafting room into the engine of the office. These articles focused on how the office functioned and highlighted features of administration and management that were typical of the turn of the century reorganization of practice.

Between 1950 and 1970, there was a similar resurgence of interest in imaging the architect's own office, this time with a focus on the increasing specialization and corporatization of practice.⁷ Not only was the architect selecting their kit of supplies and tools, but the office itself had become a tool of personalization. The articles in this period focused on the reflexive nature of the architect designing their "own" office in various ways. The articles focused less on organization and function but instead emphasized the architect's unique personality and suggested that it could be applied to the design of the office as a "showroom" for their clients reflecting the rising importance of public relations in practice.⁸ If the offices documented in the earlier articles kept the client carefully tucked in a front of house replete with models and framed drawings, the later offices reflected a client exposed to the working and storage spaces as the 'theater' of architectural production. This emphasis on the showroom reflected the broader turn toward communication and service of the period. The image of the architect in this context was one shaped by the growing importance of advertising as part of architectural services.

While the single-family house has been one of the important sites in the construction of modernist authorship, the office emerged as an equally important site in this period. In fact,

during its ascent in the 1960s, the office became increasingly linked with the house as a sign of authorial construction. A comprehensive article published in *Architectural Record* in 1953 as part of their *Building Types* project described the architect's own office "quietly" emerging as a specialized building type.⁹ The article suggested that this emergent type was the result of architects applying their theories to produce direct expressions of individuality. The article described the "housing" of the office, a telling turn of phrase given that many of the offices featured were single standing buildings developed by the architects and designed in ways that made them appear to be domestic spaces (Fig. 2.1).¹⁰

The article not only established a specialized building type out of the architect's own office but also a new authorial type—the "architect-client"¹¹—who designed their self-image as a publicity exercise. The article was accompanied by photographs of various domestic office scenes that were carefully staged. The single desks that were shown in these spartan scenes contained small items of personal effects—a pair of spectacles casually strewn on a desk, a shop drawing ready for checking, scale rules—as though the room had recently been vacated (Fig. 2.2). The photographs of the drafting offices contained more activity and posed drafters over their desks. The interior was the focus, the article said, because it was where the architect-client "most often expressed their individuality."¹² Almost to underline this point, the photographs accompanying these articles were largely empty of the architects, as though the room itself could speak for them.

The office was increasingly seen in terms of public relations and advertising. Two years later, in 1955, a similar article surveyed three offices including SOM San Francisco, Neptune Thomas in Pasadena, and Edward L. Varney Associates in Phoenix.¹³ In particular, the Neptune

Thomas was displayed from various courtyard views that emphasize the domestic-looking setting of the office and was described as a “show window” of architectural service. The article reiterated that the architect’s office was an “important and often invaluable—although silent—aid in client relations.”¹⁴ The appearance here of the office as an instrumental tool for self-promotion reinforced the idea that these offices were places where clients could experience the work of the architect. This perception of the office also appeared to animate the ways in which these spaces often took on domestic touches in order to produce the showroom effect. According to another article in *Architectural Record*, the office not only reflected the personal and “self-conscious” character of the architect but also transmitted different “visual signals.”¹⁵

The act of finding and designing an office became one of the first and most important acts of postmodernizing architectural authorship.¹⁶ By 1966, the phenomenon of the “architect-client” had only intensified in the search for new ways to individuate oneself by the design of their office. That same year, *Progressive Architecture* magazine featured a special on “The Architect’s Own Office.” Here, the “stealing time” of the 1953 article had become the “busman’s holiday,” a turn of phrase referring to work done outside of office hours for free. Significantly, the article described the “good economics and a chance to advertise by displaying the skills of his craft.” They described the office as a special image; one now considered their office a part of their image making practices, beginning with themselves. As in earlier features, the *Progressive Architecture* survey covered specially-designed spaces, but this time it introduced them as projects of finding and converting existing buildings almost in an “as-found” suggestion, raising questions of creative interpretation and the uniqueness of finding an existing site:

There are as many kinds of architectural offices as there are architects. Architects' offices can be found in the most varied spaces—in houseboats, stables, banks; in town houses, warehouses, meeting houses; in office buildings large and small.¹⁷

The emphasis was on individuality of each of the office approaches, and featured many “first offices,” including that of Richard Meier’s one room Manhattan “floor through,” Frank Gehry and Gregory Walsh’s one floor former art atelier, Lawrence Halprin’s “creative” and “fluid” space with a table tennis centerpiece (Fig. 2.3), and the conversion of James Polshek and others’ water tower space into an office that celebrated the technical and infrastructural elements remaining from the still-working water storage as found “furniture (Fig. 2.4).”¹⁸ These summaries reinforced that designing the office was a crucial aspect of the fashioning of oneself as an author.

It was around this time that Eisenman was setting up his first office too, producing work under the designation of “Peter D. Eisenman AIA,” a little after he established the Institute for Architecture and Urban Studies in 1967.¹⁹ While the houses were published later under the precarious title *Houses of Cards*, it was his office in the IAUS that was not freestanding.²⁰ Though licensed as an architect in New York since 1960, Eisenman designed his first office—outside of his academic one at Princeton—based on a decision to set up an Institution or Institute rather than a private practice. In a 1968 letter to Thomas D. Freeland, Eisenman reflected on his recent establishment of the Institute: “I still feel the need today for a group as opposed to the individual (*hence the Institute rather than the private office*) [emphasis added].”²¹ Eisenman’s statement equally and more importantly exposes an ambivalence toward his own individual and professional practice. Eisenman’s claim to “choose” the institute over a private office was

perhaps an attempt to circumvent the choice that had been offered to all graduates of architecture in 1960 between a joining a corporate practice and engaging in the larger scale technocratic form of architecture or the genius model. Any alternative, however, had faded by the time he had left the T.A.C. office. As Lucia Allais and others have reflected, the implementation of a “group” via the model of an institute can be attributed to the emergence of the postwar military industrial academic complex and the ascendancy of the Cold War think tank, in more ways than simply the designation. With an initial ambition to engage in “real world problems” of planning cities, IAUS was an institution that manufactured an interdisciplinary existence between academia and practice as a convenience of funding that would later shift with the economic context toward education.²²

One of the most important aspects promoted by Eisenman around his early houses was the seeming absence of a professional office structure from which his projects were administered. Beyond the walls of his office at the Institute, most anecdotal accounts emphasized the sense that the institution produced legitimacy and stability, often where there was none. Yet even if Eisenman claimed a criticality of commercial and corporate practice and constructed an image of an unstructured private practice within the Institute, there are other ways that his work might be described as influenced by the technical and bureaucratic form of paperwork. A sense of institutional stability and legitimacy was partially built out of an investment in the production of a published record. In this period, Eisenman and others borrowed ideas of preservation embedded in paperwork, and they rethought the notion of the archive alongside the production of their work. They learned the material processes that included record keeping, transcribing events into texts and reports, capturing design processes as drawings, and saving multiple annotated or edited texts in their filing systems. Andrew McNair, one of the IAUS’s founding fellows,

reiterated this describing in retrospect the project of the Institute in part as “myth making.” He further suggested that this was not simple documentation but rather by-design, because the inscribed records, filed and published, did not always match up with what had happened at the time.²³ Even more, McNair noted that “it was what did not happen that was important.”²⁴ This acknowledgement of the record’s departure with, or representation of, reality was another important intersection with the culture of the think-tank that operated in a world of reports, revisions, and redactions. Together with the materials of Tippex, green and red pen annotation, and other forms of textual amendment that made them possible, these alterations produced a visual culture that Pamela M. Lee has described as an “aesthetics” of the think tank intrinsic to the political and technological moment.²⁵ The aesthetics of the think tank related to the supplies that were used by typists, transcribers, and other support staff. Understanding what McNair described as the importance of messaging and record keeping not only offers important context regarding Eisenman’s relationship to the Institute but also applies more widely to many of the architects who ran institutions in this period, from Hejduk at Cooper Union to Alvin Boyarsky at the AA. The meeting transcriptions in the *Five Architects* publication or the later *Charlottesville Tapes* further reveal the bureaucratic entanglements and office logistics that undergirded the everyday work of seemingly progressive/radical architectural practice.²⁶

In the case of the IAUS, McNair, who described the “mythmaking” that went on there, never thought it necessary to explain the material ways in which the records were constructed and maintained. An examination of the archive reveals an infrastructure of materials, staff, billing systems, and work hours at the IAUS that allowed Eisenman to run what was essentially an informal “office” for himself as Peter D. Eisenman AIA inside and without the strictures of professional service. His office was a work environment that was run after-hours and in

exchange for the cultural capital of being at the Institute, network exposure, and reference letters.²⁷ These organizational aspects of Peter D. Eisenman AIA were the scaffolding onto which he wrote and imaged his theories of architectural autonomy. Eisenman structured and sustained this office within the Institute via a flexible, informal, and economically “nimble” organization.²⁸

The small, informal office model is a structure of practice that falls outside the focus of most recent historiographical scholarship on American professional practice, which tends to focus on the postwar period growth of larger multinational corporate practices. One might argue that interest in revisiting the formation of American business models of architecture reflects a reaction to the neoliberal labor exploitations of the model of small, informal offices like Eisenman’s that operated at the intersections of academia and practice.²⁹ Notably, these histories have overlooked the offices of those architects like Eisenman who, at least initially, ran similarly informal offices out of their academic posts or via grants; yet despite what appeared to be a deliberate failure to produce a professional and commercial practice, they ultimately managed enormous influence as architectural authors. Even the staffing for Eisenman’s projects was informal. The Falk House was run by a rotation of interns whose names went unrecorded and led by Graduate Fellows Gregory Gale and Randall Korman who were moonlighting between official Institute projects and the House after-hours.³⁰ Gale and Korman’s payment for this work, then, was considered covered by the fellow payment, although there are several handwritten calculations of reimbursements and hourly rates and site visit reimbursements that suggest an hourly rate of \$3.50 was also applied for overtime.³¹ Work engagements of this nature were becoming increasingly common to architectural practice that was already built out of a

culture of interning as training combined with a growing trend toward freelance work models especially for those working in technical jobs such as delineation and drafting.³²

Part of the compensation was also considered to be derived out of the “value” provided by being at the Institute, which was romanticized as an important hub of progressive, intellectual discursive interchange, dinners, exhibitions, and lectures. It is very clear, however, that the Institute had also been modeled on and within the elitist milieu of the American Ivy League, with affiliations both formally and informally established connected by recommendation letters for the students who would come and go from the building. The ideas of collegiality and critique in the establishment of the IAUS were tested earlier in the collective Conference of Architects for the Study of Environment (CASE), which was a loose, social group of architectural academics, including Eisenman, who began hosting meetings from 1964. Unlike CASE, which was simply a peripatetic coming together of individuals, the Institute promised a brick-and-mortar institution rather than meetings for peer review.³³ Similarly to CASE, however, was the idea around compensation. In an early committee authored letter related to the running of CASE, the author put it best, describing participation as one activity that was uncompensated with money but instead repaid with “intellectual stimulation.”³⁴ This notion of intellectual stimulation-as-currency is one instance of an informal economy that Eisenman orchestrated at the Institute.³⁵

The pull between the private office and the Institute presented a curious problem of organization and management for his early houses evident when considering the limits of his desk as a working surface. A photograph taken of Peter Eisenman in his director’s office at the new 47th Street Institute in 1970 by Graduate Fellow Gregory Gale provides a description of work (Fig 2.6). The photo depicts him at work at his desk, which is a surface teeming not with

drawings and sketches but with accumulations of ‘supplies’—loose paper, legal pads filled with writing, and an excessive crowd of three Luxor drafting lamps overhead. In comparison to the scientifically managed desk of the 1920s, Eisenman’s desk is radically disorganized.

Administrative writing, grant writing, reference writing, and theoretical writing could all be found in the papers inhabiting the desktop. Should Eisenman have taken a break from his writing and looked up, he would have viewed a desk of an entirely different nature: a cleared surface on which an early Fome-Cor study for House III sat on a plastic gridded cutting mat. It is unclear if this model was the focus of Eisenman’s writing, or whether the pages of text were being pushed over the desk to direct the model making and drawing activities of Gale and other unrecorded contributors and interns. The direction barely matters. What is more important is the fact that this most granular scale of material production was very much a part of his theoretical design work that was often self-described as dematerialized, or free floating. Eisenman could not divorce the theoretical from the material.

The photo of Eisenman falls outside of the careful framing of Eisenman’s own supplied portraits. One of several photographs taken by Gale from this period, it was published by Suzanne Frank in her memoir of her time as the librarian at the IAUS. When printed, the black and white image plays a fortuitous trick on the observer, because Eisenman’s writing instrument—whatever it was—has disappeared into the inked blackness of his sweater, leaving the appearance not of a writing hand but a performing one, an index of the writing act. This erasure of material craft and evidence of labor, I argue, was an important aspect of his early work, though he rarely if ever acknowledged these underlying dynamics.

The play of erasure and redirection of attention was one of the key theoretical constructs of Eisenman's early projects, exemplified by House II; around the same time, these project papers were passing across this disorganized desk alongside an essay titled "Notes on a Conceptual Architecture," which he prepared for a special November 1970 edition of *Design Quarterly* edited by John Margolies. Writing to Adolfo Natalini of Superstudio in late May, Margolies explained his concept for the edition.³⁶ He planned to focus on the "direct expression of conceptual architecture," borrowing the practices and writing from conceptual art and presenting in his invitation the context for which he understood this term to enter architecture. Each contribution was to run four pages and was to be considered "a la Archigram," referring to the British collective active since the 1960s and best known for their reproduced montaged images and published as a zine to disseminate their visionary and speculative projects from the scale of the mediated body to that of the city (Fig 2.7). If this directive set the context that would link visionary architecture and conceptual architectural practice together, Eisenman's contribution took a counterpoint and used the page to reconsider the "architecture" of an academic text. The four pages he contributed lacked a body of text and instead punctuated the page with typeset numbers, following the conventions of the Modern Languages Association (MLA), as though they referred to a text printed in invisible ink. At the foot of the page, his discursive notes centered himself amongst a group of interlocutors from art criticism and philosophy.³⁷ A shared attention to the structures that organized information and ideas was common to the thinking of this group. These considerations around organization reflected the influence of structural theory in considering the ways that value and power were regulated, constituted, and maintained.³⁸

Eisenman's essay played a game of value—inflating and deflating—titling this ode to the academic footnote as “notes,” which one considers as a minimal type of text, an *aide-mémoire* or something informally given to another, a devalued form of writing in comparison to an academic essay.³⁹ Implicit, then, in this play was Eisenman's understanding and decision making about the distinction between what might be considered authored and academic writing and that which might be considered quotidian or informal. Eisenman's footnotes were also symptomatic of an economics at work underpinning the publishing of theoretical writing at this time when texts could be packaged and repackaged into anthologies. These activities were happening in a process of what François Cusset describes as “de-contextualisation,” which was not simply a theoretical claim but also a material and historical operation that separated the specificity of the author and their writings, first from their translation from French to English and second from their original contexts of publication and institutional affiliations. This decontextualization—or perhaps more specifically, this transformation of material into “text”—allowed for the recombination of writings into anthologies and edited collections. These activities not only accumulated the writings of an author but also opened up other types of authorial contributions—prefaces and translators' notes—all activities that formed alignments with more famous authors and thereby a transference of value from a known name writing a forward for a lesser known, or in the acknowledgement of peers in the footnotes.⁴⁰ Similarly, “Notes” demonstrated the way that a footnote functioned as a social and intellectual device—as a peritext, it was used to extract value from the authors that were cited, and to position one's voice within a discussion.

These questions of value and organization were also material ones and Margolies's prompt was in line with material tendencies of conceptual thinking in the 1970s.⁴¹ One of Eisenman's footnotes in particular cited a text relevant to this discussion: Lucy Lippard and John

Chandler's 1968 *Art International* article "The Dematerialization of Art." The article outlined tendencies in what the authors called conceptual art practices, including the critique of art making and spectating.⁴² As a challenge to an artistic market, Lippard and Chandler proposed that dematerialization was a way to evade collection of objects and instead shift attention toward processes and temporal activities.⁴³ In order to challenge objecthood and monumentality, certain art practices were engaging with book and magazine culture because it was seemingly accessible, portable, and open to the invention of formats. The so-called "dematerialization" of conceptual art did not mean that things were no longer materialized, but instead of focusing on a finished object, one might look at the processes and documents around their production, leading to a more ephemeral idea of the art object.⁴⁴ Within this context, systems of distribution also became a way to challenge the traditional models of where one might encounter a work of art, with books, magazines, and mail art all providing opportunities to test systems such as the postal system, subscriptions, and the publishing industry at large. These ideas were built on a much-propagated myth that there was an anti-commercial impulse of resistance to the commodification of art. However, it was clear that rather than simple resistance, other models and sites of consumption were being modelled.

The conceptual practices that Eisenman admired and borrowed from were made by an amorphous and individuated set of artists, unified in their heterogeneous practices by the invention of the terms by which their work could engage with ideas over objects.⁴⁵ One important overlapping approach was to challenge the role of the artist as the maker and to find strategies to distance their making. It is within this context of moving from artist as maker to artist as administrator—or supervisor and coordinator, rather—that the working drawing of architecture, the workmanly drafted and strictly communicatory document, increasingly

appeared. The mechanical drawing was sometimes the subject of the work, signifying a type of depersonalized world of technicality, mass production and intellectual property. However, sometimes it was simply used by artists in much the same way that an architect would use it—that is to say, not a public document but a pragmatic and communicatory document. The bureaucratic nature of these drawings and their reprographic nature were apprehended and “made visible” in an exhibition in 1966 that is of particular importance here. Mel Bochner, who was in his final year at the School of Visual Art in New York, staged a now-famous display of the seemingly behind-the-scenes production materials. It was titled “Working Drawings and Other Things Not Made to be Viewed,” which declared that drawing was quietly undergirding the work of more and more artists who were outsourcing their production. The format of the exhibition was also important: pedestals carrying nothing but quotidian binders full of Xerox receipts and instructions. They are the stuff of the architectural office, administering and managing the construction of something. Bochner understood that the materials produced their own aesthetic world that was apparently foreign to the gallery and yet so familiar to architects. What is most important about this exhibition, however, is the sense of control and visibility that it presented and the way that this would become useful also to Eisenman and others. Contained within the receipts of the binders was the promise of transparency: one could see the receipts and other forms of communication and confirm the production processes behind known works. However, this transparency was conditional. The receipts did not reveal the new type of control that John Roberts describes as intrinsic to conceptual arts transference of skill from handicraft to management. The receipts also did not reveal that the artist’s intention reinserted themselves into the process in the form of management and quality control.⁴⁶ This is a form of administrative and managerial control that I attribute to Eisenman as erasure and redirection.

Eisenman's "Notes" in the *Design Quarterly* engaged with these questions of audience and distribution, though it is clear that the withheld text produced another unintended effect. In the fine print underneath his compulsory biography on the last page of his article, Eisenman promised the reader they could write in to receive the full text in the mail. However, in a letter to Mildred Friedman, the Design Curator at the Walker Museum of Art and Editor of *Design Quarterly* (DQ) sent after the article was published Eisenman explained that, "as with all theoretical issues, if you allow them to age for a few months, one always finds that there are changes necessary. Hence my original article stands in front of me snipped, taped, red marked, etc., as soon as it is retyped, I shall send to you" (Fig 2.8).⁴⁷ However, he would not send this article out to Friedman until April of 1971. Apologizing profusely in that letter, Eisenman explained that "My article was revised and revised and practically became a conceptual act in itself."⁴⁸ (Fig 2.9) These letters show that the text as it stood at the time of DQ publishing was not the one that he would send out to those who requested copies. But Eisenman's words also imply that there might be more than one version, or that he might continue to update the essay and send it out as others requested.⁴⁹ The fact that he described this state of perpetual motion in the text as related to the snipping, annotating, and taping of the document suggested a type of revising of the document that was afforded in part by the working processes that encouraged a type of material and textual re-composition and reproduction. At the same time, removing or erasing the text when publishing meant it was no longer fixed in ink on the magazine page and decoupled into its own timeline, which he continued to alter and edit the text producing potentially not a mass-produced text but a series of variations related to when a written request for the article was made via letter.

This thinking around updating texts was perhaps influenced by an architectural logic of working drawings where variations were an everyday occurrence and where there were textual standards for how to manage and coordinate changing information. A working sketch on yellow trace paper shows that the first design task for House II was the design of the title block for Peter D. Eisenman AIA (Fig. 2.10). The title block suggests several things by its sheer existence. First, by its very nature, the title block was designed to be mechanically repeated across not only all drawings but all versions of each drawing. It is a duplicative mark that would standardize the information on the drawing sets and enforce an order to the record keeping of versions. Second, it was a sign of drawings destined to leave the office and connect with the construction site. The title block document then is a textual partner to Gregory Gale's photograph of Eisenman's desk. Title blocks as primary bureaucratic navigation devices on working drawings operated like an interface between various forms of information. Within the title block, there was established an order of accountability and authority, from the name of the office—including their AIA designation that signaled they were a professional architect with professional insurance, the initials of the drafts-people under this office banner, the contributing consultants, and the names and address information of the clients. This social map of professional responsibility was joined by a subsystem of drawing-set communication, titles of drawings, numbering systems, and indications cross referencing from page to page. And finally, the title block held perhaps the most important information: the revision list where one could understand the drawing as updatable. The AIA Guides for Architectural Practice listed the information the title blocks most commonly contained but there were no standards of how one lay the information out leaving a space for interpretation. In the center of the page one can see a page template, or a drawing of a page of paper in an architect's office. The largest square indicates the edge of the paper, the

middle square indicates the figure on the drawing and the way it should be raised and centered, and finally in the right-hand corner the smallest square indicates the space where a title block would sit on a page. One can see a conventional title block drawn out with the office name and address, project name with an analysis alongside of figure and fields of information in graphite blocks of solid and void, and finally floating off to the side is the words without enclosure, simply lines of text. Eisenman's title block and working drawing template demonstrated an acceptance of the necessities of professional procedures, but it also refigures the dominant understanding of his textual procedures. While "Notes" is today the best-known early writing by Eisenman, other unknown documents indicate that he consistently relied on erasure, redirection, and organizational highlighting to manage questions of value. The erasure and redirection that has largely been understood as a textural strategy also extended to institutions and houses. Whether hidden or not the document inescapably shows an attention to the professionalism that Eisenman was keen to separate out from the conceptual side of the work.

II Site

"In House II there is a concern for space as the subject of logical discourse. Such a logical structure of space aims not to comment on the country house as a cultural symbol but to be neutral with respect to its existing social meanings."⁵⁰

Foundational to the historiography of the origins the humanist architect is the separation from the craft of the building site that the Renaissance practice of drawing afforded.⁵¹ This separation was

historically intrinsic to the image of how the architect worked, such that when architects sought to challenge the professionalized aspects of the field in the 1960s, they often worked on the distinction of this separation. They either worked directly on-site in design-built projects and claimed to work without the need for drawings, or they inflated the importance of artful drawings as an end product whereby the site was considered to be a page as was the case with House II (Fig. 2.11). These challenges to architecture's professionalism were contemporaneous to the reorganizations between atelier and site in art around the concept of site-specificity and the notion that an encounter with the site was equally an encounter with the 'real', whether socio-politically, environmentally, or legislatively. This belief led many American artists to leave the studio in the late 1960s to produce site-specific works out of complex community engagements.⁵² While in American architecture this same understanding of the site was especially charged as the point of contact between a broader discursive disavowal of sociotechnical and political forces and what Allais has called a retreat into theory.⁵³ As Sylvia Lavin has pointed out, this retreat into theory did not necessarily occur by abandoning buildings and sites altogether for the written page. Instead the retreat was made by managing the professional aspects of negotiating with the context of the site, something that was suppressed, and the constructing of what she called 'architecture itself' which meant the image of an autonomous 'disciplinary' discussion.⁵⁴ A key part of the management of these two worlds was the theory writing, the editing on paper, and the image making which as I will discuss involved the same operations of erasure and redirection.

Eisenman had met the Falks when he and Richard were assistant professors in the "academic enclave" of Princeton University in the late 1960s.⁵⁵ He was in the architecture department and Richard in the Public and International Affairs. Though less recorded in the

disciplinary histories of discursive formations of critical architectural theory, Eisenman had an established active academic social life at Princeton with a set of younger faculty from various departments. Through this interdepartmental and therefor interdisciplinary mix of academics that was produced through the campus lifestyle, Eisenman met Richard and Florence Falk. At the time they met Richard was a professor of international law and human rights and a Viet Nam War activist, and Florence Falk was at the time a theater actor who would during the construction of their house co-found an ecological produce collective called the Whole Earth Center in Princeton.⁵⁶ Academic social events in Princeton were important opportunities for Eisenman to consider his first moves into professional architecture. In 1967, he made an early attempt to formalize his social Princeton acquaintances by proposing a development idea for a row of townhouses designed for a site on Evelyn Place.⁵⁷ While this townhouse development did not move past this initial stage, he continued his conversation with the Falks. Florence and Eisenman both agree that it was at one of the Princeton dinner parties that they discussed a country property she and Richard had recently purchased in Hardwick, Vermont, that they hoped to turn into their writing retreat.⁵⁸

The influence of structural analysis was a common ground between the academics and a concrete instance of the cross-disciplinary popularity of structural models of analysis and the informal knowledge exchange that occurred at the academic dinner parties. It was during one of these conversation that Eisenman famously promised the Falks a “Chomsky House,” referring to their mutual admiration of linguist and public intellectual Noam Chomsky.⁵⁹ More importantly, Eisenman would design this house without charging the regular architect’s fees, instead passing along to the Falks only the costs of his site visit expenses, reprographics, and telephone bills for his communication with the project foreman.⁶⁰ In their agreement, the Falks entered into an

informal economic engagement and a level of remove from the project that would eventually lead to misunderstandings about the house design that were so dramatic that the Falks terminated Eisenman's role in the project and made legal threats against Eisenman.⁶¹ The documentary record of the house that Eisenman designed for the Falks captures the litigious and fractured relationship between the architect and his clients. Their eventual falling out was, I argue, written into the very foundations of their relationship and working arrangement because it was based on a level of familiar trust and informality that had extended from the communality of the faculty lifestyle.⁶² It also more broadly indicates an attitude toward the client-architect relationship that rejected the possibility of the client as a source of feedback and criticism. By House IV, this attitude had culminated in the removal of the client entirely and given way to an infrastructure of alternative sources of validation, including the distancing required for Eisenman to become a critic of his own designs.

The initiation of the house around the promise of importing a linguistic theory into the design was in part what would ultimately lead to his falling out with the Falks. But it was also symptomatic of the period when architects were using the single-family house commission as a way to produce individualistic experiments in form and expression that would come to mark the decade of the neo-avant-garde of architecture. This was noted and discussed in a special edition of *Progressive Architecture* that same year on single family housing. The editorial noted that not only was the single family home was “the smallest architectural unit, a designer can undertake with absolute control.”⁶³ The simple program and minor individual economics of single family houses allowed for the bracketing out of external forces such as complex regulation and planning, and the consultants that went along with them. An apologia was offered the following year in the *Progressive Architecture* Awards report, which included a published conversation on

single family homes. The discussion centered around the “experimental” nature of the single-family houses being judged that led to idiosyncrasies and difficulty forming comparative criteria. In response Robert Venturi who had built a career from a foundation of his mother’s home, somewhat unsurprisingly exclaimed of single family homes: “Thank goodness there’s an opportunity for the young architect who does not want to go immediately into the big organization, to do his individualistic thing.”⁶⁴

The Falk’s version of autonomy and connectivity that they sought in their retreat to Vermont and Eisenman’s own version based on a self-reflexive architecture conflicted at the site in Hardwick. The Falks’s plot of land was a former dairy barn outside of Hardwick. Vermont following the completion of the interstate freeways in the 1960s was a popular state for “seasonal homes” similar to the Falk’s. Their move to Vermont was coincident with what has been described as a “back to the land movement” of predominantly white middle class progressives purchasing former agricultural sites in the greater state of Vermont.⁶⁵ They were escaping from late capitalism’s malls and fast food in search of a nostalgic “more authentic” localness and setting up alternative lifestyles and self-sufficient movements including self-build systems, cooperative farming, and food exchange programs.⁶⁶ The “natural food” movement that Florence was actively involved in had grown out of the countercultural mistrust in governmental regulation and led to network thinking around individual producers and small grass roots transparency of food distribution. Bound up in this countercultural move, the legislative freedoms that many architects in this period sought out in Vermont would begin to shift in 1970 precisely in response to fears of overdevelopment that led to increased state-legislated controls over development to maintain the rural image.⁶⁷

According to the AIA handbook, one of the first activities of a professional architect beginning a project was to visit the client and the site in order to begin collecting the information about the program needs, budgetary limitations, and existing buildings or context that would shape the building. This initial period of an architectural commission, after the articulation of the program, they described as the “investigation” of the “site conditions.”⁶⁸ The handbook definition included the “character and condition” of nearby or remaining buildings, climactic factors, landscaping, and flora. The AIA defined the *site* as the plot inside property lines that encompassed landscape that had been measured and surveyed, and it was sometimes subject to municipal code. These professionalized, technical descriptions contained in the architect’s handbook suggested a neutral and incontrovertible sense of what made a site.

The historiography of Eisenman’s House II almost exclusively agrees with the main argument of Eisenman’s published statements at that time: the design of the houses were devoid of the traditional site “pressures” identified in the AIA handbook that would interrupt the pursuit of a self-referential design method.⁶⁹ These accounts also overwhelmingly avoid examination of the house, its site, and its construction, following the lead of the architect. In this model, Reinhold Martin engages the Falks’s house as an exemplar of Eisenman’s efforts to substitute the physical environment for the linguistic one, and in this Martin argues he produced a theory of the environment whereby building-elements worked together as a cohesive signifying system that was part of the neoliberalization of architecture.⁷⁰ The drawings made during site visits reveal the material procedures of drawing involved in the substitution that Martin described. When analyzing these drawings in combination with photographic records provided by the builders, one gains a more fulsome picture of the discussion of site in this period around questions of

preservation and the erasures required to produce a “neutral...logical structure” but also the stakes of the cultural symbol of the country house in America in the 1970s.

This is most clear in studying the ways that the site was initially documented by Eisenman, prior to beginning his design. The property was formerly a dairy farm and had two existing agricultural structures remaining on the site side by side: (1) a ship-lapped farmhouse and timber lean-to and (2) a separate large timber barn.⁷¹ These existing buildings complicated any notion of a tabula rasa for the design that was intrinsic to Eisenman’s free floating architectural visualizations. A set of black and white photography and a measured drawing of the farmhouse were captured during a site visit that together suggest that the brief had at least started as an alteration to the existing two-story structure (Fig 2.12-2.14).

The measured drawing of the farmhouse was made on sheets of yellow legal paper taped together into a long T shape to fit the full floor plan (Fig. 2.15-2.16). It is an ad-hoc document that reflects an onsite measurement as a draft for an absent more neatly drafted technical drawing that would follow back in the office. The measured drawing as a type belonged to the epistemology of objective reproduction of an existing building or structure into a portable form of information for use in the office. As a drawing type, measured drawings left no space for expression, interpretation, or personality in order to demonstrate their accuracy as recordings of site facts. They were commonly tasked to training architects as a form of hands on learning. The direct and close observation on site in spending time with a measuring tape, transcribing the building to paper, was seen as an encounter with the ‘real’, in the shape of oddities found in buildings rather than concepts. More importantly here, however, the measured drawing was used

commercially in practices for encountering as-builts and at the same time linked to the preservation movement as a way to document buildings for studying by historians.

Abandoned and decommissioned agricultural buildings and barns marked the transition of the 1970s U.S economy from an agricultural and manufacturing one. It is no coincidence that during this period, several books were published around the significance of barns and agricultural structures; at the same time, the ways that those who desired self-sufficient lifestyles and new forms of living were coinciding with the downturn and selling of working agriculture buildings leading to a spate of conversions and adaptive reuse.⁷² The measured drawing in this context was described paradoxically as the best way to preserve these “vanishing landmarks.” Following a Xerox logic of preservation via reproduction, then, a publication from 1972 claimed that it was precisely through what Eisenman claimed was ephemeral and conceptual material of paper that one would find an inverse sense of permanency: “Rapidly being destroyed—burned or torn down—these barns, with roots going back to a remote past in Britain and Europe, are more than worthy of such a *permanent* and beautiful record as this.”⁷³ By the 1960s, the Historic American Buildings Survey (HABS) program that in part was documenting many of these landmarks as measured drawings were at the same time provided them as a resource for government agencies, educators, and preservation bodies.⁷⁴ They were also engaging with American schools of architecture for the production of more measured drawings, thus merging the production of important historical records with the epistemological claim of learning about architecture firsthand.⁷⁵ Eisenman clearly did not intend to transform this measured drawing into historical knowledge in the way that other careful historical documentation might. The simple act of documenting the barn in this way represents a potential decision at a moment when the preservation movement in the United States was growing stronger at the same time that an

expanding definition of anonymous agricultural buildings as vernacular architecture converged with a neoconservative push toward the historicism in search of authenticity and narrative.⁷⁶

Beside the measured drawing, two sketches suggest that Richard and Florence had hoped initially to reuse the old farm-house and that Eisenman had, at least initially, explored this option (Fig 2.17-2.19). These sketches suggest an approach toward the farmhouse that focused on designing a frame around the existing structure. The first and most detailed sketch was time stamped early in the project on January 2, 1969. Eisenman signed it in the bottom left hand corner. These two acts—the time stamp and the signature—signified a value placed on the chronology of the drawing in relationship to the larger process. Similarly, the lines appear hurried and overdrawn, wiggling with indications of vegetation. Floating in the middle of the page in felt tip is an axonometric view of a structure with pitched roof that and an unusual level of specificity of materials, stripes horizontally indicate siding and the roof is also hatched in. The entire drawn-structure appears tethered to the page by a felt-tip driveway that winds from the page edge up to the house. Drawn around the barn is an enclosing frame of horizontal and vertical elements. These are not regular enough to be a grid and are instead aligned to the proportions derived from the farmhouse rather than any universal system.

What started as material specificity and detail in the first drawing was reduced and reshaped by the second; all that remained were the single pen lines of an ideal grid frame, regular and rational. The only sign of the farmhouse that lingered was perhaps the pitched roof volume drawn fitting to the frame. This drawing is perhaps the most recognizable of what would become Eisenman's grid foundation. Early signs of a language are appearing in the drawing: two black columns stand on either side and diagonal from each other. What was shown in the first drawing

as a frame around the existing farmhouse structure is, by the third drawing, a grid of regular elements, and any indication of the farmhouse was morphed to fit this regulation barely readable beyond the pitched roof. These drawings are a curious set that suggest that the grid, rather than a tabula rasa overlay, emerged (at least briefly) in response to the agricultural logic of timber frame construction built into the barn on the site. In much the same way that these drawings molded and dissolved the farmhouse into reduced lines, Eisenman convinced the Falks that the house should be a new build and it should be built on the site where the existing farmhouse stood beside the barn utilizing only partial footings and the basement from the existing farmhouse. Almost as though it were as simple as pushing a form around a page, the shiplap structure was dismantled and moved to a neighboring site. House II was built to reuse the existing basement and foundations.

This fantasy trio of drawings parallels what occurred in conversations with the clients as Eisenman convinced them that the house should be a new build, and that the best site for it should be on the bluff where the existing site was. The barn then was relocated leaving behind the foundations and a basement that would become the site-office for the construction team of the house (Fig. 2.20-2.21). Much like the connection of the Barenholz pavilion to the Barenholz house, the barn was never featured in the official photographs of House II and was framed out. More than this, the house was always photographed during the winter months when the hill surrounding was shrouded in white snow so that it could be masked out of photographs and replaced with the whiteness of the paper-surface. In a doctored photograph published in the later *Houses of Cards* publication, a Norman McGrath exterior photograph of the house was prepared by the Charrette reprographic service through an elaborate and imperceptible set of alterations. These included the cutting of the house from the ground plane and the sky above the treeline

(Fig. 2.22). Isolated with a string of trees along the horizon, the house was then pasted on a sheet of paper and blended at the edges using simple Tippex strokes to appear like snow pushing up against the building. These acknowledgements of the virtual paper-space of the flatbed picture plane over the photographic detail were material expressions of an attempt to suggest a dematerialization and absorption into the virtual, rather than an alignment with the documentary recording of the building in its site. A photograph taken by the builders sometime around 1971 shows normally obscured vantage of the Falks's house side by side with the timber barn, in which the timber grey and the stucco white constitute the two striking visual languages (Fig. 2.23).

III Construction

It is well known that Eisenman worked hard to collapse the distinction between the real and the representational work of architecture, between objects and concepts and between houses and models. What is not well known, however, is that the industries of material production in the United States had long preceded Eisenman in making this effort. Cardboard, the very sign of conceptual architecture for Eisenman, and timber studs, the very index of the American Construction Industry for everyone from Reyner Banham to Siegfried Giedion and Frank Gehry, were unified in their origins in lumber mills and by the systems of circulation and manufacture through which they were disseminated.

Florence Falk would much later reflect that problems with their second home became more apparent as the house moved “from the abstract to the real.”⁷⁷ Her aside reflects a common evaluative refrain in response to Eisenman's projects. The problems she referred to were the

couple's delayed understanding of what the house looked like and how it functioned, something that did not become clear until the house was half built. The house began as a dinner party discussion when they were colleagues in Princeton, and existed initially in the informal social and intellectual relationship of collaboration. The house became 'real' as the project moved slowly from dinner party conversation and onto the building site. Florence's characterization of the events highlights a fundamental miscommunication between the clients and the architect. The moment that this miscommunication ruptured was around a simple Fome-Cor model that was sent to the building site as an instrument for communicating with the builder and clients. Florence recalled that it was seeing the model in a client meeting as the first time that the design of the spaces became clear to her. In the model she was able to see aspects of the design that would not function for their lifestyle including a series of half walls on the second floor sleeping areas and cuts in the floor. During this meeting, the clients had advised the architect that these would need to be amended. It was some months later, when Richard went to inspect the building under construction, that he discovered that the gaps viewed in the Fome-Cor model had not been amended and were now visible in the building. It was at this meeting that the clients fell out with their architect, and Eisenman was removed from the project.

Famously, however, Eisenman's interest in this same model was in the challenge it could present to the linear progress from design to building. Eisenman's definition of abstraction to realization did not align with the clients, precisely because of his interest in the reorganization of this paradigm. His theory of cardboard architecture was based on the understanding of the ubiquitous model making substrate as an "antimaterial" and therefore the way to materialize conceptual architecture.⁷⁸ Referring to cardboard in relationship to theoretical ideas of the moment was a wider-phenomena, many thinkers turned toward cardboard in order to argue for

theories of ‘dematerialization’.⁷⁹ Cardboard then was a material degree-zero that both artists and the architects returned to as a place to claim the conceptual nature of their work. Referring to cardboard was more than a theoretical intersection between various disciplines referring to properties of the material that they rendered neutral, cheap, temporary and playful. Cardboard, as an everyday material used in the packaging of goods, meant it could be deployed in art practice as a debased media, and it challenged the permanence required for values of art.

The singular term and concept ‘cardboard’ drew a connection for Eisenman to the earliest stages of conceiving or presenting a design or building in model form; however, to maintain the singular nature of cardboard here would overlook potential counternarratives of a more specific examination of the many types of cardboard available in the 1970s. Moreover, the manufacturers of these products were making items that crossed from graphic uses on the desk to building panels on the building site. As it turns out, Eisenman’s cardboard architecture was not made of cardboard at all, but a then-recently engineered composite graphic art board made of polyurethane sheet sandwiched between craft paper. The model Eisenman made used a product called “Fome-Cor,” a type of paper-based foam board first developed in a collaboration between the American Monsanto Chemical Company and St. Regis Papermill in the mid-1950s. This collaboration quickly led to the founding of the Fome-Cor Corporation in 1959.⁸⁰ Fome-CorTM entered architecture as a model making material, following a period of attempts to market it commercially as insulated packaging for fresh-goods.⁸¹ When these markets failed to take off, the Fome-Cor Company sought out other areas for using their card including using it as a replacement of Plywood sheathing for housing, which ran into regulation issues between states, followed by uses in signage. The two places where the Fome-Cor Company found some traction and a potential market by the late 1960s were in mobile or temporary homes and automotive

fields.⁸² It was finally decided that rather than attempting to find specialized avenues to shape the material, Fome-Cor Corp. would simply supply it as standard sheeting and sell it as a “graphic board” and a model making material in graphic supply stores.

In this capacity in architecture, it was praised for its quick cut and forgiving assembly. As a composite insulated panel, Fome-CorTM was a smaller scaled version of building system of plastic construction technology that Monsanto had been manufacturing in the US since the 1950s as lightweight molded ply and fiberglass structural panels.⁸³ While these were used in the production of lightweight temporary buildings, such as Monsanto’s House of the Future, and promised as the aerodynamic construction system and aesthetic of ‘plasticity’ at the scale of Fome-CorTM, the composite panels promised instant structural integrity for a model wall but the limit of orthogonal geometries built out of the flat cardboard sheets. The model of House II shows that the cardboard of Eisenman’s “cardboard architecture” was an engineered product that complicated any assumption of signifying conceptual design.

The ways in which Eisenman managed the construction process of the Falk House offer another way of revisiting his efforts to separate between conceptual and material practices. In particular, the method of communication with the office interns and later the builder suggest a rereading of the theoretical language of design operations (*rotate, shift, etc.*) which at times became instructional. It is in this descriptive language that the drawings overlapped between the working set and the published set. Because of the distance between New York and Hardwick there were two important devices in the building site office: (1) the Fome-Cor model that was retained there for the builder’s reference and (2) a phone. Despite the existence of a working construction set of drawings, details were designed along the way after site visits and Malzak

spoke with Eisenman's office daily. Instructions were conducted via phone in part. To consider, then, the phone as the primary line of communication for the house, rather than the drawings, opens up a series of questions about the purpose and significance of the process language Eisenman was renowned for using.

Unpublished design development drawings from the office showed that numerical and textual annotation played an important role in the earliest drawings in communicating with the team producing the drawings. A series of early design drawings on yellow trace show the plan in various configurations of the wall and columns laid out. Each was marked the wall height and in later versions these heights were given color and letter codes. These iterative drawings appear to correspond to a later set of paste ups produced for a fictional paste-up for an unrealized cover for Italian architecture magazine *Casabella* (Fig. 2.24) yet in these earlier versions there as an intermingling of marks for construction including notes about minimum dimensions for fireplaces, setbacks and stairs. These drawings complicate the distinctions between the conceptual and built processes (Fig. 2.25-2.26). One particularly telling drawing is a pen axonometric that appeared to be made as a study or explanation of the walls showing their extruded heights. Alongside these walls are operational instructions: "this wall will move to this plane in plan," says one with an arrow indicating a dotting of the wall above; "call me if this isn't clear 874-7340," (Fig. 2.27) says another indicating the back and forth of verbal communication that occurred in relationship to the drafting of the operational diagrams. In this context, the role of language begins to take on a slightly different nuance relative to the one we have heretofore understood. However, similar examples on the sketches in the archive suggest that the operational language employed by Eisenman in describing his diagrams to an architectural audience also served a useful in-office function to instruct those making drawings and models. In

a similar and perhaps more pointed way, this instruction and description would become more acute with telephone correspondence, through which Eisenman began breaking the building into measurements, distances, and material thicknesses. The confluence of operational language between the office and construction site and the office and an imagined disciplinary audience was also then evident in the mechanical axonometric that would later be published to explain the virtual process of House II. A series of large diazoprinted pages showing axonometric transformations each had a typed label attached by a paperclip mixing descriptive language of measure and dimensions with the more diagrammatic movements of the design (Fig 2.28):

3 dimensional (vertical) striation—closest to dense corner- highest set of walls

Closer to NW corner

Walls maintain same level (6'-0", 3'-8 1/2", 1'-5") All Modular dimensions

These typewritten slips would eventually disappear from the published drawings, but they offer a window into the intermingling of operational language during the construction process.

Eisenman engaged with a model of design related to art practices exploring systems, process, and seriality. However, his focus on seriality was never extended to the construction of the buildings and kept strictly in the realm of text and design method. He rarely discussed in any depth the construction materials used for the Falk House on the record. Notably, an already-serial layer of his project lay beneath the silicon paint and plywood sheeting in the ubiquitous material of lumber and the timber stud frame construction.⁸⁴ The suppressed materials introduce the house into the world of industrial manufacturing, a commercial image culture, and alternative models of architectural engagement such as catalog homes that, despite appearances, were

operating according to the ideas of conceptual practice. The construction of the Falk House relied on a wooden frame and system that was the product of the lumber industry, real estate development, and governmental regulation and financialization of home ownership in the US.⁸⁵

Construction on the house began in October 1969 with construction company Dutton Smith & Company, a developer of custom homes around Hardwick. There are four color photographs of the Falks's house taken as private shots by the local foreman and carpenter Ernie Malzak between 1969 and 1970 while the house was under construction (Fig 2.29-2.30). This sequence of development shows the raising of a light wood frame construction with cross bracing and plywood sheeting cladding on the exterior. The construction system for the framing was the 'platform method,' where one built platform floors, tilting the wall frames up and then stacking the next floor on top, one after another.⁸⁶ It was a framing method reached a level of quiet ubiquity during the postwar housing boom in America. It was also a construction system that has recently become visible after being misrepresented by architectural historians. As has been noted by David Monteyne, the platform frame was either not discussed and often misidentified as the better-known balloon frame which had received inflated attention.⁸⁷ Siegfried Giedion and others ensured that balloon framing was romantically understood as a uniquely "American" building technique, because of the balloon-like "lightness" of timber framing as if to suggest a free-floating dispersal in the development of America's suburbs. However, as it turns out, the majority of the burgeoning expanse of tract housing development was constructed out of the same ubiquitous but seemingly-anonymous platform frame technique as Eisenman's house for the Falks. At the structural level, the construction process of the Falk House was not distinct from that of the suburban tract housing being built at the same time, an important material detail

that complicates the dominant narratives of theoretical, conceptual innovation and architectural authorship that circulate around House II.

In grappling with this convergence between two serialities, one that was artful and appealed to theoretical and mathematical constructs and one that was rampantly industrial, Eisenman produced a curious drawing on an extended run of yellow-trace. He titled the drawing “Analysis for Platform Framing” and depicted the house design divided according to the platform logic of floor plates and wall sets (Fig 2.31). He also further separated the design into the tripartite “sectors” of the house and included in some sectors “alternatives.” The drawing brings to the surface this pragmatic “un-disciplinary” plywood platform system and united it with the serial matrix format of drawing he was developing: the mechanical and stripped back line work, the simplified massing, and the axonometric view (Fig. 2.32). Eisenman drew this mostly anonymous and industrially-produced light wood system of platform frame, a method of construction that already embodied the type of seriality in American tract home development that he was vocally working against. And yet the drawing seems to neither serve a client nor a builder. Instead, it constitutes an intellectual and analytical exercise of formal analysis rather than a document of construction or explication. The drawing reflected precisely the bind of an architect appealing to a theory of seriality and attempt to “discipline” into a serial-conceptual ordering a construction system that was already implicitly bound to the complex industrial logics of the local lumber mill and the National Plywood body.⁸⁸

Though Eisenman could not escape the material dimensions of his project, he could attempt to curate the narrative around it. Eisenman referred to this platform construction system

only once in his published accounts, in relationship to the use of wood construction that could produce a structural redundancy that would be legible in the positioning of the columns:

This (conceptual and perceptual bivalency) was demonstrated in House II through what might be best called the use of structural redundancy. Because of our experience with the particular nature of wood construction, we know that a certain positioning of either load-bearing walls or a grid of columns produces in each case a reading of a complete structural system.⁸⁹

When the building was under construction, however, what transpired was materially different; the construction process revealed not a problem of structural redundancy but one of structural over-abundance. In one particular instance, a letter left by Gale for Eisenman described an “awkward detail” discovered during a recent site visit: an undesirous column was required in the corners of the house. In his note, Gale proposed a solution he described in the letter as an “invisible column.”⁹⁰ A detail sketched separately showed the column in question already as a dotted line as if to indicate the very solvent effect that his suggestion of using a grey paint would have (Fig. 2.33-2.34).⁹¹ To imagine that the grey paint would dematerialize the column reflected thinking about the building pictorially as though one were constructing an image as a way to manage the aspects of design that escaped control. As the next section shows, this attitude toward recuperating the project through image making or pictorial thinking reached new levels of effort.

IV Documenting

When Eisenman made his first site visit in 1969, he produced a measured drawing of a set of buildings that he would eventually dismantle on the one hand and that would determine the foundations for the Falk House on the other. He was not involved in the project for its completion, however, so this section examines the ways that he went about documenting the Falk House in order to publish it as part of the record of the *Houses of Cards*. The story of how the house was finished—or left unfinished, rather—collides unexpectedly with Eisenman’s own efforts to document the house with aerial photography. This expedition and the image making processes that followed reflect an important episode in shaping the record of his projects. It is an early and clear example of the ways that he not only constructed persuasive documents but actively intervened in the record of the house. By reconstructing several elements from disparate archival and anecdotal sources, I argue that that what appeared to be a straightforward documentation process comes into focus as Eisenman’s attempt to recuperate the house that he had lost control over. Taking to the skies in this period to capture a photograph of the house methodologically linked Eisenman to questions of measure and empiricism. The aerial photography also open up a discussion of the Falk House against the larger backdrop of scientific and militarized image making and objectivity that re-contextualize the documenting of the second cardboard house in a specific and material historical moment.

The American environmental movement legislated and regulated air measurements at the same moment of artistic examination with dematerialization and communication.⁹² Technologies of image-making including the development of early digital visualization transformed the capabilities of accuracy, reach and access for producing images in remote places and scales. A

particularly well-trodden example of this was the transmission of photography of the earth taken from space missions in the 1960s that fed the growing ecological movement with imagery the closed system of earth. At the same time conceptual art making practices were working with infrastructures and supports to explore qualities of ‘thin’ matters, such as “water, steam, dust, flatness, legibility, temporality.”⁹³ These conceptual reifications produced new images of the interconnected and ecological nature of everyday life. It was a shared concern around the ecological movement that would bring Florence Falk together with graphic designer Tadas Zilius, who would finish the interior of House II after Eisenman’s exit. In 1970, during the construction of their house in Hardwick, Florence was active with a local grassroots group of environmental activists and organic farming advocates. This group would go on to collectively found the Whole Earth Center storefront in Princeton, where Florence met Zilius. He had impressed Florence with furniture built from standardized mill lumber, built in a simple, unfinished, and resourceful manner, stripped back ‘untreated’ aesthetic reflective of the types of concerns around chemically impregnated domestic materials. By 1971, Florence turned to Zilius in order to complete the construction of their house in Hardwick and, meeting a desire that Zilius had expressed, to move his family to the countercultural milieu of Vermont.

Construction was not yet complete in 1970 when Eisenman and the Falks finally fell out. Their disagreements related to the budget and the resolution of the design elements that the Falks had requested to be changed between the model and the house. By the time Eisenman left, the exterior sealants and glazing were completed, but the interior remained without finishes and any built ins. Zilius came on as a private design-build helper over the course of 1971. He was an incongruous figure, working inside Eisenman’s design in an informal exchange for board and a small amount of money for his finishing off of the House. He arrived to Bunker Hill to find the

imposing white-box of a house on a hill unfinished beyond the plumbing, air-conditioning, and electrical wiring. A set of aging slide photos taken by Zilius at this time show the state of the House as he found it (Fig 2.35-2.38). One showed his military green Kombivan parked to the side, the house on the right had several of boarded windows and the exterior surfaces appear unfinished and already weathered. Zilius did not have any contact with Eisenman or contractor Dutton Smith, but found a relic in the site office of the house: the Fome-Cor model, a reminder of the original design intentions. He set up a temporary site-office inside the house, with a drawing station for sketching out problems as they arose. Unlike the photograph of Eisenman's office at the beginning of the essay, Zilius' make-shift drafting table appears almost empty of drawings. He described it not as a place of design work but a place where problems were solved, and his approach reflected the broader design-build culture prevalent in Vermont at that time.⁹⁴ Without a set of drawings from Eisenman's involvement, Zilius' approach appeared one of simple pragmatism. This mix of living on building sites led to a temporality of design and life that was seen as slower and more opportunistic, finding materials and solving problems as they arose. In a similar manner, one of the first things Zilius did when moving himself onto the house-in-construction was to set up a small desk area where he could draw details for the things he was building. He bought a load of untreated pine lumber from the local mill and assembled pieces into various informal fittings for the house including living room lounges, shelving systems, a kitchen set, and bedroom drawer sets. These unfinished pieces reflected an aesthetic of material transparency, unlike the invisible columns of Eisenman's design.

In 1968, before moving to Princeton, Zilius had worked in the office for the Charles and Ray Eames in Los Angeles as a graphic assistant. He had an informal training in graphic design at Robert P. Gersin Associates in New York prior to arriving to the West Coast. At the Eames

office, he worked in the roughing out of the graphic art department with the mechanicals, setting things for typesetting, and preparing files for reproduction. He constructed images from Zip-a-Tone, acetate masking, and films in a mechanical fashion alongside their photographic team. During this time, he helped with the production of their film *Rough Sketch for the Powers of Ten*, which later became the better known and circulated 1977 version, *The Powers of Ten* (Fig. 2.39). The film was one of several projects that rendered visible scientific thinking for public education purposes.⁹⁵ In order to do this, however, the Eames turned to the technoscientific and militarized image type of the aerial vantage. The film used animation and mechanical reproduction to produce the “zooming” scales that collapsed the idea of the camera lens with the operations of photographic enlargements. As Caren Kaplan has pointed out, “aerial imagery is inevitably tied, historically and technologically, to modes of passive and powered aviation as well as methods of mechanical production and reproduction that structure the possibilities and constraints of the image.”⁹⁶

The rough sketch version that Zilius worked on differed from the later and better known film, as an analogue depiction of a dial based control screen that would later become a digital interface. Both versions shared the basic premise to illustrate the relative scale of the universe for an audience of physicists but also for less specialized audiences.⁹⁷ The film’s premise involved a camera drawing back from a picnic scene outwards into the atmosphere and solar system before returning back in and penetrating the limits of the man’s skin to reveal a hand drawn-depiction of the body’s ecology. As such, the film was heavily invested in the problem of measurement and scale. It also grappled with the abstractions of the post-human scales. Clearly, the measure of the human figure was a concern in this first version more than the later one, given the addition of a Pan-Am 747 passenger jet sitting directly beside the picnickers. The airliner signifying a mass of

human bodies as a transitional object holding the frame long after the two figures had disappeared from view. An assumption of scientific objectivity undergirded the modeling of the film, which attempts to depict a world of accuracy and measure linked to technologized forms of visualization.

While this previous work by Zilius seemed to be an irrelevant detail to his later work for the Falks, the connection to the Eames' visualizations would in fact prove to be a more important aspect of what was to become of the Falk House as it lived on in the office records. Most accounts of House II do not address what happened to the house after Eisenman's exit and the completion of the building by Zilius. Built into the rhetoric of the house was the understanding that a representation of design process was more important than the finished house. Therefore disregarding the house that stood in for traditional notions of 'finish' was simply a demonstration of his own method. However it turns out that the house was fundamentally important to the project—so fundamental, in fact, that sometime between the Spring of 1972 and Fall of 1973, in one final act of recuperation of the Falk House that he had left a year earlier, Eisenman sent his assistant Randall Korman on an aerial photography mission. He described the trip to Korman as a proof, to test whether the house looked like a model from an aerial perspective. This language of testing suggests that Eisenman's interests in the photo were linked to the accuracy and measure at the root of this surveillance photography. As it turns out both the Eames' video that Zilius worked on and the an image of the Falk House taken in 1972 reflected the legacy of aerial photography and a concept of 'reading' that had emerged out of the American Military in their training of soldiers to take photographs from planes.⁹⁸

Korman's ability to fly a plane and capture the shot was related to his military experience and training. He was able to rent a Piper PA-28 "Cherokee" from the White Plains airport in upstate New York and flew the small plane to Hardwick. Using his piloting skills and a Konica SLR camera with a telephoto lens, he spent some time circling above the Falk House taking photographs.⁹⁹ Aerial photography was not simply seen as a scientific image, but one that also appealed to abstraction in the turn from vertical to a "flatbed" horizontal orientation of information and in the detachment from the vision of the upright body to a distant, remote, automatic view.¹⁰⁰ It was a similar complex of mechanized technology as the Eames' *Rough Draft*. Technically, however, the shots that Korman captured were not true aerial vantage but approximated an oblique similar to an axonometric view. Pragmatically, Federal Aviation Authority regulations also dictated the terms of the aerial photography: general operating and flight rules for low-flying aircraft formed a geometrical circumference 1,000 feet above ground for light planes, which meant that Korman would have needed to maintain the altitude of the plane while still getting the shots he needed. Each snapshot taken of the house involved moving between the controls of the plane and those of the camera. The plane's droning engine was audible from the ground, just loud enough to draw the client's son to the window, where he was captured in the frames—a small but visible figure pressed up against the glass pane.

The skill of "photo interpretation" initially developed during World War II in order to train soldiers how to take accurate, "truthful" aerial images from their planes and at the same time how to identify objects from these photographs in order to read and interpret the "meaning and significance" of those objects on the ground.¹⁰¹ Photointerpreters were seen as mediating figures who could "decode" an aerial photograph and read measure and scale in order to provide intelligence to the military and private companies. The popular appeal of this skill is illustrated

by an article in the *Washington Evening Star*, which published a demonstration of the accuracy of the photointerpreter:

Some years ago, for a feature story, *The Washington Evening Star* obtained an Air Force reconnaissance photo of the capital, taken during a practice mission. An editor picked out a house at random—and asked an Air Force photo-interpreter what he could tell about it. Then *The Star* sent a reporter with measuring tape to check on the results. The verdict came back that the photo-interpreter was pretty accurate, except of something in the backyard. The photo-interpreter had called it a wading pool, 9x12 feet. Wrong, said the reporter. It's 10 feet 3 inches by 9 feet by 3 inches, and it isn't a wading pool, it's a goldfish pond.¹⁰²

This anecdote, circulating as it was in a popular newspaper, suggests the type of public demonstrations that were part of the constitution of objectivity and method around this scientific method of seeing and knowing.¹⁰³ The interpreter's accuracy was reinforced in the article, and it finished with a flourish: the homeowners reported to journalists that the goldfish pond had indeed been converted from a wading pool, further attesting to the accuracy of the interpreter. There was a body of knowledge built up around the study of the ground from the air as something that could be “de-coded,” measured, and known, rather than simply “seen.” The connection of measure and program was significant in this context in which Eisenman's process sought to dislodge program from form.

However Eisenman's aerial was less a test of the house passing as a model, as he initially pitched it and became an exercise in editing and amending. From Korman's film roll, the pair selected views to be sent out to a photolaboratory for retouching. A combination of processes

were applied to the photograph that would isolate the house from its context, scale, materiality, and inhabitants. Korman's expedition is matched to a mechanical document housed at the Canadian Centre for Architecture and erroneously catalogued as a "view of model" (Fig 2.40). In this reprographic context, mechanical documents—layers of "copy" pasted up for plating and printing—were primary sites of work and were rarely seen outside of printer's studios, if at all.

¹⁰⁴ Like all examples of mechanical documents, the "view of model" bares each layer of activity and communication that would have otherwise been rendered invisible in the published image.

A retouching technician bleached out the shadowed textures, relief, and vitality of weathering from the roof and façade. They applied bleaching agent like white gouache to several surfaces, amplifying the brilliant white paper effects of the building-as-model; and conflating drawing with the photographic surface, they drew fine graphite lines along each of the building's edges, sharpening them. The treatment of the landscape, however, was the most important step, with the house appearing isolated and floating—an effect achieved by masking and dusting an airbrushed layer of grey paint to make the terrain. The same technique applied to the rouge corner column rendered the barn invisible. Overlaid on the newly flat grey backdrop, the shadow of the house is a curious matter. It is drawn by hand—one assumes by the retouching artist—with an outline fitted to the photopaper and not distorted by the landfall of the site. More than this, the profile that suggests an impossible lightness. Such a representation recalls on the one hand the role that shadows played in photointerpretation as a conveyor of measurable information, and, on the other, the contested history of skiagraphy, a technique of drawing that relies either on observation and memory or exacting calculations. This representation wavers between seeming facticity and interpretation.¹⁰⁵ The shadow on the photograph is not indexical to the house. Instead, it was designed, drawn freehand in graphite; it presents a simplified, edited

form and erases signs of the terrain beneath.

Removing these elements also removed the very indicators of measure and legibility that photointerpreters used for identification and that the Rough Sketch film promised with its scale bar and dials. Eisenman, whose work was trafficked in the discourse around signifying elements, now needed to find ways to mute some elements in order to reproduce an image—not to capture the building as it was, but to convey the smoothness of cardboard models. As such, it was the human figures caught in the frame during the snapshot and other details indicative of true scale that were to be wiped out. The conceptual absence of the human figure was one of the important qualities of aerial photography's distance based abstraction. If the media of photography with its button-pressing initiation had already conceptually downgraded the agency of the artist to an operator, it was equally a fascination—and as the Eames's video showed, an *anxiety*—to see the human's disappearance from the photograph.¹⁰⁶ The promise of these disappearances was a truly mechanical one that separated an object from the humanistic underpinnings of the human figure as the centralizing measure of scale and proportion. The figure of the client's son at the window, the body a resistant sign of realism and scale, was erased from the photograph, bleached, and returned to the shadows of the room he was standing in. These subtle interventions on the photograph's surface produced a profoundly confusing image—one void of scale and any other signs of life and one severed from the original subject of the photograph. These steps removed the information that would indicate the scale of the house and substitute those with a series of effects that would instead indicate that the photo captured a Fome-Cor model. In doing so, the altered photograph returned us to the world of the grey-melamine desk in Eisenman's office.

These amendments were part of the erasure and editing to the archival record. In a 1981 interview for the catalog of the IAUS exhibition *Idea as Model*, some nine years after the Falk

House was completed, Peter Eisenman said, “House II was built to look like a model (often when the photograph of House II is printed in a magazine, it is mistitled a ‘model photograph’).”¹⁰⁷ In a way, Eisenman’s statement sounds triumphant: it signaled that his ambitions to deflate the importance of the house in favor of the model had worked. Korman’s aerial photographs effectively reduced the platform ply and GE silicone house on the hill in Hardwick, Vermont, to nothing more than a Fome-Cor model. By design, however, these interventions are entirely imperceptible in the appearance of the image as published amongst photographs of models in Eisenman’s first collected works, *Houses of Cards*.¹⁰⁸ Beyond matters of fabrication, the effectiveness of the Falk House aerial also relied on the then still-persistent belief that photographs held evidentiary power and, further still, that in reading a photograph in conjunction with its label, one could be persuaded of what they were seeing. This is what William J. Mitchell would call the “reality effects” of photography, which persisted despite the growing examples of photography’s vulnerability to subjective intention and falsification.¹⁰⁹ This aerial photograph marked the tail end of the resistant assumptions of the verisimilitude of photographs, which dwindled rapidly over the decade as photographs became increasingly theorized according to the very same postmodern frameworks that influenced Eisenman.¹¹⁰

While Eisenman attempted to curate the historiography of House II by shaping selectively a narrative of radical, conceptual architectural design, this chapter’s examination of Eisenman’s office, the historical context of the site of the house, the economic and material dimensions of the construction process, and various tactics of documentation unravels a more complex historiography. Examining the site and the construction of the Falk House shows that, rather than being disparate spaces, the two sites—the building site of the house and the conceptual realm of the architect’s desk—were becoming increasingly linked by a material

industry of technology, instruments, and logistics. Finally, this examination reveals that Eisenman's focus on the representational aspects of the house eventually led to his exit from the program, but, even before his departure, the focus on the representational and conceptual left a vacuum in which other agents and activities entered. Far from being the dematerialized design process that Eisenman attempted to narrate through the proliferation of drawings detached from building production, the construction and production of the Falk House could not be removed from its everyday material and technical entanglements.

¹ Michel Foucault, "What is an Author?" in *Foucault Reader*, ed. Paul Rabinow (New York: Pantheon Books, 1984), 101.

² I use House El Even Odd (phonetically playing with Eleven-odd) as the bookend here. This house is also known as the Castelli House because it was designed and featured in *Architecture II: Houses for Sale* exhibition at the Leo Castelli Gallery in 1980. The first essays on 'cardboard architecture' were published in the 1972 catalog for the Five Architects alongside House I, and II. The first compendium of the houses was *Houses of Cards* which was initiated in 1973 but would not be published until 1987. See Museum of Modern Art (New York, NY), ed., *Five Architects: Eisenman, Graves, Gwathmey, Hejduk, Meier* (New York: Wittenborn Press, 1972); Peter Eisenman, *Houses of Cards* (New York: Oxford University Press, 1987).

³ A primary source for this description is Manfredo Tafuri's critical quip of the 'retreat' into the boudoir first presented at Princeton University in 1973 and published in K. Michael Hays, ed., *Architecture Theory since 1968* (Cambridge, MA: MIT Press, 2000). More recently it has been articulated by Lucia Allais, "The Real and the Theoretical, 1968," *Perspecta* 42 (2010): 27–41, and Reinhold Martin, *Utopia's Ghost: Architecture and Postmodernism, Again* (Minneapolis: University of Minnesota Press, 2010).

⁴ This is the lead sentence in a survey article published in *Architecture Record* in 1953 as part of their multi-year Building Type Studies (this was No. 194). This quote in particular is relevant not only because it articulates the architect 'stealing' time as though working on something without a client and for themselves was an illicit practice. The linkage of the architect's office as the application of their theories to design also was a link that had heretofore been described in relationship to their own homes. Likewise in the quote the description of 'housing' their firm which I argue was in part one of the distinctions of the offices surveyed that many of them appeared to be domestic in scale and appearance. See *Architectural Record*, vol. 113 (January 1953): 140–166.

⁵ There is a robust literature around the artists' studio or atelier as a place of mythologizing in art production that is intrinsically bound up in the formation of authorial models. In particular art historians such as Rosalind Krauss and Caroline Jones examined the ways that romantic model of lone authorship persisted despite the mechanization of production, and later with the imbrication between art and industry in the postwar period, and the ways in which this was expressed and repressed in the discourse of art history and criticism. See Caroline A. Jones, *Machine in the Studio: Constructing the Postwar American Artist* (Chicago, IL: University of Chicago Press, 1996).

⁶ Mary Woods identified this surge of publishing around the images of the professionalized architecture. For more, see Mary N. Woods, *From Craft to Profession: The Practice of Architecture in Nineteenth-Century America* (Berkeley: University of California Press, 1999).

⁷ This resurgent interest was related to the transformation in authorship examined in Chapter 1.

⁸ "Architects' Offices Western Examples," *Architectural Record*, October 1955, 190–195; "Architectural Record's Building Types, Study Number 194: Architect's Offices," *Architectural Record*, January 1953, vol. 113, 140–166; "The Architect's Own Office: Showplace and Workspace," *Progressive Architecture*, September 1966, vol. 47, 126–139; "Economy and Flair Architect's office," *Architectural Record*, December 1969, vol. 146, 111–118; "When an Architect Designs Their Own Office," *Architectural Record*, April 1971, vol. 149, 101–108.

⁹ The showcased offices were compiled from projects already published between 1947 and 1953. "Architectural Record's Building Types, Study Number 194: Architect's Offices." *Architectural Record*.

¹⁰ The article suggested that their focus on single standing offices was less a choice than the result of a broader trend toward decentralizing the architectural office and the architects ability now to exist outside of the business district. "Architectural Record's Building Types, Study Number 194: Architect's Offices." *Architectural Record*.

¹¹ "Architectural Record's Building Types, Study Number 194: Architect's Offices." *Architectural Record*.

¹² "Architectural Record's Building Types, Study Number 194: Architect's Offices," *Architectural Record*.

¹³ "Architects' Offices Western Examples," *Architectural Record*, 190–195.

¹⁴ "Architects' Offices Western Examples," *Architectural Record*, 190.

¹⁵ "When an architect designs his own office," published in *Architectural Record* the author Barclay Gordon suggested that architects designing their own offices reflect the personal and "sometimes self-conscious" results: "Each is different in character, in emphasis, and in the kind of visual signal it transmits." See *Architectural Record*, April 1971, 101–108.

¹⁶ This premise has been one of the most important arguments of Sylvia Lavin's recent exhibition *Architecture Itself and Other Postmodernist Myths* at the CCA. For catalog, see Sylvia Lavin, *Architecture Itself and Other Postmodernization Effects* (Leipzig: Spector Books, 2020).

¹⁷ "The Architect's Own Office: Showplace and Workspace," *Progressive Architecture*, September 1966, 126–139.

¹⁸ A similar article published in 1971, titled "When the Architect Designs His Own Office," states that these offices are "usually personal, sometimes self-conscious.. each is different in character, in emphasis, in the signals it transmits." "When an Architect Designs Their Own Office," *Architectural Record*, April 1971, vol. 149, 101–103.

¹⁹ In 1967, the first office was on 47th Street and 5th Avenue in Midtown Manhattan. Initially there were six people in the office, so the space was small with a conference room, reception area, and two offices (one for Eisenman and one for William Ellis), as well as an open drafting space. In 1970, the IAUS moved offices to a larger venue: a penthouse at 8 West 40th Street.

²⁰ Interview with Andrew McNair, in Suzanne S. Frank, *IAUS, the Institute for Architecture and Urban Studies: An Insider's Memoir* (Bloomington, IN: Author House, 2010), 260.

²¹ Peter Eisenman to Thomas R. Vreeland Jr., January 9, 1968. AP143.S10 Series: Personal Papers, Peter Eisenman fonds Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

²² Lucia Allais, "The Real and the Theoretical, 1968," *Perspecta* 42 (2010): 27–41.

²³ In some cases, the imperfect record is unintentional. For instance in a conversation with Diana Agrest in 2014 at a viewing of her film *The Making of the Avant Garde*, Sylvia Lavin asked her about the decision to use a soundtrack when presumably the recording would have captured constant noise of conversation, and instead there was a decision to silence. Agrest replied that this was simply the decision she made in purchasing a Super 8 camera without sound capacity, describing the "fiddly" magnetic tapes. However, Agrest added that the importance was to capture the "atmosphere" which she described as the viewing of people, including Eisenman "working." Conversation at UC Berkeley Diana Agrest, in conversation at UC Berkeley, November 17, 2014, "Diana Agrest – 11.17.14 The Making of An Avant Garde: The Institute for Architecture and Urban Studies, 1967–1984," Vimeo video, 39:06, uploaded by the UC Berkeley College of Environmental Design, October 18, 2016, <https://vimeo.com/187873842>.

²⁴ To describe their interest in "myth making" at the same time that they were reading Levi-Strauss or Roland Barthes, and indeed the importance of mythologies in bringing together anthropology and literary theory via structuralism. Lucia Allais writing on the IAUS at this time says; "'Myth' became the preferred pejorative term for an unexamined ideology in the early 1970s Institute discourse—the paradigmatic example being functionalism, a basic theoretical fallacy that was the source of Modernism's social failures." Allais, "The Real and the Theoretical, 1968," 30.

²⁵ Pamela M. Lee, "Open Secret: The Work of Art Between Disclosure and Redaction." *Artforum*, no.138 (May 2001); Pamela M. Lee, *Think Tank Aesthetics: Midcentury Modernism, the Cold War, and the Neoliberal Present* (Cambridge, MA: The MIT Press, 2020).

²⁶ This idea of transcription and documentary impulse has been noted by Sylvia Lavin related to what she called the Little Tools of Knowledge whereby video and tape-recorders were as record keeping leading to transcripts. Lavin, *Architecture Itself and Other Postmodernization Effects*.

²⁷ There are several recent histories of the Institute for Architecture and Urban Studies that establish the Institutional context. See, for instance, recent anecdotal histories, including Diane Agrest's *The Making of An Avant Garde: The Institute for Architecture and Urban Studies, 1967–1984* (2012), a documentary film made from personal video recordings and featuring recollections from those involved in the institute. Similarly, Suzanne Frank, the Institute's librarian and client for House VI, has written a memoir *IAUS: An Insider's Memoir* (Author house, 2010). More recently, Lucia Allais wrote an essay examining the funding sources for the Institute. See Allais, "The Real and the Theoretical, 1968." Kim Foerster has a forthcoming publication based on his PhD dissertation. See Kim Foerster, "The Institute for Architecture and Urban Studies, New York (1967–1985): A Cultural Project in the Field of Architecture" (PhD dissertation, ETH Zurich, 2011).

²⁸ Douglas Spencer begins to describe the ways neoliberal ideologies can be identified within practice models see Douglas Spencer, *The Architecture of Neoliberalism: How Contemporary Architecture Became an Instrument of Control and Compliance* (New York: Bloomsbury Academic, 2016).

²⁹ More recent attempts have been made to come to terms with work-models like this including Peggy Deamer, ed., *The Architect as Worker: Immaterial Labor, the Creative Class, and the Politics of Design* (London: Bloomsbury Academic, 2015) which is part of a larger project to re-examine the work structures of architectural education and practice, The Architecture Lobby.

³⁰ Evidence of the unusual conflation of practice and academia is evident in the titles of Gale and Korman as “Fellows.” The 1958 AIA Committee on Office Practice “devoted several years to a revision of terminology” around the definitions of personnel included in the AIA Practice Handbook that year. While many definitions of entry level jobs were included, Fellow was not. See American Institute of Architects, *Handbook of Architectural Practice*, 8th ed. (Washington, DC: Interim Printing, 1962), II, 2.01.

³¹ Correspondence of Peter Eisenman, Records of Peter Eisenman 1966-1982, AP057.S4.SS1. Peter Eisenman fonds Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

³² It was not unusual for small offices to have part time assistants according to the 1958 AIA Handbook of Architectural Practice that noted that a “surprisingly large number” of architects organized their office this way due either to their inexperience and youth or inability to expand their practice, or preference see American Institute of Architects, *Handbook of Architectural Practice*, 2.01. Dana Cuff has also written about the practices of moonlighting and freelance work for architects. See Dana Cuff, *Architecture: The Story of Practice* (Cambridge, MA: MIT Press, 1991).

³³ In 1968, Eisenman discussed the early ideas behind the Institute at Reyner Banham’s Aspen conference: “What I feel this educational mechanism does because we have private funds, we have funds outside the range of city planning commission, so we are not just the arm, we are not just the drawing arm of the city planning commission acting out what they want. We also can be the mind of the city planning commission. We can do things. We can talk to sociologists where they cannot afford to. We can take time for design studies and research where they don’t have time to. In other words, we can be an effective mechanism for generating ideas, perhaps evaluating their ideas and helping them to administrate and eventually implement these ideas.” See transcripts in International Design Conference in Aspen records, 1949-2006, Box 19, Folder 3, 5-6, 8, 9; Box 20 folder 1, 2,5-6; Box 21 folder 6, Getty Research Institute.

³⁴ In the CASE May 1969 program there was the inclusion of a single apologetic note at the bottom. “CASE unfortunately will only be able to provide intellectual stimulation for this particular meeting. Transportation, accommodation, and meals will be the responsibility of each person attending the sessions.” (Case Seminar Program for 9-10 May, 18 April 1969) See Series: IAUS AP143.S3, Peter Eisenman fonds Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

³⁵ For a discussion around cultural capital more generally, see Pierre Bourdieu’s identification of Institutionalized Cultural Capital that is socially produced and reproduced based on institutional affiliations. In alignment with this idea, the IAUS networked together many Ivy League and international institutions and MoMA. There are many signs in the archive that an internship at the Institute was a stepping-stone to graduate school in many of these institutions. See Pierre Bourdieu, “The Forms of Capital,” in *Handbook of Theory and Research for the Sociology of Education*, ed. John Richardson (Westport, CT: Greenwood, 1986), 241–258.

³⁶ Letter dated May 28, 1970, from John Margolies to Adolfo Natalini inviting Superstudio’s contribution to the *Design Quarterly*, no. 78, Walker Archive. It is interesting to note the difference between this invitation and the one that was ‘staged’ for the cover of the publication. The published cover-ready version did not include the reference to Archigram, and it also showed that the list of contributors that Margolies had initially invited diverged from that which he ultimately published. An important omission from the Superstudio invitation letter was that Eisenman was initially not in the list sent to tempt the Italian radical group to join, although it is unclear whether this was a strategic omission or a chronological one.

³⁷ Footnotes as an academic convention came under much scholarly interest by the late 1970s in literary departments. Within this context the footnote was understood to reveal specificities about different epistemologies, fields of study, nationality of authors. For instance, footnotes in scientific papers embed a text within a larger community of ideas, figures, and their regulating institutions that reflected a certain anxiety about human fallibility

in a field that was somehow supposed to produce objectivity. For more see Anthony Grafton, *The Footnote: A Curious History*, rev. ed. (Cambridge, MA: Harvard University Press, 1997).

³⁸ Roland Barthes, “The Structuralist Activity,” (1963); Claude Lévi-Strauss, *Structuralist Anthropology*, trans. Claire Jacobson and Brooke Grundfest Schoepf (New York: Basic Books, 1958).

³⁹ The title also likely references an essay written by Sol LeWitt in this period. Sol LeWitt, “Paragraphs on Conceptual Art,” *Artforum* 5, no. 10 (June 1967): 80.

⁴⁰ Likewise, publishing as a commercial enterprise started to have some influence on the texts including acts such as abbreviation or other decisions of selection. What Cusset is reminding here or reinforcing is that behind the discussion of ‘text’ as opposed to writing there were indeed necessarily written and printed contexts and audiences and that an important aspect of “inventing” this notion of French theory in America meant these contexts were overlooked precisely because they did not support the theoretical claims of free floating text. Coincident with this Cusset suggests that the language of French theory was an important aspect of generating an intellectual community through discourse. François Cusset, *French Theory: How Foucault, Derrida, Deleuze, & Co. Transformed the Intellectual Life of the United States* (Minneapolis: University of Minnesota Press, 2008).

⁴¹ Gregory Battcock, “Documentation in Conceptual Art,” *Arts Magazine* 44, no. 6 (April 1970): 42. Battcock emphasizes that the shift of context from the gallery to the pages of a magazine meant a shift into the pages that were the domain of the critic and as such a potential collapse in the distinction or a collaboration between artists and critics. For another recent publication that revisits Conceptual practices from this period not only in the USA and UK but also in South America, see Christian Berger, ed., *Conceptualism and Materiality: Matters of Art and Politics* (New York: Brill, 2019). Also Gwen Allen, *Artists’ Magazines: An Alternative Space for Art* (Cambridge, MA: MIT Press, 2011).

⁴² As Terry Atkinson pointed out in response to Lippard and Chandler in 1968 their concept of ‘dematerialization’ was a metaphorical term because the works in question of course still existed. He laid out however a middle ground for theoretical objects: “Such a framework uses only theoretical entities and as such does not come up for the count as either material or immaterial art. The ideas are recorded in typewritten word form as the nature of the ideas can only be satisfactorily developed in such a form (or in audio form on magnetic tape). One reads the written information just as one reads any written information.” Terry Atkinson, “Concerning the Article, ‘The Dematerialization of Art,’” in *Conceptual Art: A Critical Anthology*, ed. Alexander Alberro and Blake Stimson (Cambridge, MA: MIT Press, 1999), 54.

⁴³ Lucy Lippard and John Chandler, “The Dematerialization of Art,” in *Art International* 12, no. 2 (February 1968): 31–36.

⁴⁴ Gwen Allen, *Artists’ Magazines*.

⁴⁵ Christian Berger, *Conceptualism and Materiality: Matters of Art and Politics* (New York: Brill, 2019).

⁴⁶ John Roberts discusses the idea of a new form of control that he calls ‘reskilling’ for conceptual practices where the outsourcing of their work led to new forms of administration and supervision. John Roberts, *The Intangibilities of Form: Skill and Deskilling in Art after the Readymade* (London: Verso, 2007).

⁴⁷ Letter from Peter Eisenman to Mildred Friedman at the Walker Art Center. Nov 19, 1970. Archived in Mildred S. Friedman, editor, Design Quarterly, correspondence for DQ 78, 1970, Walker Art Center Archives, Minneapolis, MN. (Box Location: UP 00033).

⁴⁸ Letter from Peter Eisenman to Mildred Friedman. April 27, 1971. Archived in Mildred S. Friedman, editor, *Design Quarterly*, correspondence for DQ 78, 1970, Walker Art Center Archives, Minneapolis, MN. (Box Location: UP 00033).

⁴⁹ As it turned out the only taker of this opportunity was a Canadian social scientist. Letter dated May 13, 1971 from Phillippe E. Mondor to Mildred S. Friedman. Archived in Mildred S. Friedman, editor, *Design Quarterly*, correspondence for DQ 78, 1970, Walker Art Center Archives, Minneapolis, MN. (Box Location: UP 00033).

⁵⁰ Museum of Modern Art, *Five Architects*, 27.

⁵¹ This is common in many telling of the origin of humanist model of architect, for a more nuanced example see Catherine Wilkinson, "The New Profession in the Renaissance." In Kostof, Spiro, ed. *The Architect: Chapters in the History of the Profession*. New York: Oxford University Press, 1977. This refrain regarding the drawing as the device that traverses the office and building site has only increased as computation draws the construction coordination into the managerial environment of software for instance see Mario Carpo's *The Alphabet and the Algorithm*. 1st Edition. Cambridge, Mass: The MIT Press, 2011.

⁵² Miwon Kwon, *One Place after Another: Site-Specific Art and Locational Identity* (Cambridge, MA: MIT Press, 2004).

⁵³ Lucia Allais has argued that 1968 as a date and a marker was an important hinge between the operations of the real and theoretical in the architectural discipline. It was after this point Allais argues that architects were increasingly finding ways to work outside of architecture and likewise that the types of works expanded as well. Allais, Lucia. "The Real and the Theoretical, 1968." *Perspecta* 42 (2010): 27–41.

⁵⁴ See Sylvia Lavin, *Architecture Itself and Other Postmodernization Effects* (Leipzig, Germany: Spector Books, 2020). In particular, see the chapter "Architecture Itself," 27–50.

⁵⁵ Francois Cusset discusses the context of American academia and the role that it played in decontextualization of French theory in the 1970s-90s. Cusset, *French Theory*.

⁵⁶ Fredric Jameson writing about this period described the influence of global political unrest including the ongoing cold-war related activities of the American military in Vietnam and Korean War, and the internal reflections of these struggles for self-determination such as the American civil rights movements. The characteristics of the sixties in America then were the anti-government impulses from the New Left student uprisings against the Vietnam War and military draft, and at the same time the YIPPY (Youth International Party), and other environmentalist impulses of those leaving the city to return to the land and seek self-sufficient lifestyles in places like Vermont. As Reinhold Martin has pointed out this version of environmentalism and ecological language was appropriated by Richard Nixon by the 1970 against a backdrop of a new world order of the increasingly international financial market (IMF) and economic imperialism replacing the colonial one related to land resources including significantly oil. Fredric Jameson, "Periodizing the 1960s," *Social Text* no. 9/10 (1984): 178–209.

⁵⁷ In an email with Richard Falk dated June 26 2019, he described Eisenman's plans for the townhouse for faculty friends as "a congenial community". There is a file in the Eisenman Archive titled; Town house file 1967 Princeton that matches this description with simple plans for a community of townhouses. See Townhouse Project, Princeton New Jersey 1967. AP143.S4.D7. DR 1994 0154: 112-136. Peter Eisenman fonds. Collection Centre Canadien d'Architecture/ Canadian Centre for Architecture, Montréal.

⁵⁸ This is the most widely reported account of the house, including newspaper reports, articles and interviews with Eisenman. In 2002, there was a *New York Times* article printed in the "Home & Garden" section some two years after the Falks had sold the house to John Makau who would renovate it. The article interviewed the Falks and Eisenman, Richard Falk claimed that Eisenman promised to design a "Chomskyeque house," Eisenman agreed with this and expanded to suggest that he had made good on his promise of a house based on Chomsky's linguistic

theories but suggested that Florence Falk had wanted a “Heidi House” all along. See Gwenda Blair, “House Proud: A White Elephant Reincarnated,” *New York Times*, October 10, 2002, 1, 5.

⁵⁹ Then-president Richard Nixon’s rhetoric of environmentalism Martin says was part of a larger economic project of economic extraction for instance in resource management, labor organization, trade, that abstracted material characteristics into instruments. According to Martin this was comparable distancing of Eisenman’s theory from entanglements see “Environment c. 1973” in Reinhold Martin, *Utopia’s Ghost: Architecture and Postmodernism, Again* (Minneapolis: University of Minnesota Press, 2010).

⁶⁰ A lone bill dated March 18, 1970 from Eisenman to Richard Falk is kept in Richard Falk’s papers showing that Eisenman sent his own bill and included the invoices also of Dutton Smith. He said in this invoice; “Although psychologically this might be a poor strategy, I just put all of these figures together on the expenses such as telephone (long distance), and the cost of reproducing drawings., etc.. something to which we both agreed.” The last sentence already pre-empting perhaps the client’s displeasure at receiving this bill, and indeed evidence of mounting stress over issues of cost on the project. Richard A. Falk Papers, Box No.2, Folder 1970. Syracuse University Library Manuscript Collections.

⁶¹ There are no signs of the case entering the courts and Richard Falk in a phone interview with the author said he never went through with it. There is a letter to Eisenman dated May 25, 1971, from Thomas P. Peacock of Nickerson Kramer Lowenstein, Nessen & Kamin that simply says; “It would appear that Professor Falk has gone away.” IAUS Fonds, AP057.S4.SS1, Canadian Center for Architecture.

⁶² In 2002, Richard Falk described the experience of working with Eisenman on his house early on as “dreaming together,” see Gwenda Blair, “House Proud: A White Elephant Reincarnated,” *The New York Times*, October 10, 2002, F5.

⁶³ Forrest Wilson, “Editorial: The Single Family Home,” *Progressive Architecture*, June 1969, 78.

⁶⁴ “The Jury Discusses: The Present State of the Art and Trends Toward the Future,” *Progressive Architecture*, January 1970, 107.

⁶⁵ For a local Vermont account see Yvonne Daley, *Going Up the Country: When the Hippies, Dreamers, Freaks, and Radicals Moved to Vermont* (Hanover: University Press of New England, 2018). There is a wide historiographical trend recently toward revising the intersection of ‘hippie’ culture and architecture especially in the Bay area where there was an engagement with cybernetic thinking and social networks. See Felicity Scott and the recent exhibition at the Walker Center Hippie Modernism where there is a claim that rather than being outsiders Hippies can be connected with modernism by their shared pursuit of utopianism and their engagement with media. Specifically to the farming cultures and the political and ideological intersection with the ‘natural’ food movement in this period in American, see Maria McGrath, “Natural Foods Conservatism From Hippie Evangelism to Whole Foods,” in *Food for Dissent: Natural Foods and the Consumer Counterculture since the 1960s* (Amherst, MA: University of Massachusetts Press, 2019).

⁶⁶ For a Vermont specific reading of these phenomena, see James Howard Kunstler, “The Selling of Vermont,” *New York Times Magazine*, April 10, 1988; and Robert M. Vanderbeck, “Vermont and the Imaginative Geographies of American Whiteness,” *Annals of the Association of American Geographers* 96, no. 3 (September 2006): 641–659.

⁶⁷ A place with small towns and little municipal oversight that would be developed in this period also. The *New York Times* article also suggests that it was a place of resistance to “progress.” In 1970, the Comprehensive Code of State Building Regulations Act 250 passed with environmental standards. See James Howard Kunstler, “The Selling of Vermont,” *New York Times Magazine*, April 10, 1988.

⁶⁸ See American Institute of Architects, *Handbook of Architectural Practice*, 8th ed. (Washington DC, Interim Printing, 1962), III, 2.01.

⁶⁹ Keller, Sean. *Automatic Architecture: Motivating Form after Modernism*. Chicago: The University of Chicago Press, 2017) 74.

⁷⁰ Martin, “Language: Environment c.1973,” in *Utopia’s Ghost*, 49–68.

⁷¹ In conversation, Florence Falk described feeling an embarrassment at the baronial stature of the white box in the economically depressed context of Hardwick. Her feelings were confirmed by a sign put up on the building site door by the construction workers announcing the building as “Falk’s Folly.” She described the seduction of her house as revealing itself from up on a hill at night from a distance, when the building appeared to float with light beaming out of the windows. This seduction was at the expense of her experience from inside at the same moment, backlit and exposed, which left her feeling the insecurities canonized into the historiography of modernism in relationship to Mrs. Farnsworth’s House. Florence Falk, in conversation with the author, 2019.

⁷² For instance, see Eric Arthur and Dudley Whitney, *The Barn: A Vanishing Landmark in North America* (Greenwich, CT: New York Graphic Society, 1972); Charles Klamkin, *Barns: Their History, Preservation and Restoration* (New York: Hawthorn Books, 1973); Ernest Burden, *Living Barns: How to Find and Restore a Barn of Your Own* (Boston: New York Graphic Society, 1977).

⁷³ Arthur and Whitney, *The Barn: A Vanishing Landmark in North America*, jacket text.

⁷⁴ In America measured drawings were used to preserve architecture as information sets. The Historic American Buildings Survey was established in 1933, documenting American “building arts” with a mixture of written, drawn and photographed material. Some material was donated by individuals or offices there was a push in the 1930s and 40s to employ out of work architects to produce documents for HABS funded federally and after World War II this pool of human resources switched to students under supervision with the funding model switching to a service model. Consistency in documentation was maintained by mylar standard templates provided by the National Architectural and Engineering Record office. For a later example of the HABS Guidebook for Measured Drawing, see Kenneth L. Anderson, John A. Burns, and James Speake, *Field Instruction for Measured Drawings*, Historic American Buildings Survey, HABS National Architectural and Engineering Record National Park Service, Department of the Interior, May 1980.

Another secondary source is Catherine C. Lavoie who observes the HABS federal level program as a resource, data and information for government agencies, state preservation offices, Private Institutions, publishing illustrations, and individuals engaged with historical buildings for remediation or renovation. Catherine C. Lavoie, “The Role of HABS in the Field of Architectural Documentation,” *APT Bulletin: The Journal of Preservation Technology* 41, no. 4 (2010): 19–24.

In a book published in 1978 on the event of a Measured Drawing Competition in the UK, Robert Chitham noted that the historical attention paid specifically to measured drawings as a drawing type in its own right was ‘scanty’, even if there was interest in the drawing type specifically. The resulting publication attempted to carve out measured drawing as distinctive because of its unique position post-building, use by historians as an epistemological tool, and because of the relationship to the project of preservation; “The ultimate aim should be, I suppose, that with the aid of the measured drawings of a demolished building, supplemented by photographs, an accurate facsimile could be built.” Robert Chitham, *Measured Drawings For Architects* (London: The Architectural Press, 1980), 2.

⁷⁵ Writing in the JSAE in 1963. Vernon Shogren described the way that HABS was engaged with pedagogy. An example he cited was that in 1952 the School of Design at North Carolina State College made each student measure and record “document” a work of historical significance completed before entering their fifth year. It was a long-term project over several semesters. He claimed that the purpose was threefold firstly adding to the knowledge set and working to preserve things that would “Otherwise vanish anonymously”, to give them practical experience with

a building up close, and to test their judgment of merit. See Vernon Shogren, “Historical Research in the Undergraduate Curriculum,” *Journal of Architectural Education* 18, no. 2 (September 1963): 27–28.

⁷⁶ This conversation around the vernacular was occurring at the same time as Eisenman was engaging with the barn and farmhouse on the Falk’s site, even as the meeting of CASE in 1970 CASE was marked by claims of retreat into white, purist forms of architecture that were academic, elite and exclusive. For more, see Dell Upton, “Ordinary Buildings: A Bibliographical Essay on American Vernacular Architecture,” *American Studies International* 19, no. 2 (Winter 1981): 57-75. However, Eisenman’s work was often discussed as a counterpoint to the neoconservative and reactionary retreat from the modern to a romanticized ideal of the past or as Foster defined it an ahistorical form of historicity, see Foster, Hal. *Recodings--Art, Spectacle, Cultural Politics*. 1st ed. (Port Townsend, Wash: Bay Press, 1985), 121-138. This was the basis of the discourse around the whites and greys for which there is an enormous literature see for instance Reinhold Martin’s description of the mediated ideological debates of the so-called whites and greys amongst other televised wars, see “History The Last War,” in *Utopia’s Ghost: Architecture and Postmodernism, Again*. (Minneapolis: University of Minnesota Press, 2010), 27-48. Felicity D. Scott, “When Systems Fail: Arthur Drexler and the Postmodern Turn,” *Perspecta*. Vol. 35, Building Codes (2004): 134-153.

⁷⁷ Florence Falk, in a phone interview with the author, 2018.

⁷⁸ For an example of the continuity of this argument, see Sean Keller’s description, to which I refer heavily: “Eisenman began to argue that the only viable materialization of a truly conceptual architecture was an antimaterial ‘cardboard architecture,’ one that intentionally frustrated traditional notions of structure, tectonics, performance, and scale.” Sean Keller, *Automatic Architecture: Motivating Form after Modernism* (Chicago, IL: University of Chicago Press, 2017), 71.

⁷⁹ “Within art historical writing, dematerialization is generally described as a specific lineage of conceptual art, criticizing the traditional objecthood of the artwork, or more specifically, the art object as a commodity. This lineage cannot be entirely separated from—and even merges with—other lineages that question the originality of work, place art at the threshold of information, or meld within the context of public spaces and publicity.” Nathalie Zonnenberg, *Conceptual Art in a Curatorial Perspective: Between Dematerialization and Documentation* (Amsterdam: Valize, 2019), 41.

⁸⁰ The two companies formed the Fome-Cor company. St Regis was joined to a network of North American paper mills with their various specializations. It was quite common in this period for paper companies to work together with plastic companies for films and adhesives as the manufacturing of papers became more innovative. St. Regis had research laboratories in Pensacola, Defriet, Providence, and Jacksonville For more, see “St. Regis Paper Company,” *The Analysts Journal* 11, no. 3 (June 1955): 135–137. See also Oral history interview conducted 1975 by Elwood R. Maunder and John Ross with former general sales manager of bag packaging operations, St. Regis Paper Company, 1950s-1960s. Produced by the Forest History Society. Sponsored by St. Regis Paper Company. Forestry History Society, Record 58951. See also St. Regis Paper Company, *From Pine Seed to Pulpwood: the Story of St. Regis Forestry in the South* (Pensacola: Southern Woodlands Division, St. Regis Paper Company, 1956); Eleanor Amigo and Mark Neuffer, *Beyond the Adirondacks: The Story of St. Regis Paper Company* (Westport, CT: Greenwood Press, 1980); Richard M. Ketchum, *The Secret Life of the Forest* (New York: American Heritage Press, 1970).

⁸¹ “New Packaging Material Is Plastic-Paper Sandwich,” *New York Times*, February 9, 1959, 39.

⁸³ Stephen Phillips has written a comprehensive account of Monsanto’s war and postwar time activities and their engagement in the construction of the Monsanto House of the Future project. For more see Phillips, Stephen “Plastics,” in Beatriz Colomina, Annmarie Brennan, and Jeannie Kim, eds., *Cold War Hothouses: Inventing Postwar Culture, from Cockpit to Playboy* (New York: Princeton Architectural Press, 2004), 91.

⁸⁴ The house was built like a model with lightweight materials built up to material specifications by Eisenman. These included an 8” build up out of of ½” marine plywood exterior cladding, ½” CDX lower grade ply, 6” stud, ½”

lower grade ply CDX and ½” gypsum drywall. The seamless cardboard finish was achieved by ‘taping’ the seams and the entire house was primed in a white finish silicone sealant newly manufactured by GE.

⁸⁵ The potential of the FHA to shape and influence the construction materials was seen in the ubiquity of the platform frame, which was also related to the consumer advocacy of the Douglas Fir Plywood Association that protected the laminated timber ply industry for the US. In 1968 with Operation Breakthrough The Federal Housing Association influenced the acceptability of prefabricated and manufactured homes in the US that was designed to cut through local regulation that was obstructing these methods from breaking through. See David Falk, *Building Codes and Productivity in Residential Construction*, paper prepared for submission to the President’s Productivity Council, September 14, 1971. It is important to reinforce here that home ownership in America has been structured in unequal ways and along racialized lines by HUD. See “Inequality in Mass Suburbia” in Lizabeth Cohen, *A Consumers’ Republic: The Politics of Mass Consumption in Postwar America* (New York: Vintage Books, 2004).

⁸⁶ The history of timber framing in North America is one that is split between a mythical founding of the balloon frame technique in Chicago historicized by the likes of Giedion and other amateur historians, and the “invisible” ubiquity of the Platform frame system that was more often used in the construction of domestic American architecture. Giedion’s telling was a more heroic attempt to singularize the balloon technology rather than the variety that was actually occurring during the 19th century. Even in the case of Platform, both systems carry beneath them a myriad of construction idiosyncrasy of light timber framing habits related to the specificity of geography, climate, construction skills. For more, see David Monteyne, “Framing the American Dream,” *Journal of Architectural Education* 58, no. 1 (September 2004): 24–33. For a more quantitative report on wood products in housing design, see David B. McKeever and Robert B. Phelps, “Wood Products Used in New Single-Family House Construction: 1950-1992,” *Forest Products Journal* 44, no.11/12 (November/December 1994): 67–74.

⁸⁷ David Monteyne argues that despite the renown of the balloon frame courtesy of Siegfried Giedion and others, the Platform (or Western) platform frame was far more commonly used. See Monteyne, “Framing the American Dream.”

⁸⁸ This problem also comes up in writing by artists and art historians in this period writing about seriality. For instance both Mel Bochner and Rosalind Krauss in particularly acknowledged that architecture was built on serial logics related to issues of modularity or regimes of copying respectively. See Mel Bochner, “The Serial Attitude,” *Artforum* 6, no. 4 (December 1967): 28–33.

⁸⁹ Museum of Modern Art, *Five Architects*, 26.

⁹⁰ See House II Folder in Correspondence of Peter Eisenman, Records of Peter Eisenman 1966-1982, AP057.S4.SS1.

⁹¹ Handwritten letter from Gregory Gale to Eisenman. (Falk House Design Development Drawings Original Details) Letter dated July 11 (presumably 1969 during design phase) from what appears to be an unnamed office intern; “SW and NE columns awkward detail- requires a column of sorts. Paint it grey?” See House II Folder in Correspondence of Peter Eisenman, Records of Peter Eisenman 1966-1982, AP057.S4.SS.

⁹² The Clean Air Act was enacted in 1970, following 15 years of development out of air pollution legislation and the 1963 Clean Air Act. Kavior Moon has written in particular on the intersections of conceptual art and air in this period in her work on Michael Asher. See Kavior Moon, “From Air to Architecture: Michael Asher’s Early Air Works,” in *Conceptualism and Materiality: Matters of Art and Politics*, ed. Christian Berger (Leiden: Brill, 2019), 57–88. Laurent Stalder has also written about the binding of air and architecture in the postwar period in relationship to questions of building performance, see Laurent Stalder, “Air, Light, and Air-Conditioning,” *Grey Room*, no. 40 (Summer 2010): 84–99.

⁹³ Lucy Lippard and John Chandler, “The Dematerialization of Art,” *Art International* 12, no. 2 (February 1968): 31–36.

⁹⁴ Vermont was seen as a place with little regulation in regard to new buildings and developments until at least the 1970s. Therefore it was seen as a place where the professional codes that kept architects in their offices and builders on the building site seemingly did not apply. This perceived freedom also drew students who hoped to gain a more ‘direct’ or hands-on knowledge and relationship to their practice by building houses themselves on plots of land that they would live on while they built. This was the claim in an exhibition in 2008 at the Robert Hull Fleming Museum at University of Vermont Burlington for example. For instance, see Janie Cohen, ed., *Architectural Improvisation: A History of Vermont’s Design/Build Movement, 1964–1977* (Burlington: University of Vermont Press, 2008). This publication accompanied an exhibition at the Robert Hull Fleming Museum at the University of Vermont Burlington. Most recently Sylvia Lavin has demonstrated that the counter cultural aspects of the Design build culture in Vermont was underpinned by an economic logic of development. Lavin, *Architecture Itself*. See also Richard W. Hayes, *The Yale Building Project: The First 40 Years* (London: Yale University Press, 2007).

The design-build movement in Vermont also was influenced by a misreading of art practices’ directness of contact with the making of work. As such there was a tendency to imagine themselves as sculptors working with the material itself and understanding the properties and performances of material and how to manipulate it. In a similar way Zilius was a self-proclaimed artist and produced serial hard-edge painted canvases alongside his work on the house. It was no surprise then that critic and designer C.Ray Smith would borrow a term “Happenings” from contemporaneous artistic practices coined by Allan Kaprow in California to name the design-build tendencies of young architects developing activities in Vermont.

⁹⁵ Beatriz Colomina, “Enclosed by Images: The Eames’ Multimedia Architecture,” *Grey Room*, no. 2 (Winter 2001): 6–29.

⁹⁶ Caren Kaplan, *Aerial Aftermaths: Wartime from Above* (Durham, NC: Duke University Press, 2018), 4.

⁹⁷ Eames described *Powers of Ten* as “a film that uses various effects not to promote ‘self-expression’ or to experiment with a new idiosyncratic technique but rather to give the audience a direct sense of exponential change. It was conceived in a way that conveys meaning to a distinguished scientist as well as to a small child.” Charles Eames, “Language of Vision: The Nuts and Bolts,” *Bulletin of the American Academy of Arts and Sciences* 28, no.1 (October 1974): 13–25.

⁹⁸ The technical problem of visual literacy and reading of images emerges as a discourse in the 1980s with authors such as William J. Mitchell and James Elkins. They looked at what it meant to consider the types of skills and techniques required in order to achieve a literacy in the reading of images that was equivalent to that of reading and writing. See James Elkins, ed., *Visual Literacy* (New York: Routledge, 2008).

⁹⁹ Description of the event is based on phone interviews and email exchanges between Randall Korman in 2018.

¹⁰⁰ Art critic Leo Steinberg wrote an important except in 1972 in *Other Criteria* about the “characteristic picture plane of the 1960s” that was the flat bed printing press. Steinberg noticed the transformation in the world of pictures from the 1950s on, beginning with Rauschenberg and Dubuffet, no longer simulating windows onto worlds to be viewed from an upright posture, but instead he claimed pictures of the late 50s on spoke of the world of information production and display; table tops, printing presses, charts, drafting boards. In short the allegiance of these works had transformed from one that was analogue with the experience of nature’ to ‘operational processes’ he claimed at the time. See Leo Steinberg, *Other Criteria: Confrontations with Twentieth-Century Art* (New York: Oxford University Press, 1972), 90.

¹⁰¹ These photographs were used for land and resource management and as such were documents of the ‘real’, that is to say they were used by city planners for data collecting. Photographs were considered “information”. “Photo interpretation may be defined as the identification of objects on airphotos and the determination of their meaning or

significance.” Thomas Eugene Avery, *Interpretation of Aerial Photographs*, 3rd ed. (Minneapolis: Burgess Publishing Company, 1977), 15.

¹⁰² Kodak Publication, *Photointerpretation and Its Uses: A Non-Technical Review of Some Aspects of Interpreting The Information Contained in An Aerial Photograph* (Rochester, NY: Eastman Kodak Company, 1968), 3.

¹⁰³ Horst Bredekamp, Vera Dünkel, and Birgit Schneider, eds., *The Technical Image: A History of Styles in Scientific Imagery* (Chicago, IL: University of Chicago Press, 2015)

¹⁰⁴ Preparation of the mechanical sits in between the creative work of sketch design and layout and the reproduction work of platemaking and printing in the production cycle. For an extended discussion of mechanical documents and their preparation, see Bernard Stone and Arthur Eckstein, *Preparing Art for Printing* (New York: Van Nostrand Reinhold Company, 1965).

¹⁰⁵ Robin Evans, “Architectural Projections,” in *Architecture and Its Image: Four Centuries of Architectural Representation: Works from the Collection of the Canadian Centre for Architecture*, ed. Eve Blau and Edward Kaufman (Montreal: Canadian Centre for Architecture, 1989), 27–28.

¹⁰⁶ This concept of the absence of human figure disappearing from in front and behind the screen operating is from Noa Steimatsky, “From the Air: A Genealogy of Antonioni’s Modernism,” in *Camera Obscura, Camera Lucida: Essays in Honor of Annette Michelson*, ed. Richard Allen and Malcolm Turvey (Amsterdam: Amsterdam University Press, 2003), 191.

¹⁰⁷ The interview was published in the catalogue for the 1976 exhibition at the Institute for Architecture and Urban Studies in New York, both titled *The Idea as Model*. The conceit of the exhibition was to explore architectural model as an object in its own right, no longer representative of anything outside of itself. David Shapiro and Lindsay Stamm, “A Poetics of the Model: Eisenman’s Doubt,” in *Idea as Model*, ed. Kenneth Frampton and Silvia Kolbowski (New York: Rizzoli, 1981), 121.

¹⁰⁸ Eisenman’s collection of essays was in development since the same year as Korman’s aerial jaunt, though it was not printed until 1987. Peter Eisenman, *Houses of Cards: Critical Essays* (Oxford University Press, 1987).

¹⁰⁹ William J. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-Photographic Era* (Cambridge, MA: MIT Press, 1992), 27. The question of media and intention of photography and the automatism of the camera I will discuss in chapter 3 related to film. Cameras had been used in documentary recording and research bureaucratic photography. These types of photography were seen to be without subjective intention, although there is increasing scholarship to show the intermingling of intention and aesthetics in many early scientific visualizations, see, for instance, Horst Bredekamp, Vera Dünkel, and Birgit Schneider, eds., *The Technical Image: A History of Styles in Scientific Imagery* (Chicago, IL: University of Chicago Press, 2015).

¹¹⁰ The same year that Eisenman’s photograph was taken, Susan Sontag published her own series of essays on photography in *The New York Review of Books*. Sontag’s articles pointed out that despite all of the possible technical options for fabrication and falsification, the photograph retained an evidentiary power. Susan Sontag, “Photography,” *The New York Review of Books*, October 18, 1973, 59–63.

Chapter 3: Endless Series

I Tools for Thought

We make our tools and our tools make us: by taking up particular tools we accede to desires and we manifest intentions.¹

—William J. Mitchell

This chapter examines House IV, Eisenman's own, which he designed for a plot of land in Falls Village, Connecticut. After the plans for the house were canceled, the design was reactivated through other financial channels that would have an impact on the shape and life of the project. I argue that an examination of the traces of the house reveal the negotiation between the context of a burgeoning market of drawing and model production and display on the one hand, and research funding structures that prioritized the techno-scientific fields of research on the other. In both cases, drawings were understood to be the site of architectural thinking, but to different ends. Eisenman however, reformatted two distinct approaches to manage what he called the 'arty' and 'rational' effects of his projects, sorting from a heterogeneous base of representational material two divergent epistemic and production goals, neither of which conform to conventional definitions of drawing. First, Eisenman's understanding of the terms of scientific research—with its sense of empirical testing and proof—led him to explore film as a diagnostic design tool. Second, he employed reprographic copying, arranging, and composition to produce what appeared to be singular drawings for collectors but that are better understood as mechanically generated records of formal "process." In engaging in these two approaches, Eisenman effectively *crafted* an authorial narrative that relied on seemingly singular expressions of critical

conceptual architecture but were in fact always already mediated by the technical objects and processes required to produce them. In this chapter, I argue that House IV is not reducible to a house or a drawing set but rather must be understood as an endless circulating series of crafted objects. It is the space between Eisenman's efforts to control his projects and the technical and seemingly neutral items that reveal the particular conditions of production in which House IV is recursively situated.

The chapter focuses on two media-based trajectories that emerged from the House IV drafted diagrams: the first is a film initially made for exhibition in the Milan Triennale in 1973, and the second is a duplicate set of process drawings made contemporaneously that were gifted to the MoMA in the 1980s. These two seemingly disparate media are related to the archived materials at the Canadian Centre for Architecture (CCA). There, several House IV folders marked 'presentation drawings' make evident that there was a great deal of work done that was not advancing the design for the house, and might therefore be considered exercises in reformatting.² Rather than sets of drawings these folders contain loose piles of cut-out drawings, multiples and duplicates, and miniaturized versions made by mimeograph and diazoprint (Fig 3.1). The items carry the marks and signs of sequence and groupings, by numbering and other encodings in the lines of the drawings, the use of acetate plastics for layering, the edges of drawings cut and reassembled from one place to the next, and the copious amount of reprographic copies. These items do not fit neatly into a discussion of image making in the same period. Their genealogy is not that of early twentieth-century montage, where the introduction of found-imagery from magazines or postcards entered and interrupted the image plane.³ Nor is it a question of the smoothing realism effects that photography provided when employed in renderings.⁴ What Eisenman's pile of reprographic offcuts reflect is that techniques designed to

promote efficiency in the drafting room were also rhetorically becoming places for improvisation and creativity within the technical systems of design. These items also suggest a heretofore unrecognized shared origin between his film for House IV and the duplicate drawings in the MoMA collection.

This chapter engages Eisenman's work in the photographic and reprographic processes to understand an alternative narrative to his engagement with models of repetition. In highlighting this dimension, I interpret Eisenman's work in a way that pushes against the more recognized discussions around his intellectual project of serial design method. I use this frame to (1) highlight that any claims to architectural authorship were circumscribed by the very technical supports used and (2) argue that these claims to originality were often curated and narrated in a way that obscured these aspects of craft of drawing and writing production.

In 1973, Paul Rudolph—an architect as famed for his hatched Rapidograph-pen renderings as for his hammered-concrete buildings—wrote an introduction to a publication by Alfred M. Kemper titled *Drawings by American Architects*.⁵ In it, he rehearsed the sequence of design:

The age-old process has not changed much. The *idea*, transmitted to the *sketch* often augmented by *models* is developed into a *rendering*, which is in turn *translated* into *working drawings*. These evolve into a *building*.⁶

Rudolph outlined two seemingly enduring facts about architecture: the first was that an architect produced representations that led to buildings, and the second was that design phases that moved an idea to a building were linked to drawing types from sketch to working drawings.⁷ The book was a curious compilation of perspective renders submitted by commercial offices and

represented by the network of professional renderers working between them at that time. These illustrations combined with the emphatic nature of Rudolph's summary were perhaps reinforcements to cover over the contentious status more broadly in this period around the changing organization of drawing production. Primarily, despite the age-old 'idea to building' trajectory, it was increasingly unclear what a design process *was*, who took part in it, and how it was to be divided and defined. This reflected the ways that postwar research practices were infiltrating architecture schools and offices, leading not only to alternative forms of architectural outputs including reports and articles, but also to more exhibitionary formats such as films, models, and installations. With research as a parallel activity, the types of drawings and documents produced were no longer always so clearly defined in relationship to the building output. Coincident with these alternative forms of architectural production, drawings, which had been somewhat suppressed as secondary to buildings, gained increasing importance and separation from their important role as instruments of construction over the course of the 1970s.⁸

By 1977, this undercurrent was evident, with critic Reyner Banham observing the proliferation of critical attention and exhibitions in New York city focusing on architectural drawings.⁹ He counted 'no less than' three venues—the Cooper Hewitt, the Drawing Center, and Leo Castelli gallery—that were part of a network of institutions serving the burgeoning interest in seeing the architectural design process inscribed on paper.¹⁰ A common critical reaction to these architectural exhibitions at the time was a noted shock at the way that architectural drawings had escaped their relationship to building production. Banham suggested that the foundations for this appearance, which had been in place since the 1960s, were related in part to the magazine industry's foregrounding of the production of 'ideas' over the examination of buildings.¹¹ Drawings that were most valued in exhibition venues were those that could be

engaged into an existing system of artistic authorship. That meant that the drawings temporally linked to the moment of ideation were privileged, most commonly identified in the immediacy of the sketch. There was still value found in the artfulness of an elaborate rendering, but these were, importantly, *authored* documents rather than the commercial and outsourced versions in Kemper's publication. The creative and intellectual act of design, historically held in the immediacy of sketches, was conferred into other drawing forms. This visibility coincided problematically, according to Banham, with the diminishing importance of drawings in building construction and more pointedly when architects themselves were less useful in building construction. Therefore, Banham argued, the valuations placed on drawings were a professional atavism, as architects expanded their modes of practice into new institutional areas.¹²

More than most, Eisenman's work registered these influences over this same time span, largely because of his efforts shifting the terms of what we today refer to as the architectural design process coincident with the milieu informed by discourses around early computation and processing languages, and technocratic ideas around problem solving and innovation. Eisenman worked to produce a definition of design process that was separated out from a more traditional professional set of phases and drawing organizations that were rooted information management from sketch design to development and construction drawings. He had to separate and suppress the things that Rudolph so easily linked including phases to drawing types.¹³ This inevitably required what seemed to be a disavowal of the importance of the building over the process. One example of this claim will be examined in this chapter. As shown in relation to House II, part of the management of the project included the separation of the virtual design process from the documents that were related to the design development and working drawings. By Eisenman's own characterization, his design was textual and diagrammatic, both which were theoretical

claims that effectively stripped contextual considerations of material substrates.¹⁴ This splitting off has been understood as part of the operation of producing a form of architecture suited to circulation in architecture's media-landscape of this period.¹⁵ I would argue, however, that this description, though accurate, does not attend to the ways that what we understand as Eisenman's virtual-process, remained materialized in technical and material systems through which it was reproduced and circulated (Fig 3.2-3.3).

In 1972, after one year of designing, plans for House IV were halted on the edge of the construction phase.¹⁶ Eisenman's fourth house was for himself, a detail not credited publicly as anything other than a 'private client.' Another form of omission common to his houses, this time it suggested that despite the benefits of removing an external client from the design process entirely, it was at least important to maintain the professionalized appearances of still having one.¹⁷ In designing for himself, Eisenman became what I established in chapter 02 as the 'architect-client.' During the 1960s, professional journals used the term to refer specifically to when an architect designed their own office not as simply a working environment but as a showroom to the architect's personal expression. I extend this designation here to include House IV in order to emphasize the closed loop of authorship that was assumed when the architect became their own client without the interruption of serving the tastes and wants of others. However, another important aspect was the binding this term imposed between the self-image of the architect to their design which according to the formulation in the earlier journals, produced a type of "advertising" for their work. This configuration maps onto the trope of modernist architectural historiography that centralized the architect's own home in the constitution of authorship and as a direct expression and manifestation of their ideas. However, this form of modernist authorship was on some level the figure that Eisenman claimed to overturn in his

critical practice. And yet, it suggests that his design process—which was intended at least in part to lessen Eisenman’s influence as an author—was only made possible by his presence at the other side of the project as the client.

The fact that House IV was never built fed into Eisenman’s authorial narrative of this project as a standalone conceptual piece. Plans for building House IV were canceled around 1971, which Eisenman explained as a decision produced from a change of placement on his property. This response to the site change requires two remarks: (1) the paradox that a house designed to be ‘siteless’ (as his houses were) would be impossible to resituate; and (2) that these types of stops and starts are quite usual in architectural construction and constitute a type of feedback in shaping the design. Nevertheless, rather than altering or updating the design, Eisenman would later admit that, by 1972, he was searching for new models to move the project forward.¹⁸ The house design was “ready to go,” with a full set of working drawings. The use of language from energetic models—stops and starts, ready to go—is significant when considering a description he would make some years later that House IV was “specifically constructed to be largely self-propelling and therefore as free as possible from externally determined motives.”¹⁹ It is a common definition of the search for autonomy that he would become renowned for.²⁰ The automaticity implied by such a design process was the removal of external motivations that promised to release architecture from the bindings of necessity and procedures of building production. According to materials in the archive, the project would continue on in the office for at least another eight years. This prolonged suspension raised questions around the nature of what was driving designs in a period marked by an architecture that actively sought disengagement with the logic and context of construction. Paradoxically, these external constraints, including client briefs, site constraints, building codes, and material properties, have

traditionally been the fuel that shaped design development. House IV, then, required other channels of dissemination in order to maintain this idea of an automatic process.²¹

The state of suspension coincided with a visit from a potential client couple who had approached him aspiring for a split-level suburban house.²² House IV, without attachment to himself-as-client, could be sold as a unique set of plans. In response to the couple's inquiries, Eisenman described a "stunt" to offer them a reduced-price option—to propose selling the working plans for House IV for their site. Part of the theater of this meeting was the retrofitting of an existing Fome-Cor model and dressing it with green flocking and model trees more at home on model railways (Fig 3.4).²³ These kitsch appliques did not lure the couple into an engagement, but in describing the situation to a class that year Eisenman reflected about how one might start to think about the "packaging" of their designs. He was careful to set his proposal an alternative to the dominant mode of suburban postwar real estate development, in which homeowners would buy "off the plan." The distinction rested on an engagement with the New York commercial gallery system:

what I should be doing is producing my houses ahead of time without a client really...package them and then merchandise them to these unsuspecting clients. And I think that I should sell them as high art or pop art or suburban art or environmental art or some term that will sell to these unsuspecting people these things so I can build them to test these things in space.²⁴

In this proposal, it was clearly recognized that a source of funding would be necessary to replace the specific commission model, and that a market already existed to be tapped into in the form of an audience consuming populist forms of art. The terms that he raises—environmental and

suburban art—point to a growing category of artistic practice that was itself engaging with the scale comparative to domestic architecture, and being constructed outside of the studio and gallery sites.²⁵

The ‘suburban’ art Eisenman mentioned marked the overlapping interest between artists and architects in the homogeneous repetition of single-family homes in suburban speculative markets. Both artists and architects were looking for similar cues there for models of financialization and funding or what artists like Dan Graham referred to as ‘economic support.’²⁶ Graham and others working in conceptual areas designed financial systems and rethought the ways that their artistic agency and value were circumscribed by a closed loop of values defined by the institutions of art and the art market.²⁷ Part of this work was considering the ways that they could design ‘instruments’ that would accrue value and to find these they at times looked to models of architectural development. In Graham’s exploration of the suburban tract house, published as *Homes for America* in 1966 in *Arts*, he documented the seeming multiplicity of types and hues of suburban housing ‘styles’ marketed by real estate developers to clients like the couple targeted by Eisenman’s stunt. In 1969 Graham had been writing and thinking about the financial ecology that artists could use to support themselves. He took the developing language of cybernetics to think about inputs and outputs in order to imagine that income might be a circulating and sustaining force: “INCOME (OUTFLOW)” through this alteration reflects the homeostatic balance of my life.”²⁸ An important part of the maintenance of this financial system was Graham’s ability to produce value by using existing systems of advertising in print media. He argued that advertising by an artist was tantamount to the making public of a private need but at the same time it provided important exposure necessary to build the identity of the artist.²⁹ In other words, Graham understood that it was through his engagement with the commercial and

public nature of advertising in his art practice that he could transform the often-invisible economic aspects of artistic production into forms of support.³⁰

Graham's engagement with advertising and print culture more broadly brought him into contact with 'readerships' depending on the journal distribution.³¹ His work examined these issues of taste and preference in order to understand the systems of circulation and the map of individuals that they linked together. If *Homes for America* critiqued this real-estate and market driven model of economic support by circulating it as an art journal article, Eisenman on the other hand understood that suburban art had, by 1972, paradoxically also become an influential marketing brand to support his real estate development. Both Eisenman and Graham's interest in the suburbs which took opposite positions reflected the growing attention being paid to the speculative activities in art and real estate in this period. Indeed, by the 1970s, artists themselves often utilized this market in order to create personal income support to produce their work. Graham noted that the logic of the tract house was its flexibility within a limited palette of options that promised individual choice. However, there was the assumption that the client was tangential to the product's completion. Beyond their role in the fantasy of freedom of choice and tailoring, in some respects the client did not matter to either scheme. Like Eisenman, Graham understood that the model of architectural service in the relationship with a client was no longer necessarily the determining factor of a project anymore. Eisenman observing these operations in the art world at that time, saw the strange potential or fantasy for an architect to co-opt this growing market of buyers who better understood how to commission an environmental art-work than they would an architect's plan for a house.

The interest Eisenman showed in engaging architecture within a gallery context as “high art” would emerge as an opportunity in five short years when a “proliferation” of interest in architectural drawings converged with the concerted effort to transform these drawings into commodities to be sold.³² Eisenman’s thinking around the marketing of a house as a piece of art would arrive as a model by the early 1980s, coincident with the burgeoning market for architectural drawings, with the second in an exhibition series at Leo Castelli Gallery curated by Barbara Jakobsen (B.J. Archer) and Emilio Ambasz and titled *Houses For Sale*.³³ There, houses would be sold alongside drawings to specific clients who could build “off the plan” or simply display drawings, which by that time were becoming valuable in their own right. But before the Castelli show, in 1972, the proposal Eisenman made for selling House IV as a piece of art reflected the pull of another model of funding, with a description that set terms toward the model of research. Firstly, he spoke of the potential of packaging and selling single ready-to-go houses as art, which would allow him to have an ongoing experimental project. Secondly he described the idea that the client purchasing the house would be paying the cost to construct and thereby “test” the buildings “in space,” this language was inflected by the terms of empiricism, even as the continuity of the patron model of artistic funding and commissions remained rooted in the idea of artistic originality—one house per client. Removing the specific client and replacing them with an abstract notion of a market or readership was an attempt to externalize validation that the specific client may have provided. However, the episode illustrates an attention toward the need to design tools for financial support, borrowing the economic effects from the art-work, and how to sustain an ongoing series of experiments that one might define as a research practice.

What was being set up in this conversation was the broader art historical theme of recursion that was an intrinsic feature of art in the 1960s evidenced in works inflected by systems

thinking and seriality, but also introduced via media of reproduction such as video and film.³⁴ The idea of recursivity was built on the self-reflexive project and shaped by models of repetition, testing, and rules, in an endless cycle of returns. It was a model that required and imposed the establishment of a critical distance that was central to the critique of authorship. This influence of this type of thinking can be seen in Graham's observations of economic cycles of income and expenditure, but were also influenced by circulation of media, and the influence of systems thinking and cybernetic models related to 'feedback.' When Eisenman separated himself from the client with House IV he also separated himself from one of the professional sources of architectural feedback in the client. In lieu of this form of feedback, then, he needed to manufacture alternative sources rather than face the unthinkable confrontation with himself as client and author. As such, this problem of recursivity is key to his early elaborations on a self-propelling project, his self-removal as client, and, as I will examine in the next section, his move to animation film.

II Animating Process

What followed was not that the house was tested in space, but that the experimental impulse shifted to testing the house in animation film. Film media had a growing presence in exhibitions in New York over the 1960s sometimes standing in at the other end of process-art as a recording of an event, but also independently with showings of computer graphics, animation, and showings of Avant-Garde film making from the early twentieth century. Film media offered an inherent structural logic—one cel after another—that pointed to an industrial lineage, and, like photography, the promise of automaticity. Animation, when considered as steps of drawing

and recording and editing or what is considered post-production, could also be seen I argue as a way of working *after* the building or in this case after the drawings were completed and as such it was a way of re-starting the stalled House IV project.

In particular, Eisenman's turn to animation film in this moment introduced him to an active set of conversations around authorship that were similar to those faced by architects. Graphic animation films had until then been a predominantly commercial and entertainment-oriented field, but a small group of artists were carving a critical approach outside of these larger organizations by personalizing their tools and techniques and producing what was considered a more experimental form of film making. These were visible via alternative channels of funding and exhibition, and produced under the conditions of precarity and decentralized production.

Eisenman's turn to film was by no means early, nor even timely. There was a longer history of usage in architecture, that he himself acknowledged in his note writing when he admitted that previous usage had predominantly been a "bore."³⁵ This was a curious charge that film should be linked with entertainment, but this state of boredom was related to the ways that films invariably according to him which he reduced to reproducing experience of moving through buildings in some way or another or didactic explanation of the building. Instead he proposed an engagement with forms of film making that were anti-narrative and attended to the material properties of the film media. Even this appeal toward the animating of process would have been influenced by the legacy of Bauhaus film making and preoccupations with techniques that animated forms in motion and in relationship to each other. In this case the film media had the potential to 'make visible' things that were either imperceptible to the human eye.³⁶ In these ways, animation was used as it was intended in order to produce the illusion of dynamic

movements from a series of animation cels. In contrast, the way that Eisenman approached film might be understood according to Rosalind Krauss' definition of the 'technical support' that she uses to reform works from the mid 1970s to recuperate a form of specificity based not on the concept of medium but on rules of operations. In this context, the film presented a model of automaticity to Eisenman's design process, but rather than simply rendering the illusion of movement, he would use it to impose an idea of iteration that emphasized the single frames, and thereby the single drawings.³⁷

Eisenman's scribbled notes contained citations for structural film makers including Paul Sharits, Peter Kubelka, and Tony Conrad, all of whom were known for 'flicker' filmmaking that emphasized structural and durational qualities of cinema.³⁸ Flicker films were a subgenre of what was at times referred to as the structural films of the 1960s; however, a broader genealogy of film traced these under what was called 'graphic films' which was one of the two strands of Avant Garde film making.³⁹ Graphic films were considered the hard edge, flat films that would later incorporate animation, computer and electrically modified films. Flicker related to the projection of film produced by the shutter—that protected the transition from one frame to another—expressing the effects of the apparatus itself.⁴⁰ The definition of structural film would later be defined by four characteristics that in some combination in these films; fixed camera position, flicker effect, loop printing, and rephotographed off a screen.⁴¹ Structural films like those of Sharits and Kubelka were invested in models of repetition and yet, as George Baker has pointed out they were a curious mix of the stationary and mobile, simply because they expressed the still frames that were built into a continuous sequence *ad infinitum*.⁴² These films made the viewer aware not only of the single still frame, but also the camera and projector, they expressed the conventions of the 'technical support' as part of the experience of the work. Sharit's 1966

Ray Gun Virus was made of solid still frames of single color, that ran in a flickering pattern one to the next was accompanied by an emphasized sound of the film being processed across the projector and the perceptual effects of colors blending in front of the eyes. Flicker films makers often also made timing sheets that showed their films as plans these appeared as elaborate pixelated layouts of colored stills . One of the most important features of these films were the ‘space’ between frames, which Kubelka describing as the space where cinema “speaks.”⁴³

Eisenman would borrow this idea of the gap and the flickers for his own film for House IV which was made in 1973 and titled *Houses of Cards*. The film animated the process drawings, or what he called the diagrams, into a short 2-minute film. It was made to be exhibited at the Milan Triennial XV that year, though there is no record of the film ever being shown. Eisenman’s plan for the film was twofold, to explain the diagrams drawn for House IV, and to examine and make the diagrams understandable to himself and others.⁴⁴ In explaining the benefits of film over other formats Eisenman used a McLuhanesque media theory of participation in order to argue the difference between formats of drawing:⁴⁵

The visual transformations of form which occur in the design process cannot be shown in still photography on a printed page or in slide, because on paper they omit too much and because the mind in an attempt to make sense or order of such a sequence of drawings tends to fill in the gaps which might exist from drawing to drawing unconsciously.

However, when the same sequence is put onto film, because of the speed of film the mind is no longer able to fill in the gaps.⁴⁶

These statements had much to say about the new control that emerged out of use of animation. Rather than having the “coolness” of drawings with gaps that invited participation, the film

would simply run through the cels (Fig. 3.14). The issues of control and creativity in all cases were to be managed and erased by the industrial nature of film. Eisenman was unwittingly writing a theory of media of his own that applied to the legibility of his process from one format to the next, where each new format remained in some way embedded in the form it was replaced by.

The silent film that resulted opened with a series of establishing credits and a three-part title that illustrate the complexity of shifting from a client context to one of exhibitions. The three-part title reflected a hierarchy of importance (“*Castelli di Carte*”; “*Transformations Series B*”; “*House IV*”) that located the house as the least important behind the larger project and sequence. A hierarchy of contributors that indicated that the film was collaborative effort. Eisenman headlined, credited as ‘Architect’, which was a label that did not fit within any authoritative structures related to film. There were three other contributors of significance and varying technical expertise: Ellen Cheng, a Princeton architecture student who was listed as the ‘Animator’; Martin Abrahams, a New York artist who worked in the media of ‘experimental animation’ who was listed as the ‘Animation Consultant’; and Dick Frank, a commercial photographer and client who was credited as the ‘Producer.’ This series of names and contributions established a scene of a decentralized effort and framed the industrial model of post-production. I describe in this section the way that architectural production fit into this model of animation more procedurally. Abrahams was hired through producer Dick Frank, and an animation house was rented in order to record to film.⁴⁷

Cheng was credited as the animator, though she was technically working as a delineator charged with drafting the animation cels. Her role would fit within a lineage of industrial

organization in animation studios where the division of creative work and mechanical work was clearly divided and mechanized with the tools. This was also historically gendered work that reinforced a division between those who were considered artists and those who were a part of the production apparatus as delineators and colorists. The artistic production of key cels drawn by the head animators supported by teams of anonymous women colorists and delineators who worked in the frames between to produce a smooth movement from one to the next.⁴⁸ In a much smaller model of this division Cheng, who worked from Princeton as she continued her studies, would meet with Eisenman for feedback and planning. She produced the drawings on her studio-desk rather than in the office, and she made visits to New York for reviews at the Institute. Cheng had undergraduate training at MIT through the classes she took in the Architecture Machine Group and cognizance of applications like Sketchpad as a graphic interface, she was hired to work on the Triennale film primarily for her mechanical drafting. She drew 160 drawings based on a basic set of developmental phases that had already been represented by Eisenman's office and statically in drawn and printed diagrams. This left a substantial effort in representing the frames that fell between. It is precisely this space between frames that produced a conversation around control, because it was in these gaps that design occurred. These gaps between Eisenman's control and Cheng's contribution that would become central to his thinking about authorial distance, creativity and intuition in relationship to the project.

Following the title sequence, the black background of the credits dissolves into a grey backdrop on which a simple mechanically cube is drawn. The animation moves in uneven pulses on the same drawing twice, and then shows the cube bisected; next, the cube disappears and flickers onto a nine square grid frame variations before viewers see a solid wall to internal wall animation, and, finally, a solid cube (Fig. 3.5-3.6). Studying the frames of the film reveals the

discontinuous visual effect produced by the insertion of blank frames between the drawings rather than a smooth transition from one drawing to the next. Around a third of the way into the film, these primary transformations segue into the beginnings of the legible house with strip windows, frames, and infill walls. The transforming form on the screen reaches a conceptual pinnacle as the process then reverses and returns to the original cube frame, closing a process loop that could continue on ad infinitum.

The conversations that circulated around animation at that time related to tools and technology and reflected a field grappling with the reorganization of authorial production. Abrahams, Eisenman's animation consultant, was one of several other New York animators who were attempting to utilize the formerly commercial or industrial media of animation for artistic and experimental purposes.⁴⁹ The discussion then circulated around an idea of independence that required the invention of new tools that were smaller and craftier than the larger facilities available to commercial animation studios. Many of these practitioners were, like Abrahams, students or teaching in academia with access to laboratories and tools in that way. Reflective of the production world of the independent animator, Abrahams worked on Eisenman's film by renting out a special effects studio in New York named Optical House. The set-up of this studio was 'state of the art' for the field of commercials and entertainment. Notably, the studio featured an 'Oxberry' Machine that was designed by an inventor who had vested interest in producing tools for independence and had designed the machine to be accessible beyond the large entertainment houses.⁵⁰ At this time, museums were collecting and displaying animation film and experimental film, and smaller institutions such as the Anthology Film Archive and Invisible Cinema in New York also collected and displayed the films of these independent makers.⁵¹ Film makers Cecile Starr and John Russett attempted to coin a genre of "experimental animation"

from between the diverse approaches—from illustration based, to flicker, and early computer graphics—emanating out of 16 and 36mm film reels. In explaining the use of ‘experimental’ in their title, Russett and Starr claimed that the term “suggest[ed] individual techniques, personal dedication, and artistic daring.”⁵² The animations they collated together were significantly defined as critical and outside of the commercial circuits.⁵³ In their definitive 1976 publication on experimental animation, Russett and Starr claimed to be the first to examine this newly defined field of practice that tied film, computers, and cartoon animation together.⁵⁴

The personalizing tools that constituted a fundamental unifying characteristic of experimental animation was in part a way to turn from the industrial processes to a form of craftsmanship or artisanship.⁵⁵ This turn toward craft was part of a material turn and attempt to consider questions of medium and structure in film making in this period. Starr emphasized that early adopters of non-commercial animation were interested in more than simply making experimental films, but in the making of “technical directions.” Their imperative was equally about the potential development of tools that could traverse the informal spaces of amateurs and school children but equally support “budget conscious students and independent filmmakers on more advanced level.”⁵⁶ Animation maintained a connection toward the graphic—the flatbed picture plane, so to speak—on which the production took place.⁵⁷

Paradoxically, it was not the potential of animation for personalization and craftsmanship, but the exact opposite that Eisenman was seeking when he moved toward the media. However, I borrow film historian Hannah Frank’s “frame by frame” method to examine Eisenman’s film. One frame at a time, this filmic analysis illustrates that regardless of Eisenman’s intention, it was his insistence on a media that began with a drawing process that

produced an alignment with a discussion of craft. Frank's photographic theory of cel animation reintroduced two discourses that had historically been kept distinct, photography and animation. Much like the history of photography's role in drafting practice, it had been similarly underrecognized in relationship to animation practices. In that context, the photographic work of animation was considered to be analogous to other seemingly automated and anonymous bureaucratic forms of photography such as document copying or archival photography. In these processes mechanized photographic process were seen as "merely recording" after the creative act had occurred in the design, delineation and coloring of the animation cells.⁵⁸ These were productions in which the camera and operator were suppressed as an invisible agent, merely capturing the content but not expressing any signs. In delaminating all of the spaces of contribution, Frank begins to rethink the notion of post-production and between creative and technical work.

An important reason why photography was underacknowledged was related to the way that when it was flattened together in the recording it became difficult to discern where the two material worlds began and ended. She described this in a close reading:

The fiber of the background watercolor paper intertwines with the grain of the film; what looks at first to be specks of dust that have adhered to the cel might in fact be cartoon raindrops or scratches in the film emulsion. A hair in the gate is often indistinguishable from a squiggle of ink; what seems to be an explosion of dynamite in the upper-right half corner of the frame could just as easily be a cue for the projectionist to change the reel.⁵⁹

The space that Frank opens up in her description of a single animation cell is the material worlds of delineation and drawing and the recording of those drawings that are merged together by the

camera. Animation film, she argues, prioritized the sequence and narrative of the film and rarely if ever considered the still frame with quite the same seriousness or attention that is accorded a more serious genre of film making. However, for my purposes here, Frank's proposal to halt the animation to the single cel is a useful one because Eisenman was an architect first, and the cel in his film was, after all, a drawing. By returning to the single unit, the layers of drawing and the cel it became via animation, one can understand the graphic procedures behind the drawings that linked Cheng and Eisenman together with other industrial graphic arts such as advertising and graphic design by their shared techniques of paste-up. These two realms of production and reproduction, drawing and photographing, were precisely the spaces in which many experimental animators worked. It is clear in Eisenman's film that certain effects can be understood as the melding of these worlds under the camera's eye. For instance, the grey background in the House IV film—the product of melding the drafting mylar under the lens of camera—matched neither the semiotic whiteness of paper nor the black that would at that time have been associated with early computer screens. Instead, the film maintained the appearance of the very act of running mylar sheets under the lens in the animation studio. When stilled into single frames the cels reveal other material traces such as the reflection of studio lighting on glass pressing plates, or the scrapes of emulsion in the transitional cels. Therefore the House IV film, in expressing the grey mylar backdrop, indexes the space between the work of preparing drawings and the undertheorized process of recording to film.⁶⁰

This grey backdrop was not the only example of the way the animation maintained a clear relationship to architectural drafting. As I elaborate in section III, to choose drafting over other forms of expression, including computation, was already a decision. Animation had the capacity to accommodate freehand linework that computers would not, it was there for yet

another decision to draw in a mechanical way. The depiction of the transforming cube, rendered in simple, sharp Rapidograph lines and occasional color-block overlays, represented an attempt to remove external affect, signs of expression, and the drawing hand (Fig. 3.7-3.9). These removals were key to the appearance of an ostensibly authorless or automatic process. However, the control, or rather the failure of control, in the film becomes visible in the recording by way of the conspicuous pauses between frames, made possibly only by the inaccurate calculation of drawings needed for a smooth film. With only moments of lucidity in the transforming process the animation showed gaps as the drawings from one transformation turned to the next.

The way the film expressed its origins as a drafted set of drawings raises a question around technical control. Drafting had appeared by then in conceptual art practices in the 1960s and 1970s as a stand-in for the externalization of the idea from the artist, a sign of remoteness. These practices centralized control as an artistic problem more broadly. According to John Roberts, though, the effort of conceptual art practices revolved around the outsourcing of specific technical areas of expertise, which is what has been understood to be a removal of the hand, leaving a gap in which other agents and contributors would enter to realize the project.⁶¹ In order to overcome what he called a fear of heteronomy in the production of the work “handcraft” returned in other ways related to the manipulation and supervision of the technical processes including tasks like editing and oversight.⁶² According to Roberts, it was this intervention (one that was often invisible) in the processes of making, often seen as things like hands-on supervision of paint finishing and so on, that allowed for the disappearance of the artist’s hand from their work despite their reinsertion in other forms of control.⁶³

The animation cels for the House IV film were preserved and are amongst the collection at the CCA today (Fig. 3.10-3.12). An examination of these sheets of mylar shows a complex set of repetitions and recursive rules than expected because rather than one drawing per cel, each mylar sheet held a reduced version of three drawings and one blank space. The sheets were prepared with registration holes for the pegs. Each quadrant then carried three separate animations that were stitched into one linear sequence. The economy of means of combining drawings onto one page required other systems of organization and communication in order to instruct the order of the cels for filming. It also suggests a difficult and reprographically intensive process of production in order to ensure that each quadrant of the page registered to the one beneath.

These mylar documents also reveal that these animation cells were also used to reproduce images in the making of the 1987 House of Cards Publication, indicated by the Oxford University Press publishers tags on several of them. The entanglement of these documents within a wider reprographic circulation of these diagrams would be reproduced in a set of drawings that I examine in Section V.

III Redesigning Film

In 1960, at the AIA ACSA “Technology” conference at Camp Sagamore, examined in Chapter 01, the concept of technology was seen as a loose association of things threatening the architect’s centrality. Within this context, Charles Moore had described the bifurcation between the conceptual designers who were not interested in engaging with technology in their work and tended to a younger generation, and the nuts and bolts (or watts and bolts) who were the

architects more focused on technical expertise and the technocratic sides of architecture. This ‘great divide’ which repetitively marked discussion of authorship in the twentieth century between the sciences and the humanities echoed the technocrats and intellectuals of Snow’s two cultures, or the divisions of bureaucrats and geniuses from Hitchcock. As Pamela M. Lee has pointed out, the division that Snow articulated was in many ways a nostalgic one, given that the postwar focus on techniques of organization were structuring art making in the critique of direct authorship.⁶⁴ Yet a growing presence of collaborative ventures between art and technology toward the end of the 1960s, or the fashioning of ‘residencies’ for artists within corporate and academic laboratories were signs of these attempts to cross over and were often driven by funding sources. At the same time the celebration of technology was twinned with a counter concern with the military industrial academic complex and the Viet Nam war protests in the early 1970s, as well as counter cultural use of technology to paradoxically escape technocracy.⁶⁵

This context provides the backdrop for the next episode in the life of House IV. The film, which had according to Eisenman’s evaluations, failed to didactically explain the design process had at the same time offered other options for moving the design forward. At the same time the ‘grand divide’ between these two cultures remained obviously useful to Eisenman who spent some time thinking about how to articulate a different approach for the same set of drafted drawings that were the House IV process diagrams into various formats related to their future circulation and reception, whether in the class room or the museum collection.

The convergence between new-media and the modernist concept of medium in this period led to what appeared in Eisenman’s notes to be a heightened self-consciousness of the project’s relationship to a scientific and art epistemes.⁶⁶ The image of a transforming cube was

the exemplary subject of interdisciplinary research, circulating between various technical and artistic contexts. Cubes featured prominently in the conceptual and process driven artworks that Eisenman was interested in, for instance Robert Morris' larger serial works in the mid to late 1960s. In that context these platonic forms were often scaled to the dimensions of the a human figure, and were seen as primary in an artistic movement dedicated to understanding the primary and elemental aspects of language, form, and art.⁶⁷ Similarly, a cube was a form that could be easily converted into mathematical languages; it had simple modular rules around dimensions, faces, and edges that related to a grid logic. With formal links to the cardboard-box commercialism of Andy Warhol, cubes were equally described as geometrically self-referential or self-evident. As such, the cube was emblematic of an artistic practice that had dedicated itself to shifting creativity from a direct genius model to a more mathematical and systematic concept. While Eisenman clearly sought to establish in his writings a connection to the variations of LeWitt, or the experimental film-making of Kubelka and Sharits, his work could have just as easily reflected the contemporaneous modelling of transforming cubes that preoccupied designers producing didactic material to demonstrate a software's functionality—for example, Bela Julesz and Michael A. Noll's hypercube animation made at Bell Laboratories.⁶⁸

In 1973, Eisenman reshaped his ideas about film in order to apply for a research grant from the Graham Foundation to rework the *Carti di Castelli* film and redevelop another film for House VI.⁶⁹ He suggested two titles: *The Use of Film in the Design Process* or *The Development of a Design Tool*. Between the two title options was an indecision. In the first title, the media of film was named but it was not made instrumental and instead seen as perhaps one of many agents at play when one designed. The latter title was more direct and suggested that, despite the suite of materials and tools at the architect's hands at that moment, there was still the need to

develop his own design tool which would forge a link between an idea of experimentation and technology. The indecision between two titles for his research proposal to Carter Manny was reproduced again in the following sentence when explaining the relevance of film to architecture in the light of the development and capacities of computation:

[the research] is much more concerned with using film in much the same fashion as a computer to produce a fine grain visual analysis of a design process. In fact, if the cost were not so prohibitive one might use a computer to do the drawing and even perhaps the analysis.⁷⁰

This reference to the computer remained through all drafts of his proposal writing, even when challenged by an unnamed editor who queried the necessity for such a sentence: “Peter if you think a computer useful—why not use it—otherwise—why mention it??”⁷¹ It was a good question, and leads the assumption that an association with computers was important, despite his choice to use film instead. His explanation that his choice of film over computers was related to the costs was a curious one given that in other appeals for funding he admitted that animation was “very expensive.” Furthermore, cost breakdowns and budgets from his desk reveal the specialized rental for the Optical House film was itself a substantial cost.⁷² Taking the written evidence collectively, it is clear that there was more motivating Eisenman’s alignment with computers and his simultaneous rejection of it in favor of animation film. The rejection of computers was not related to a lack of knowledge about their potential, as there was great overlap in thinking between the fields of mathematics, linguistics, structuralism and computation in this moment.⁷³ The decision, then, that Eisenman built out film over computer analysis remains a curious and untimely one—one that I argue related to a form of nostalgia and control

that he found rooted still in the processes of drawing and maintained by animation. The choice between computer and film in this period turned out to not be a choice at all when considered more closely relative to the various activities in computation. The potential to produce color animation did not exist at that time, and processing was often so time consuming that animation was used to thread together still captures from the screen. Even by 1970, the computer animation was recorded from the computer screen by the animation camera onto film.⁷⁴ Yet at the same time, computers likely represented a problematic entanglement with technocracy, and the divide between conceptual and technical realms examined in Chapter 01. It is likely that these were also influencing Eisenman's rejection of the computer, even if it was useful still to acknowledge it as a parallel agent to his own research. Choosing the film meant, paradoxically, choosing drawings and the laborious production required in Eisenman's office with interns drawing in Rapidograph pens on sheet after sheet of Mylar, tracing, scratching out mistakes, redrawing, calculating the shifts in geometry to transition from one form to the next (Fig. 3.13).

According to his Graham grant application and a later NEA one, Eisenman would use film as neither "a literal record" nor "structure as a thing in itself." Rather, the structure could be seen as a "tool" that "disciplined" each drawing stage of the design process diagrams.⁷⁵ The film structure became useful with the promise of delivering 'feedback' to the design process. This notion of feedback was key given that this was a house with no client and had therefore transformed into a recursive system. Eisenman's use of film in order to "invent" his design tool, was rather an apparatus that satisfied his belief in the externalizing his authorship. The way that he conjured this belief was related to the "untapped resource" of intuition that he sought to extract like a resource: "mining one's intuition and getting it on some sort of belt and feeding it into some sort of way."⁷⁶

A statement that echoed his student paper in 1960 where he had proposed the “idea-as-machine,” here he described a conveyor machine for ideas. This substance of intuition, a resource he claimed would be unleashed in a designer by the structure of film appeared to be another effort to externalize the design process to produce another form of control. In explaining the limits of a single drawing, Eisenman articulated a type of automation that would occur in shifting from page to page but raised another important issue in his authorial mode:

A first drawing of a plan or elevation is not a final result. The second drawing must be something which transforms the first one in terms of some latent intuitive pre-fixed image that is ~~one has~~ desired as an ultimate result. The question is how much of this ~~design may be~~ image is derived from what one knows about the program or from one’s own taste and ~~finally~~ how much of it comes from pure intuition? The full extent of ~~this~~ the effect of the latter [intuition] remains latent in any individual as long as there is no method for exposing it. *If one could find a more adequate tool which would uncover (or tap this) unconscious capacity, two results might be expected. One, a freer and expanded intuition which might produce truly innovative solutions beyond the tasteful, and the “avant garde” gesture; and second, that the released intuition, so to speak, would be more available to conscious manipulation-(control) [Strikethroughs and ellipses annotated in pen in the original; italics added by the author].*⁷⁷

Film could not only be used in order to “show” a design process, but that it could be used to intervene and extract or externalize parameters to the designer that could be harnessed and controlled. This was a fantasy that reflected the context of critical art practices from the 1960s whereby techniques of externalization described in Chapter 1, were required in order to produce

a form of critical distance. For Eisenman who had already abolished the client from any form of feedback now was confronted with himself as client, and as such the film provided the belief of distance and depersonalization intrinsic to his desires for a critical practice.

It is useful at this point to return to the choice of film in the first place by Eisenman back in 1973. A hint of the reason behind this is given by Eisenman's later recollection of a "largely self-propelling" design process. Eisenman's description of self-propelling design echoed the early theorizing of the media of film as 'moving-images.' In this context, the media affordances of film were described in the movement of the film strip that could capture life and vitality.⁷⁸ It therefore makes sense that, when considering the next step for his project, he turned to film as a way to test his design process and perhaps even shifting the validation of a client to the research funding of granting departments. But the concept of self-propulsion also drew upon a long history of marginalized scientific activity that centralized on a fantasy of designing a machine that perpetually accrued value. The idea of 'self-propulsion', something sustained in an activity ad-infinitum and without external forces and thus promised infinite profit, was historically linked to the pursuit of perpetual motion. Since the early eighteenth century, this provided a powerful metaphor and model for absolute power, statecraft, modernization, and automation. The impulse to invent machines that endlessly worked sat at the intersection of scientific, technical and commercial life in early modernizing Europe.⁷⁹ The energetic model of these demonstrations was that of absolute power, and yet in the hopeless pursuit of the impossible, perpetual motion became a symbol of 'vain irrational ambition.'⁸⁰ The perpetual motion machine promised a speculative potential of investing in a machine that would be an infinite source of energy and work.⁸¹ Automation in the late 1960s was intricately tied up with the question of intellectual productivity. In the shift from industrial to post-industrial labor paradigms the question of what

labor was, how it was measured and managed shifted. Eisenman's fantasies of automation that harkened back to a form of creativity that was not seen to be productive or outside of manufacturing and manual labor.⁸² Artistic autonomy was predicated on immeasurable qualities such as creativity or intuition that was, as Eisenman describes, an immeasurable resource. More than that he promised that harnessing intuition was a space to be exploited and controlled. As such, the film as a design tool might equally reflect the imaginings of a form of conversion in this period of creativity into the economic framework of capital. Since he did not see these creative activities as manual production or labor then it was not subject to the same scrutiny of hours of work, output, and as such already in the framing of the film one can see an excess form of production in the expansion of the design process. Despite the language of free-flowing texts and diagrams and workers dutifully working to produce them, this infrastructure was built on the landscape of graphic supplies at use in order to draw the hundreds of 'transformations'.

Understanding the context around computers and architecture in this period sheds light another possible motive for Eisenman's rejecting computers and choosing film to animate and analyze his process. Primarily computers were still seen as entrenched in the technocratic world in 1973.⁸³ They were found in corporations and institutions with access to the budgets required to develop and maintain the software and hardware required.⁸⁴ Eisenman's research proposal followed almost a decade after the first conference for computers and architecture in 1964.⁸⁵ The conference titled *Architecture and The Computer* reflected the technocratic and vocational context of architecture in that moment.⁸⁶ The conference reflected concerns around the reorganization of knowledge and expertise in the face of computational tools and the status of creativity in architecture. A sense of divide was registered between what was considered creative work and what was considered processing. Conference organizer Sanford R. Greenfield

described the problem as a lack of distinction between knowledge and expertise suggesting that the disinterest of architects in computation would leave a vacuum of work opportunities that would be filled by programmers without architectural training. In order to parse out the relationship therefore between programmers and architects he proposed a cooperative model similar to the broader art and technology context in which artists were sent to “create” within technoscientific and industrial contexts.⁸⁷ Greenfield proposed that the dominant thinking retained a resistance to considering where and when creativity occurred and where computers may be engaged:

Many people hold that the creative act occurs early, perhaps initially, in the design process. The architect is an artist whose brain serves as the ultimate computer, programmed by years of experience and sensitivity to visual phenomena. Intuition serves to limit and reduce the number of alternative solutions (and variables) and therefore eliminates the need for a logical testing apparatus.⁸⁸

The issue of design phases, returning to Paul Rudolph’s summary at the beginning of this chapter, was at stake in these reorganizations of knowledge at the foundation of architectural design tools in this period. The problem related however to where the creative act occurred and Greenfield’s suggestion demonstrated the ways that discussions around computation was reinforcing the creative act as an early and limited activity akin to the Ecole des Beaux Arts concept of the ‘parti’ sketch.⁸⁹ Reading this quote one recalls Eisenman’s own statement about intuition where he referred to the media of film as an extraction machine, drawing the untapped resource of intuition and externalizing it for control. Both he and Greenfield were pursuing the release of recursivity and repetition. However for Eisenman the imperative of his use of film, and

the mechanical drawings, was to extract the resource of intuition, which he imagined was infinite, and externalize it thereby constructing the appearance of objectivity. For Greenfield the battle remained between the computer that produced infinite variation and the human brain that constantly reduced these according to the shaping of personal biases built into intuition. The externalization of this intuitive source would produce a limitless potential that could be severed from the personal, whereas the computer could produce infinite options that would be reduced and shaped by the personal.⁹⁰ Greenfield's definition of intuition related to the choices that one could make around how to set up parameters to the process. Computation at that time meant a compartmentalization of knowledge between who wrote code and those who used it, a division that aligned with a cleave between notions of creativity and processing.⁹¹

This distinction between the appearance and performance around tools was something that Eisenman spent a great deal of time writing private notes about. He defended that he was searching for a "rational design tool," not to make something simply 'look' rational. This division of appearance and performance was a larger concern and space of manipulation in relation to the film. It was a claim however that was perhaps complicated by a personal discussion inscribed on yellow note paper in which the architect seemed to wrestle with the problem of using color in the film:

Why should I use color as opposed to black and white? Adding semantic or meaning, take away from transformational images, becomes arty.⁹²

This statement suggests that color would help improve legibility and thereby legitimacy of the film as a rational research object, but it had the added benefit of producing the effect of

‘artiness.’ The effect of artiness was perhaps equally something that would diminish the potential of the film as a rational tool:

How can I use filmic potential to reinforce enhance my drawings which are better understood in film without becoming arty and self-conscious and destroying intent of making film in the first place.⁹³

The sentence suggested a consideration around the control of “effects” in the making of the film and how to manage the appearance and validity of the film as a tool. In qualifying the tweaking of these ‘settings’ in the film tool he was designing Eisenman engaged with a pre-existing conversation around the manufacturing of color graphic supplies for use in film and photography for uses that were systematic and rational. The material Eisenman was using in his drawings at this time to inlay color was Color-Aid paper sets that were produced as a “system” by the Color-aid Corporation since 1948.⁹⁴ Each ‘set’ of paper came with 202 sheets of set hues and tints per color. The product was first manufactured as a photographic construction paper providing backdrops for photographs, but was used in scientific illustration contexts and for advertising agencies.⁹⁵ These paper sets that were used in paste ups and inlays were advertised as a new “tool” in printer journals for color studies related to their use as teaching aids for color theory studies in colleges.⁹⁶ It was this “readymade” aspect of the color-aid sets, much like manufactured paint, that interested serial and conceptual artists such as Sol Lewitt and Donald Judd as a constrained palette.⁹⁷ Color-aid sets and other commercially available graphic color transfer sheets or paints during the 1960s were of interest precisely because they seemed to promise a level of objectivity and remove from the idea of signature colors or other more subjective ideas of choice.⁹⁸ Two years before Eisenman made his film, Richard Serra had used a

color aid paper set to make a 36 minute film titled “Color-aid” (Fig. 3.16). The camera sitting overhead and cropped to a color aid set of papers filmed with a cropped view of the colored papers from above with the repetitive intrusion of a hand that removed page after page and color after color across the duration of the film. Serra’s film that called attention to the structure of the paper sets, recalled the earlier flicker films that Eisenman had referenced in writings about his own forays into the medium. In the films of Paul Sharits, for example, Eisenman noted the use of color in order to render the filmic structure visible. Eisenman’s discussion around the appearance and performance of rationality or artiness was a reinforcement of the divide that was one again undermined by the material supplies that traversed these worlds (Fig. 3.15)

IV Immutable Mobiles

Eisenman’s desire to produce a tool, or promising to do so, in this moment as a way to seek grant support tells us something important about the culture of research in America in the postwar period. As Avigail Sachs has pointed out, the amorphous definition and debate around what research was related in part to the effects that research funding had in shaping directions toward scientific research agendas in United States universities and laboratories.⁹⁹ One can start to understand through Eisenman’s positioning that there was such a thing as a ‘fundable’ project and at that time it was one that performed ideas that were scientific. Research in architecture was defined in the AIA Mid Century portrait of the profession most loosely as “the discovery of new knowledge and formulation of new principles occurs whenever experience is interpreted and organized by intuition or intellection for the purpose of deepening understanding, sharpening sensitivity, and guiding future action.”¹⁰⁰ The survey outlined specific areas of architectural

research related to the sciences, applied sciences, product development, testing, surveys, and documentation research. But research centralized “problems” that formed the basis of a practice of research. More importantly, one had to show some idea of advancement or “carry over” from one project to the next.¹⁰¹ Research had to be circulated in some way via publishing to join the body of knowledge in the field. As such the film as a reproducible media promised a type of portability and reproducibility.

The film was made at the IAUS alongside other larger grant-based projects including the related Generative Design Program with Diana Agrest and Mario Gandelsonas funded by the National Institute of Mental Health.¹⁰² However the film itself was one that Eisenman tried to extricate from the Institute and argue that it was independently made:

It is my own and has nothing to do with the Institute. I am hungry, poor, and hopefully worthy, and like all powers great and small I am succumbing to the lure of gold.¹⁰³

The concern he felt to separate between professional and independent practice and the projects that occurred under the provision of the Institute was a financial one. These grants produced a network of support that replaced the model of client service and shifted the forms of validation. However it also marked the way that institutions, academic, museums, grant foundations, and residencies, were providing project-specific research opportunities. This condition was fundamental to the concept of independence that Eisenman’s animator Abrahams and others made their livelihoods working across institutions often working within universities which gave them access to film-making equipment. The visibility of those producing “experimental animation” was made possible by an alternative system of distribution and circulation of the films within educational and museum contexts. The museum and academic distribution was an

alternative network of circulation from the film industry channels, thus allowing for films that were not likely to be commercially viable and successful to reach audiences nevertheless.¹⁰⁴ Likewise, seeking economics from other forms of funding including residencies, grants, meant that these individuals were highly mobile passing through various research institutes and schools.¹⁰⁵ As Starr would later note in her book with Robert Russett, the circulation of films via art and educational channels had in large part supported the so called ‘experimental animation’ by offering alternative channels for the work to be circulated. While collecting film had long been important to the library and circulating visual aids, there were a series of exhibitions particularly in 1967-8 around animation and computer films.

It is a model of work that is naturalized in architecture today, but it was during this period that the institution became a client and transformed the nature of architectural work coinciding with the shift of the theater of architectural production such that the design process would be paradoxically technologized by photography of Mylar, Zip-A-tone, and pen. Architects of means and support turned their attention toward design activities that were instrumental in the self-fashioning of their area of expertise and in packaging of their work that were part of the forces of post-modernization which were transforming the various models of architects were ones that were predicated on new models of financialization of the field.¹⁰⁶ These models related things like the nascent art market for presentation drawings, changing opportunities in academia for guest lecturing, cross institutional events as architects and slides packaged as learning tools and visual aids began to traverse the country and beyond. An important aspect of this circulation of people, ideas and media sets was the resource building that was occurring in universities related to the development and growth of ‘visual aids’ that were seen as circulatable tools for learning.

This shift of understanding architectural work required the removal of the patron-client and what Bruno Latour describes as the *mobilization* of the instruments and institutions of knowledge dissemination via an engagement with exhibition culture, magazine culture, and collecting which were the primary sites of discourse in that moment.¹⁰⁷ Considering these instruments and sites in relationship to questions of mobilization and media in relationship to Eisenman's fourth house also refigures our understanding of his work as serial. Eisenman himself considered his design process to be rule-driven and serial in the production not of unique entities but in thinking in multiples and variations. However, one can start to see the ways in which a medium that was already intrinsically serial, such as film or photography, was equally useful for circulating and reproduction that would increase the transmission of his ideas. In order for his work to be funded as research and knowledge production, there would need to be a strategy toward dissemination, and film and slides were in this time the dominant information infrastructure in schools.

Previous accounts of Eisenman's mobilization have focused on the ways that he established an analytical design process as a reproducible method and that these ideas were transmittable to others. The method of design derived from a rule based approach was the primary way that his work has been considered in relationship to any form of automaticity in the form of an automatic process.¹⁰⁸ This, however, is the narrative that also tracks with the one Eisenman himself established publicly in his writing. Discussing Eisenman's work often required the use of terminology and framing that he had set up thereby demonstrating the transmission of the method. An example of this is provided by Institute Fellow and then-collaborator, Mario Gandelsonas, who wrote a piece on Eisenman and Michael Graves titled 'On Reading Architecture' in 1973 at the same time House IV was in the office. Gandelsonas explained the

project would: “eliminate all factors at the communication level...consequently, there seem to be few or no references to the client, user, technical structure or to symbolism.”¹⁰⁹ Gandelsonas’ statement illustrates the transmission of Eisenman’s conceptual model by suggesting that his buildings could only be understood if one abided by this exclusionary framework, thus isolating the conversation from outside concerns. Gandelsonas was also vital in emphasizing Eisenman’s disavowal of any “finished product itself” instead prioritizing the design process (described as a set of operations), noting that Eisenman “replaced” the plans, sections and elevations with “generative sequence” of axonometric perspectives.¹¹⁰ This replacement of course was not a replacement at all, attested by the conventional orthographic drawings alongside the axonometric sequences that illustrated Gandelsonas’s own article. What *was* being replaced perhaps, as this chapter is demonstrating, was a mode of working with individual clients, or the technical conditions of construction and replacing them with the Institution as client, and another set of technical structures around how and where the project would circulate.

Circulation, it turns out, was primary in Eisenman’s mind when considering his turn toward film as a media. His grant proposal to the Graham foundation referred the “real possibility” of an exhibition following his discussions with Mildred Friedman, who was then the curator at the Walker Art Center in Minneapolis. This exhibition proposal was an idea reiterated and extended by an earlier draft of the letter to Carter Manny in which Eisenman outlined his vision for the project of the films being shown as a pair for a traveling exhibition. Referencing the use of a portable media like film and its circulation specifically to Institutional spaces of learning including schools and museums, fits within a longer history of ‘visual aids’ and tool development in this period. In his letter to Carter Manny, Eisenman described his experiments in film:

In my early experiments in this area I have found that by working in this way, I have been able to uncover design ideas which have not been previously available to me. I am hopeful that this work can be generalized and more precisely formulated so that students and practicing architects will find it of value.¹¹¹

The film that produced the fantasy of an externalized his design process was thereby generalizable, a claim that would allow it to circulate as a tool for use by others.

It was a fantasy of tools for education that was a wider phenomenon in this period. Director of the Department of Architecture Arthur Drexler had encouraged Eisenman in their discussions about his film as tool project, reflective of Drexler's attempts a decade earlier to develop the slide and film department at MoMA in 1963. The proposal sought support for a project he had for 'teaching aids' for high-school and college age students of architecture. Included in these teaching aids was a series of slide sets arranged into one-hour lectures with accompanying printed information sheets. These sets would, according to Drexler, fill a significant gap in the publication and education market that had become clear to him while teaching: "From my own experience I would bet that students all over the world would give their lunch money for this kind of material." The funding then was in order to produce publications that would be expensive to produce but cheap enough for student budgets, with the Graham covering the shortfall. The promise of these circulating sets of slides was "culminating in something architects and students could hold in their hands." A nostalgic sentiment that suggested that the objects of architecture may no longer be the buildings but the stuff of discourse including their media supports:¹¹²

In my own view, the development of modern architecture in this country, and its continuing presentation in the popular and professional press, have now reached a point where the only relevant contributions to be made by museums and foundations concerned with the advancement of architecture, must be through activities independent of the ordinary commercial procedures, Architects, Scholars, and public alike now require more substantial nourishment than is available.¹¹³

The circulation that Eisenman was proposing funding for was an important infrastructural feature developing in schools in that time. The status of visual aids and teaching tools were key items described in a survey commissioned by the AIA and led by Turpin Bannister between 1949-1954 and published in 1954 as *The Architect at Mid-Century: Evolution and Achievement*. The study which examined the connection between the needs of practice at that time and the developments of office organization and the ways that the education system in America was producing and preparing graduates to meet this working context. In the larger first volume of the publication in a chapter dedicated to the “facilities, personnel, and administration for education” the book outlined the presence of tools for teaching. The survey proposed a “magnificent teaching device” of the circulating exhibitions of honorable work and associated exhibition facilities in the schools. Honor work would be collected by a central agency and sent to schools to provoke conversations around the various approaches and culminating in a “stimulating exhibition” at the AIA convention. While the facilities listed included studios, dark rooms, and model yards, there was also the inclusion of a different type of infrastructure being surveyed called Teaching or Visual Aids and including the teaching materials of slides and video that were linked to the library.¹¹⁴ The question of circulation was another way to think about where slides were held and how the schools did not have equitable access to them. These slides were

duplicated internally between faculty also and shared, photographed from texts books, or requested from architects directly. More formally sets of slide images packaged together and circulating around a network of schools as a priority. There were already ‘standard sets’ of architectural slide photographs initially sold by photographic agencies such as the glass lantern slide sets taken by Dr Franz Stuedtner that had been made commercially available in sets. With some schools setting up Visual Aid departments, the College Art Associations Microfilm Slide Project and the ACSA setting up a committee to regulate the circulation of visual teaching aids. The ACSA in particular oversaw the distribution of sets such as freely distributed sets of slides that covered building material.

Slides were described as dominant over “motion pictures” in school collections in part due to technical infrastructure but also as what was seen as a fault or specification of the media itself:

the use of such films would normally be very limited because the speed and broad treatment characteristic of the media lends itself to general and supplemental, rather than primary use. A number of teachers who have experimented with them seem to prefer to use them as quick reviews or highlights.¹¹⁵

The interest of the AIA in these visual aids was also a part of a larger effort toward the presentation of architecture to new public audiences. In August 1967, the AIA sent out the call for its first “slide show competition”. Architects were asked to submit a carousel of slides and a typed and timed by slide script to show at the National conventions as part of the Institute’s “war on community ugliness”.¹¹⁶ The slide shows invited were for use as “visual aids” as a “public relation tool” carrying out the messaging of the Institute. This mixing of film and slide suggested

a lack of distinction by the AIA between a slide show and a narrated film, both were media with which to deliver a timed and sequential narrative.

The distinction between slides and films then were key to the problem of ordering and narrating images, but to different ends. Eisenman had been lecturing about House IV coincident with the production of the film and using a slide carousel to show the drawings. He described having an outline on slide of the drawings that he planned to transfer to film. This raises the question of what precisely the distinction between the two was. Eisenman picked the one that could travel independently and had less of an association with pedagogy and more with exhibitions. The question remains, then, whether his decision to have the slide be an animation cel and automate the timing of their presentation was a symbolic one. Slide sets were seen as narrated presentations the media of darkened lecture rooms. However, slide sets were also increasingly finding their way into the presentations to large publics and corporate clients, and in their usage the slide presentations were becoming increasingly like films. An article appeared in *Architectural Record* in 1971 that registered the ways that slides not only provided pedagogical value but were also powerful as coercive presentations to public audiences. Written by practicing architect and delineator Ernest Burden, who published “Architectural Delineations, a Photographic Approach to Presentation” that same year, the article claimed that the benefit of slide presentations was that they were versatile. This versatility, then, allowed the slide show to become “a totally creative tool in the hands of an imaginative person.”¹¹⁷

V The Process of Process Drawings

Architectural drawings were not simply visible in New York galleries and museums in the 1970s, but there had been a growing transformation around the value of the drawings as objects of historical study and collecting. This coincided also with the postwar period marker in which the value of drawings shifted from “design inspiration” to evidentiary documents for understanding the invisible structures and conditions around a design and construction process.¹¹⁸ Interest and discussion around the topic of design phases rose to the foreground in this moment was in part related to the institutionalization also of architectural drawings within collecting institutions. Within this context, the values attributed to drawings were marked by a lack of knowledge that was reflected in the inaccuracies of institutional cataloguing. A very good example of the discussions around the value of drawing provided by RIBA curator Margaret Richardson. She observed between London and New York in the 1960s that the value of architectural drawings was changing related to a variety of pressures including the academic reorganization around the teaching of architectural history to students in architecture rather than art history departments and the ways that drawings were increasingly becoming more “seriously” valuable as research subjects, their visibility as saleable objects in the art auction houses, and the transatlantic interest in exhibitions, as well as the production in school of more and more drawings. For Richardson, however, this energy was shifting the value and allowing the art market to drive values leading to crises in the ways that value was decided on.

The diversity of drawings being produced and the materials that they were produced with, and the diversity of uses for the drawings led to a lack of knowledge or direction in how to value the drawings as objects. Richardson sought to restore an order and value to the

categorization of drawings related to the values of aura, authorship, and place of making and the time it was made. Of particular consternation to these structures of value were drawings being produced contemporaneously that were challenging the categories of architectural production. For instance, she referred to the influx of drawings that were produced with what she called the “regrettable” practice of redrawing, tracing, and delineation. Drawing by others was already considered “less sensitive” than the architect’s own hand, and even more egregious to Richardson was the use of reprographics that were involved in producing drawings for publication. She seemed to directly address those like Eisenman who produced mechanical drawings and mechanical vantages:

they often present their work in axonometrics which have been specifically redrawn to a reduced scale for publication or exhibition.. choosing to redraw and present their work by sharper, newer axonometric which reproduce well but lack the style and subtlety of the year in which they were first conceived and drawn.¹¹⁹

So the problem Richardson identified was the distance of conception of the project, where a sharp, redrawn drawing no longer held the auratic marks of immediacy. This was managed in Richardson’s archive by relying on the ‘stage of realization’ as their definition of the drawing’s relationship to the architect and the building. The structuring of value in this system divided drawings made before and after design being built:

By testing a drawing against this format its uniqueness and status emerges. The intrinsic superiority of creative sketches and designs in the first category is indisputable.¹²⁰

In other words, uniqueness was derived from the time and place of the drawings making. Such a system of valuation, however, failed to take into account the ways that the technical conditions of architectural production were dematerializing the very stable concept of an original drawing.

In 1979, Eisenman gave two almost identical drawings of House IV to two different collectors who were both associated with MoMA.¹²¹ The first was acquired by the former curator of the Architecture and Design Department at MoMA, Phillip Johnson, who had been intrinsic to the founding of the IAUS (Fig.3.21). The second was purchased by one of the most prominent North American collectors of architectural drawings in this period, Howard Gilman of the Gilman Paper Company (Fig. 3.22). The drawings that these two collected are almost entirely identical; they depict a matrix of design transformations with each “step” of the project along two axis, starting from the most elemental on the left hand side (single line solid cube, single line cubed walls, single line wireframe cube) toward the most complex on the right hand side. Both drawings depicted the sequential diagrams of House IV and were recorded as being made in 1975. Johnston’s drawing was purchased by the collector from Eisenman sometime between 1975 and 1980, although a note written on the drawing indicates a date of January 11, 1979, alongside Eisenman’s signature and the following personalized message:

BUILDING MAY BE THE MERE

REPRESENTATION OF AN IDEA

FIRST STATED IN A DRAWING¹²²

Included in the descriptive material provided to MoMA when the drawing was acquired was the name of a delineator of the drawing: Robert Cole, an assistant at the IAUS. The second drawing

was purchased in the same year by Howard Gilman and his drawing came without any credited coauthors or annotations. Similarly the drawings diverged slightly in their dimensions, the former (ink on vellum) smaller than the ink on trace version. Both were recorded as drawn and sold in the same years their circulation diverged.¹²³ These small discrepancies distinguish drawings that are otherwise apparently identical. These drawings do raise other questions around architectural seriality as it converged with media in this period. While the museums have long managed serial works of art, limited series, and other methods of managing multiplicity, it is the doubling of this drawing (rather than its exact duplication) and the attention of Eisenman to distinguishing one of them with a delineator that complicate simple categorization.

The annotation on the Johnson drawing reversed the value of the buildings over drawings, if both the building and the drawing were representations of an idea and thus there was no longer a direction from drawing to building. The annotation gestured back to the ‘age old’ drawing process described by Paul Rudolph’s at the beginning of this chapter as a uni-directional process in which drawings were linked to design. What the annotation did amend was that there might not be a building at all, as was the case with House. It seems fitting then that the drawings held in the MoMA collection likely valued in their own right as material objects, were in the end merely architectural drawings without a building. What remains unclear is why these drawings were made at all, some three years after the house was designed, and two years following the House IV film.

In the various private writings Eisenman made about the failure of the House IV film, there was mention made of the need to design a ‘score’ that would bring the drawing process closer to the documents used in the production of film (Fig. 3.17). The drawings in the MoMA

collection suggest the appearance of such a document. Even if produced some two years later, the drawings do link back to this film project via their material processes. The archive reveals that there are many “versions” of these two drawings of different variations that bring together the transformations onto an extended stretch of page. Not only are there many versions but there are many formats of the drawing. It is clear from these materials that the drawings were not only theoretically about a process of seriality, but in fabrication terms there was a level of design and a level of reprographics at work the material terms. The reprographic copies, reassembled and floating ‘cels,’ and photographic negatives, attest to the process *behind* the process drawing that was beholden to a different level of work and attention. The use of reprographics in duplicating the drawings, is a side to the drawing production that is less well recognized than the better known drawings for the later House VI which were traced on yellow-trace rolls and numbered as a demonstration of the ‘design’ of variations.¹²⁴ These activities are absent from the House IV drawings although there are signs of design it was designing the arrangement between the drawings to format them on a page. Here duplication and scaling recalled the organization of the drafting room and the automation that copying machines promised to the offices, that they should “draw the line once.”

When Ellen Cheng prepared her drawings for the animation she drew a single drawing on mylar that would correspond to an acetate cel that was animated by Abrahams. At this point, each drawing was easily recognized in relationship to a culture of tracing and delineation that one would consider mechanical drafting. The transparency film acetate was not only stable and a material that could be animated, but its transparency allowed for development of formal distinctions and modelling from one drawing layered to the next. Each of these drawings—of which there were many—remained discretely considered even when there was a plan to

reassemble them into a single paste-up, or sequence them into an animation. A white card paste-up board that had many drawn and mimeographed 'miniatures' of the film cels reproduced and pasted into a matrix form (Fig 3.19-3.20). It is clearly a design tool, much like the film. Each miniature carried a written code and signs of communication around the drawing about the order and grouping of the miniatures. Along the top several phases were mimeographed together into a strip suggesting that this drawing existed in another chain of versions rather than being a foundational object. Beneath these, a row of crossed out squares indicated a future set of miniatures that did not yet exist but had a position to fill. Below these again was a sequence of miniatures on white trace that carried the signs of being traced from another reproduction. The entire document suggested a middle stage of developing reproduction and tracing, arrangement, and redesign. It suggests that even if the film were to identify the 'gaps' in the sequence, another form of diagnostic drawing was being used in order to calculate and design the cels between (Fig. 3.10).

The document seems to suggest that there was a level of conscious design in how one shaped the relationship of these stages of design. One might consider the design here not related to the design of the house but in the design of the format of presentation. What is curious, then, about this is that it problematized Eisenman's characterization of his design process:

The series of houses which I have designed and built are the result of an evolution involving first an analysis of what was happening in the design process from house to house; and second, the application of that knowledge in the design process of the next house, to make the form of each successive house more consistent. Because of the way

form communicates meaning, it is thought that such consistency would make the intention of the forms more accessible to an individual.¹²⁵

The most common understanding of Eisenman's design process is that it was analysis and design ad infinitum, thereby linking the projects together in a larger sequence of ideas and tests.¹²⁶ This collection of reprographic "out takes and edits," paste ups, and the House IV film reveal the enormous effort spent by many contributors over several years after the design was "ready to go" and the emergence of work "after work," or work that came after the design and related to questions of formatting and circulation (Fig. 3.18).

When Paul Rudolph's quote opened this chapter, design process was attached to a building and drawings. Presumably, the value of the sketch lay primarily in capturing an immediate moment of authorial expression on a single sheet of paper. By the end of the chapter, the process was composed, assembled, and flattened. Process was not seen as a visual account, the sign of design. The work with film ultimately had an unexpected influence on drawings. Given the conversation around the use of computer processing that drew lines around the distinctions between creative work and analytical work, Eisenman's process drawings promised a collapse of the two. The resultant drawings were a 'demonstration' of design thinking, not as an immediate flash of expression nor as a rendered representation, but by extending out a virtual thought process.

Though there are scant copies of the House IV film—ultimately, the CCA has the same number as the MoMA has drawings—the failure of the film to circulate widely does not diminish the secondary effects. The film gives an early example of Eisenman's attempts to externalize the design process. It begins to articulate the ways that Eisenman managed his position in

relationship to critique and validation of his designs. In the same ways that the artist-critic emerged out of the distancing produced by conceptual practices, one might argue that the mediation of film and reprographics were similar efforts to establish a distance that would, paradoxically, bring him closer to role of the critical theorist behind his own project.

¹ William J. Mitchell, *The Reconfigured Eye: Visual Truth and the Post-Photographic Era* (Cambridge, MA: MIT Press, 1992), 58.

² In order to define and situate the term ‘reformatting’ I refer to the history of the term format and why it is useful to this dissertation. In the field of bibliographic studies the term format presents an alternative frame to consider the way that a text is printed and circulated. At its most constrained historical definition format related to the folding and cutting of paper involved in printing and attendant conventions including related terminology and positioning of markings such as watermarks or wove direction. A broader definition of formatting would be described as the material characteristics of a printed material; the paper size, paper thickness, page number, configuration of the pages into a publication. More than this though a format is a way to identify broader influences and standards; such as questions of economics (how much was the publisher willing to spend on printing techniques related to their expectations about a consuming-reading demographic) or technological capabilities of the printer’s machinery, or even the cultural context about how a book should be read. As scholar of Bibliography Studies G. Thomas Tanselle writing on the contested history of the term says that the power of the term lies in the way “format illustrates the inextricably of description and analysis” bringing together physical description with knowledge around the technological conventions of printing (or book structure and book production) that shape the development of the book.

More recent definitions of format rely on the expansion of the term influenced by the uptake of electronic questions of information and software or display. This recent context for the term was engaged in art and architectural history by historian David Joselit, who defines ‘formats’ as “dynamic mechanisms for aggregating content...that channel an unpredictable array of ephemeral currents and charges.” David Joselit, *After Art*

(Princeton, NJ: Princeton University Press, 2013), 55. While a medium is defined by its objecthood, formats are defined by how images (or information) circulates. “Image effects,” then, are the moments when an image is captured and captures a social assemblage (a social movement, an art installation, or political messaging) around it in some specific and meaningful way. Formatting, in Joselit’s definition, relates to the storage, and retrieval of information that can then be captured and manipulated into what “intelligible patterns.” Joselit, *After Art*, 55. Neither entirely ‘virtual’ and related to questions of digitality nor wholly material and encumbered by the specificities of medium Joselit’s formats are interfaces between the two; rendering visible the “set of relations” that link these two realms together. For instance one might consider not simply an installation or exhibition but the circulation of photographs that documented the event and the ways that these gained value by circulating in alternative information channels.

³ Historian Craig Buckley who has described the emergence of a graphic logic of assembly in the work of conceptual European architects such as Hans Hollein and Superstudio who were working contemporaneously with Eisenman. Buckley describes the montage work in this period as neither renderings nor personal sketches, but rather image-projectiles sent into the media-sphere circulating alongside the growing talk circuit and exhibitionary networks of international architecture schools in particular. Buckley however importantly argues, as do I, that the focus on media and circulation of recent historiography of this period tends to overlook the material procedures involved including documents like paste-up boards or the origins of items that were selectively recombined. I diverge however from Buckley’s definitions and suggest that there is another branch of drawing paste-up procedures with-out the links to early twentieth century European Avant-Garde image practices of montage and found photographs nor the collisions in imagery between megastructural elements and photographic landscapes. One must also think in this period of the question of reformatting and the ways that photographic media like papers allowed for the continuous reworking of existing items into new configurations and groupings. See Craig Buckley, *Graphic Assembly: Montage, Media, and Experimental Architecture in the 1960s* (Minneapolis: University of Minnesota Press, 2018).

⁴ See Buckley, *Graphic Assembly*.

⁵ Timothy M. Rohan has written that the signature hammered concrete used by Rudolph in 1963 in the Yale Architecture Building was in fact an effect produced out of his rendering hatch-work, emphasizing the real effects of drawing implements like Rapidographs in their connection to construction materials in material expression. Timothy M. Rohan, “Rendering the Surface: Paul Rudolph’s Art and Architecture Building at Yale,” *Grey Room*, no. 1 (Autumn 2000): 84–107.

⁶ Paul Rudolph, “Foreword,” in Alfred M. Kemper, *Drawings by American Architects* (New York: Wiley, 1973), i–ii. Italics in the original.

⁷ A similar example of this perpetual narrative, even some time later, see the passage on “The Process of Design” in the *Architecture and Its Image* catalog. It reads, “When an architect designs a building, he or she very often creates another kind of design repertory. This is the sequence of designs, beginning with the first idea, that the architect sketches, revises, rejects, and gradually refines into the final design.. Sometimes, by putting all of the designs in the strict chronological order of their composition, one can reconstruct a sort of developmental sequence out of the evolving ideas.” Eve Blau and Edward Kaufman, eds., *Architecture and Its Image: Four Centuries of Architectural Representation* (Cambridge, MA: MIT Press, 1989), 305.

⁸ For a more focused account of the emergence of drawings as exhibitable and collectible documents in this period see Kauffman, Jordan. *Drawing on Architecture: The Object of Lines, 1970-1990*. Cambridge, Massachusetts: The MIT Press, 2018.

⁹ Mark A. Hewitt wrote about the growth of publishing around architectural drawings in the 1970s in a review and survey that suggested that there was interest in drawings as art shared by architects and historians stating that “more books have been published on the subject during this brief period than during the previous century.” Mark A. Hewitt, “Books of Drawings, Books on Drawing, Books about Drawings,” review of *Masterpieces of Architectural*

Drawing; Great Drawings from the Collection of the Royal Institute of British Architects; The Plan of St. Gall in Brief; Architecture of the Twentieth Century in Drawings; and Architectural Drawing: The Art and Process, Journal of Architectural Education 38, no. 1 (Autumn 1984): 29–30.

¹⁰ The exhibitions Banham referred to—that had occurred simultaneously in what he considered to be a watershed year—were *200 Years of Modern Architectural Drawings* at the new Drawing Center in parallel with the newly renovated Cooper-Hewitt museum, as well as the first in a series of architectural exhibitions at Leo Castelli’s art gallery. Deborah Nevins and David Gabhard with 6 regional researchers and with installation designed by Dorothy Twining Globus and Maureen Healy and sponsored by the American Federation of Arts and Architectural League of New York, with funding from the New York State Arts Council, the NEA, the Graham and Mellon foundations. A travelling exhibition titled ‘200 Years of American Architectural Drawing opened at the Cooper Hewitt Museum.

¹¹ Reyner Banham, “Iso! Axo! (All Fall Down?),” in *Great Models: Digressions on the Architectural Model*, ed. Suzanne Buttolph (Raleigh: North Carolina State University School of Design, 1978), 17–21.

¹² Banham, “Iso! Axo! (All Fall Down?).”

¹³ These efforts were so successful that his diagrams were not discussed as drawings until the catalog to his monographic exhibition at the Canadian Center for Architecture to celebrate their collecting of his archive. See K. Michael Hays, *Cities of Artificial Excavation: The Work of Peter Eisenman, 1978–1988* (New York: Rizzoli International, 1994).

¹⁴ It is this aspect of the material aspects of textual production that make turning to media theory productive. For instance Lisa Gitelman, *Always Already New: Media, History, and the Data of Culture* (Cambridge, MA: MIT Press, 2006), 96.

¹⁵ Reinhold Martin, “Environment, c. 1973,” *Grey Room*, no. 14 (2004): 78–101.

¹⁶ Sean Keller has contributed a history of ‘automatic’ architecture in post war period comparing architects emerging from Cambridge University in the 1960s including Lionel March, Christopher Alexander and Peter Eisenman, with German engineer Frei Otto. Keller suggests that the issue of automatic architecture related to the enlightenment impulses of disciplines to establish and legitimate their own methods and terms. In this context then automatic architecture resulted from an approach to the design process that was rigorous and mathematical or scientific reaching a level of seeming objectivity. Contextually Keller foregrounds the turn from artistic and personal intuition and toward models of thinking from mathematics and sciences. I argue this only reinforces the distinctions and obscures the intermingling evident in the film in particular. Keller’s analysis remains beholden to the textual analysis of Eisenman and other’s writings however rather than consider the material-processes behind Eisenman’s process—meaning the material activities required to design for automaticity. For more, see Sean Keller, *Automatic Architecture: Motivating Form After Modernism* (Chicago, IL: University of Chicago Press, 2017).

¹⁷ The information management of Houses I-III when publishing involved the effacement of the client names from the title with a serial number, but reconnected these titles with client names in the credit lines. Unlike these three House IV was almost never connected back to any named client but instead was connected with the Falls Village site-location. The secrecy in House IV around who the client was suggested that despite the advantages of being an ‘architect-client,’ Eisenman preferred to publicly maintain the impression of an external client involved in the project and thus an attachment then to the trappings of professionalized practice.

¹⁸ Annotated Interview 1972, DR2000:0052, Peter Eisenman Papers, CCA.

¹⁹ Peter Eisenman, “Misreading,” in *Houses of Cards: Critical Essays* (Oxford University Press, 1987), 177.

²⁰ Miriam Gusevich has written a summary of the various forms of architectural autonomy in operation. She notes that decontextualization has been an imperative in establishing a critical canon of works of architecture. Tacitly invoking Eisenman, Gusevich suggests that architectural autonomy functions similarly not as an ontological condition but in order to move questions of judgement and value from the realm of professional practice and client judgement which is beholden to a profit driven measure of success. I would argue that Gusevich's argument still does not, in material terms, examine the other forms of "exigencies" and governance were involved in the construction of critical architecture and its judgement. But her understanding of the operation of autonomy explains why Eisenman was so keen to erase his clients from the narrative of the houses and indeed why House IV was the one to receive critical attention from Eisenman and his peers. See Miriam Gusevich, "The Architecture of Criticism: A Question of Autonomy," in *Drawing/Building/Text: Essays in Architectural Theory*, ed. Andrea Kahn (New York: Princeton Architectural Press, 1996), 8–25.

²¹ Sean Keller, *Automatic Architecture*, 3.

²² Annotated Interview 1972, DR2000:0052, Peter Eisenman Teaching, Institute for Architecture and Urban Studies, AP057.S4.SS2.

²³ Ibid.

²⁴ Ibid.

²⁵ The description of environmental and suburban art conflates two contemporaneous vectors of artistic work in this period. However the combination does suggest that Eisenman was thinking about a particular scale of work in thinking about the growing categories of site-specific work, sometimes called land art or earth works in the period. Miwon Kwon's exhibition catalog *The Ends of the Earth* examines larger site-specific work in America and Europe in this period and the artists' engagement also with popular media such that these works were visible in popular culture. See Kaiser, Philipp, Miwon Kwon, and Museum of Contemporary Art (Los Angeles, Calif.), eds. *Ends of the Earth: Land Art to 1974*. (Los Angeles, California : Munich, Germany ; London, United Kingdom ; New York, NY: The Museum of Contemporary Art, Los Angeles ; Distributed by Prestel, 2012). The term 'suburban art' is less clearly defined and presumed refers to the intersection of artists and architects such as the Venturis and Ed Ruscha, or Dan Graham and the interest in the 1970s around the suburbs as a standing in for the ordinary quotidian face of American real estate and pop commercialism.

²⁶ Many conceptual artists in their examination of art's commodity status and the role of institutions in setting and protecting these values led to various activities around thinking about financial and economic intersections with art and the art market. See Anne Rorimer, *New Art in the 60s and 70s: Redefining Reality* (London: Thames & Hudson, 2001), 200. See also Sophie Cras, *The Artist as Economist: Art and Capitalism in the 1960s*, trans. Malcolm DeBevoise (New Haven, CT: Yale University Press, 2019).

²⁷ Ibid.

²⁸ Quotation listed as "1969 Notes" in Dan Graham, *For Publication* (Los Angeles: Otis Art Institute of Los Angeles County, 1975).

²⁹ Dan Graham, *Income (Outflow) Piece*, 1969.

³⁰ Graham's use of magazines as a 'site' was based on his observation as a gallerist that value was the result of the exhibition in a gallery but also the work's photograph and a review that would be circulated in print. See David Company, "Conceptual Art History or A Home for Homes of America," in *Rewriting Conceptual Art*, ed. Michael Newman and Jon Bird (London: Reaktion Books, 1999), 133. For a broader overview of publishing and conceptual art, see Gwen Allen, *Artists' Magazines: An Alternative Space for Art* (Cambridge, MA: MIT Press, 2015). See also Dan Graham, "Homes for America: Early 20th-Century Possessable Houses to the Quasi-Discrete Cell of '66,'" *Arts*, 41, no. 3 (December 1966–January 1967): 20–21.

³¹ “Magazines—all systems of context in the art system—also serve as part of a social-economic (which in part determines a psychological) framework. Each class of magazines (TIME, LIFE, BOY’S LIFE, SPORTS ILLUSTRATED, FILM CULTURE, ARTFORUM) appears to cover a defined field, its form assuming a category of readership who are identified with the ‘line’ of its advertisers whos ads support and uphold the magazine’s existence/ ‘image.’” See Dan Graham, *For Publication*.

³² Reviewer Joseph Giovanni would write in the *Los Angeles Herald Examiner* of the exhibition that “architectural drawings have become an art commodity. They sell. The demand for drawings in galleries has, over the last several years, elicited a surprising supply, and the new market situation has subtly changed the nature of architectural drawings itself.” Joseph Giovannini, “Models for ‘Houses for Sale’ for Sale,” *Los Angeles Herald Examiner*, March 16, 1981, B5.

³³ For a discussion of the development of an art market for drawing see Jordan Kauffman, *Drawing on Architecture: The Object of Lines, 1970–1990* (Cambridge, MA: MIT Press, 2018); Sylvia Lavin, *Architecture Itself and Other Postmodernization Effects* (Leipzig, Germany: Spector Books, 2020).

³⁴ Eisenman’s former colleague art historian Rosalind Krauss discusses the rise of the recursive project in the 1960s in Krauss, Rosalind E. *Under Blue Cup*. Cambridge, MA: MIT Press, 2011. Pamela Lee similarly examines the same period and phenomena and links this to the systems thinking and new media on artistic practice in this period. See Lee, Pamela M. *Chronophobia: On Time in the Art of the 1960’s*. Cambridge, Mass: MIT Press, 2004.

³⁵ Writing drafting in Film File, DR: D007: 0091. Peter Eisenman fonds. Collection Centre Canadien d’Architecture/Canadian Centre for Architecture, Montréal.

³⁶ See, for instance, Laszlo Moholy-Nagy’s 1947 *Vision in Motion* with its chapter on “motion pictures” and his advocacy for visual media such as film and animation in particular, sound, light and movement. Laszlo Moholy-Nagy, *Vision in Motion* (Chicago, IL: Theobald, 1947). In 1965, György Kepes published an essay related to the founding of the Center for Advanced Visual Studies at MIT, which was an intermedia and interdisciplinary research laboratory. Kepes argued for the forms of art more engaged with the complexities technologically in that period. In that same year he would publish *The Nature of Art and Motion* series, an edited publication in which he described issues of time and representation and how to document the “dynamic visual organization” of the city. He also called for the use of tools that extended the capacities of human vision including scientific imaging to enhance visual experience.

³⁷ Film is what Krauss refers to as ‘technical support’ that were a useful employment to challenge specificity of modernist media. Krauss says that when idea became art, medium was what vanished, marking what she described as the post medium condition. Krauss identifies however that by the mid 1970s there was a return toward a form of a new type of specificity that she identified with technical supports such as animation or slide film and that required the “invention” of medium meaning the use of existing media but in a new way. The technical support replaced the idea. In a way Eisenman’s attempt to reinterpret film represented the transformation of it into a technical support and yet he was pursuing an idea machine. Rosalind Krauss, *Under Blue Cup* (Cambridge, MA: MIT Press, 2011), 20.

³⁸ Handwritten note, 24 September 1973. Eisenman wrote about Kubelka and Sharits who he observed were using flickering cels not in order to mark a transition but to find new meanings and sequences. Their flickers were not cel by cel and regular but marked their own logic of interruption. In comparison Eisenman claimed his ‘use’ of flicker was to “create isolated images.to create recognition of breaks in transformation sequence.. to create changes within sequences.” See Writing drafting in Film File, DR: D007: 0091. Peter Eisenman fonds. Collection Centre Canadien d’Architecture/Canadian Centre for Architecture, Montréal.

³⁹ P. Adams Sitney, ed., *Film Culture Reader* (New York: Cooper Square Press, 2000), 5.

⁴⁰ For a very good historical survey of flicker and shutter relationships, see Tom Gunning, “Flicker and Shutter: Exploring Cinema’s Shuddering Shadow,” in *Indefinite Visions: Cinema and the Attractions of Uncertainty*, ed. Martine Beugnet, Allan Cameron, and Arild Fetveit (Edinburgh: Edinburgh Press, 2017), 57–58.

⁴¹ The term ‘structural film’ was first used by P. Adams Sitney in 1969. Sitney alongside Jonas Mekas, and Peter Kubelka founded a new York institution in 1970 called the Anthology Film Archives. There is a note in Peter Eisenman’s writings about films that indicate that he visited the Film Archives. A definition recorded later can be found in P. Adams Sitney, “Structural Film,” in Sitney, *Film Culture Reader*, 327.

⁴² George Baker, “Reanimations (I),” in *October*, no. 104 (Spring 2003): 28–70.

⁴³ Jonas Mekas, “Interview with Peter Kubelka,” in Sitney, *Film Culture Reader*, 292.

⁴⁴ Typed and annotated document, September 25, 1973. DR 2007:0031. Peter Eisenman fonds. Collection Centre Canadien d’Architecture/Canadian Centre for Architecture, Montréal.

⁴⁵ Marshall McLuhan’s theory of hot and cold media in McLuhan, Marshall, and Quentin Fiore. *The Medium Is the Massage*. A Bantam Book R3348. [New York: Bantam Books, 1967.

⁴⁶ Xerox with annotations for “proposal” dated on Xerox as December 28, 1973. Eisenman Archive, CCA.

⁴⁷ Abrahams was trained as an artist and illustrator but had briefly worked the year previously with Italian film maker Michelangelo Antonioni on the film *Zabriski Point*, which was famous for using a replica full scale house in order to stage an explosion simulation. Told to the author in a phone interview, 2019.

⁴⁸ Hannah Frank, *Frame by Frame: A Materialist Aesthetic of Animated Cartoons*, ed. Daniel Morgan (Berkeley: University of California Press, 2019).

⁴⁹ Industrialization in animation had occurred with the technological invention of “cels” out of plastic films that had allowed for the mechanization and division of tasks to streamline and rationalize work much like an assembly line. John Halas and Roger Manvell, *The Technique of Film Animation* (New York: Hastings House Publishers, 1968).

⁵⁰ The Oxberry Machine which was considered state of the art in this period for special effects and was the machine on which Eisenman’s animation was made in the rental studio at Optical House. The Oxberry machine was designed by John Oxberry, who after working for the Signal Corporation during the war had gone on to make animation machinery untied to the large corporate and industrial film studios. He was an early advocate of alternative film makers and in particular experimental art animation (“self-expression”). As an article in *Animation Magazine* described his influence, “Everyone in the film business has heard of an “Oxberry.” much about this specialized equipment eludes the awareness of the average filmmaker. Even more shrouded in mystery remains the singular figure of the inventor and innovator who gave his name to an entire family of animation stands.” See Gary Comorau and John Oxberry, “The Man Behind the Machine,” *Animation Magazine* (April 1975).

⁵¹ There is a note in the Eisenman Archive that indicates that he had been visiting the archive. It was also published in *DQ Meaning* it was embedded within Eisenman’s circle of influence.

⁵² Cecile Starr and Robert Russett, *Experimental Animation: An Illustrated Anthology* (New York: Van Nostrand Reinhold Co., 1976), 7.

⁵³ In 1967 film critic and maker Cecile Starr attested to the new visibility of short animated films in particular at US Museums: “In a unique attempt to have the programs widely seen, The Museum of Modern Art showed three programs of 28 films for two weeks at continuous showings lasting six to eight hours each. An estimated 18,000

people saw these programs.” Cecile Starr, “Selected Short Subjects,” *Film Comment* 4, no. 2/3 (Fall/Winter 1967): 66–67.

⁵⁴ Suzanne Buchan, *Pervasive Animation*, AFI Film Readers Series (London: Routledge, 2013). Karen Redrobe points out the difficulty of defining animation as a term has been a persistent problem for historians of the area with most claiming loose associations or ‘catch all’ qualities to the definition rather than a clearly defined discipline. Karen Redrobe, “The Worries of the World(s) Cartoons and Cinema,” in *Worldbuilding: Transmedia, Fans, Industries*, ed. Marta Boni (Amsterdam: Amsterdam University Press, 2017), 254. Redrobe does cite one of the clearest articulations for this dissertation’s purposes: Tom Gunning’s formulation of animation as distinctive from film because not only is it the “production of motion and rapid succession” but more importantly that what is being set into motion is not coming from photography. See Tom Gunning, “Animating the Instant: The Secret Symmetry between Animation and Photography,” in *Animating Film Theory*, ed. Karen Redrobe Beckman (Durham, NC: Duke University Press, 2014), 40.

⁵⁵ “One common bond among all experimental animators is that, in varying degrees, they personalize their equipment and techniques, as does any fine artisan or craftsman.” Starr and Robert Russett, *Experimental Animation*, 7.

⁵⁶ Starr and Robert Russett, *Experimental Animation*, 7.

⁵⁷ Refer to footnote 150 in Chapter 2 for a discussion of art critic Leo Steinburg’s writing on the flatbed printing press as a visual dominant in the 1960s.

⁵⁸ Frank, *Frame by Frame*, 44.

⁵⁹ Frank, *Frame by Frame*, 46.

⁶⁰ Frank, *Frame by Frame*, 61.

⁶¹ “handcraft re-enters the circuits of authorship through the continuing ‘autonomy effect’ of art: the attempt by artists to distinguish art from general social technique through the physical intervention in, and manipulation of, technical processes, on the basis of what separates artistic labor from productive is that its access to the subjective transformation of materials all the way down.” John Roberts, *The Intangibilities of Form: Skill and Deskilling in Art after the Readymade* (New York: Verso, 2007),

⁶² Ibid.

⁶³ Ibid.

⁶⁴ In *Chronophobia*, Lee notes that the concept of postwar technology was organization and the influence of this on artmaking was evident in systems theory, seriality, and the aesthetics of administration attributed to conceptual art by Benjamin Buchloh. For more, see Pamela M. Lee, “Presentness is Grace,” in *Chronophobia: On Time in the Art of the 1960s* (Cambridge, MA: MIT Press, 2004).

⁶⁵ An example of the euphoria might be seen in Douglas Davis’ 1973 book *Art and the Future: A History/Prophecy of the Collaboration between Science, Technology, and Art* that inserted the past decade of new media and technological works within a historical genealogy that spanned back to Leonardo and via the European Avant Garde. The book captured the spate of exhibitions focused on art and technology including the often listed exhibitions including Robert Rauschenberg and E.A.T founder Billy Klüver’s *9 Evenings in New York* in 1966; Pontus Hulton’s MoMA show *The Machine, as Seen at the End of Mechanical Age* at the Museum of Modern Art in 1968; Jack Burnham’s *Software: Information Technology; Its New Meaning for Art* at the Jewish Museum in New York City in 1970; and the *Art and Technology* exhibition at LACMA in 1971, an exhibition that sent artists in residence in various companies as creative agents. The show was broadly panned, which, as Victoria Goodyear notes, marked a

cultural turning point when the involvement of many of the industrial partners of this exhibition in the production of military supplies and the Viet Nam War led to a shift in reception of the show by the critics. The 1971 show became inextricably linked with the escalating violence in Vietnam, and this perception tempered attitudes toward the collaborative project. See Anne Collins Goodyear, "From Technophilia to Technophobia: The Impact of the Vietnam War on the 'Art and Technology' program," *Leonardo* 41, no. 2 (April 2008): 169–73. For an overview of this period of art and technology, see also Marga Bijvoet, "How Intimate can Art and Technology Really be? – A Survey of the Art and Technology Movement of the Sixties," in *Culture, Technology, and Creativity in the Late Twentieth Century*, ed. Philip Hayward (London: J. Libbey, 1990), 15–38; and Donna De Salvo, *Open Systems: Rethinking Art c.1970s* (London: Tate Gallery, 2005).

⁶⁶ Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2002).

⁶⁷ Benjamin Buchloh surveys the importance and ubiquity of the cube (and square) on conceptual practices see the section titled "A Tale of Many Squares," in Benjamin H. D. Buchloh, "The Aesthetics of Conceptual Art 1962–1969: From the Aesthetic of Administration to the Critique of Institutions," *October*, Vol. 55 (Winter, 1990), pp. 105–143. Jon Bird writes about Robert Morris' *Box with the Sound of its Own Making* as a foundational work that uses the cube as a self-evident form and the recording implanted inside it as the critical conceptual impulse that worked against the seeming self-evidence and spoke to issues of authorship, process and making, see "Minding the Body: Robert Morris' 1971 Tate Gallery Retrospective," in Michael Newman and Jon Bird, eds., *Rewriting Conceptual Art* (London: Reaktion Books, 1999).

⁶⁸ In a recollection Noll described the staging of the Hypercube video at the Wise exhibition. Saying that the stereoscopic images were "reproduced using polarized technology and then mounted between clear plastic sheets. Special polarized spectacles were used by those attending the exhibit." A. Michael Noll, "The Beginnings of Computer Art in the United States: A Memoir," *Leonardo* 27, no. 1 (1994): 39–44.

⁶⁹ Eisenman also appears to have sent a funding update to the NEA. A hand drafted letter to update Bill Lacy then director of Architecture and Environmental arts for NEA application outlined Eisenman's plans to retroactively extend funding received for the film for Milan as well as a second film for House VI: "My situation vis-à-vis these is complicated. Without wanting to lean on you I took your optimism for the project last June as an encouraging sign."

⁷⁰ DR2007:0091. Peter Eisenman fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁷¹ DR2000:051. Peter Eisenman fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁷² DR2007:0091. Peter Eisenman fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁷³ Eisenman knew of these from as far back at least as his time at Cambridge, which was an architecture school from the 1950s onward renowned for its allegiance to architecture as a science, and a dedication to technical and empirical research. Keller, *Automatic Architecture*, 17. His supervisor there, Leslie Martin was an important force in shifting the culture of the school toward an engagement with fields of science, sociology and economics that he envisaged could be guided into the architecture field via a rigorous program of research and theory. Keller, *Automatic Architecture*, 21.

⁷⁴ This is based from two anecdotal accounts. Thomas Bachoff recalled that "the early equipment in the late 1960s was still quite primitive by today's standards. The images we studied were black and white wire-frame models of shapes in three- and four-space. It could take a minute or so to produce a single image so we had no way of seeing objects rotating in real time. However, with enough patience, and often by staying up all night in a dark laboratory photographing one frame at a time with an animation camera, we produced short animations that we could view with a projector showing thirty frames a second." See interview with Thomas F. Bachoff in *3D: Double Vision*, 47.

Likewise, in an interview in 1970 printed in *Art in America*, architecture-trained filmmaker Stan VanDerBeek described the process: “Imagine a mosaic-like screen with 252 by 184 points of light; each point of light can be turned on or off from instructions on the program. Pictures can be thought of as an array of spots of different shades of gray. The computer keeps a complete map of the picture as the spots are turned on and off. The programmer instructs the system to draw lines, arcs, lettering. He can also invoke operations on entire areas with instructions for copying, shifting, transliterating, zooming, and dissolving and filling areas. The coded tape is then put into another machine that reads the tape and instructs a graphic display device (a Stromberg-Carlson 4020), which is a sophisticated cathode-tube system similar to a TV picture tube. Each point of light turns on/off according to the computerized instructions on the tape. A camera over the tube, also instructed when to take a picture by information from the computer, then records on film that particular movie frame.” Stan VanDerBeek, “New Talent: The Computer,” *Art in America* (January/February 1970): 86, as cited in Starr and Russett, *Experimental Animation*, 200.

⁷⁵ Proposal Film File in 2007:0091. Peter Eisenman fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁷⁶ Interview with students transcribed 1972 DR 2000:052. Peter Eisenman fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁷⁷ Proposal Film File in 2007:0091, Peter Eisenman fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁷⁸ One need only look at Walter Benjamin’s foundational text theorizing of photography and moving images, “The Work of Art in the Age of Mechanical Reproduction.” Written by Benjamin during the war in 1935 with a posthumous translation into English by Harry Zohn in 1969 published in the USA by Schocken books titled *Illuminations* edited by Hannah Arendt, the text had reached art and architectural audiences during this period.

⁷⁹ Simon Schaffer has described these parallel ideas of perpetual motion and self-propulsion anecdotes from the margins of history of science. The folly of inventors demonstrating perpetual motion machines marked the eighteenth and nineteenth century according to Schaeffer and these ‘shows’ promised an automation where manual and repetitive activities might be performed without the intervention of human bodies. Simon Schaffer and Steven Shapin talk about “virtual witnessing” meaning the way one reproduces the image of the experimental proof in their audience. If experiments require witnesses in order to attest to the veracity of the experiment, they can build a larger influence by growing their audience. The circulation of scientific proof to produce virtual witnessing is key to producing facts. Schaffer, Simon. “The Show That Never Ends: Perpetual Motion in the Early Eighteenth Century.” *The British Journal for the History of Science* 28, no. 2 (1995): 157–89. Steven Shapin. “Pump and Circumstance: Robert Boyle's Literary Technology.” *Social Studies of Science*, Vol. 14, No. 4. (Nov., 1984):481-520.

⁸⁰ Ibid.

⁸¹ The idea of a frictionless machine was also a countercultural issue, as Leo Marx pointed out the notion of mechanization and automaticity was something set up in opposition to material friction such as bodies. In the 19th century turn against mechanical arts he cites Thoreau’s “Let your life be a counter-friction to stop the machine.” And likewise referring to the 1960s countercultural push against technocracy that we are concerned with here embodied in a statement by Mario Savio’s: “You have got to put your bodies upon the [machine] and make it stop!” So the concept of automation and the body (Marx, 567). Resurgent interest in the fantasy of an autonomous and endlessly circulating energy source in the early 1970s is not coincidental but reflects a convergence of events and conditions that transformed the economic landscape of America at that time.

⁸² Richard Biernacki, “The Capitalist Origin of the Concept of Creative Work,” in *The Architect as Worker: Immaterial Labor, the Creative Class, and the Politics of Design*, ed. Peggy Deamer (London: Bloomsbury Academic, 2015), 39.

⁸³ Antoine Picon has described the history of computation and architecture by setting up a distinction between the pre 1990s when there were “few” computers in architectural practice and those that were there were deployed in administrative activities such as word processing and accounting. He says that design was still an activity that was done by hand. In fact he suggests that Bernard Tschumi’s efforts with the Paperless Studio at Columbia University in the early 1990s was one of the “first large scale attempts at using computers for architectural design”. The significance of this statement is that he suggests that the computation that occurred prior to this period was not design but something else. One would usually place Peter Eisenman into the group who were designing with computers after the 1990s and yet this chapter will show that Eisenman better fits within an early period of technical transition in which film, animation, and computer graphics intersected within the military academic industrial context.

⁸⁴ But as Daniel Cardoso Llach points out the initial usage of computers tended to be the firm’s own software and the usage remained in the realms of calculation rather than in CAD until the 1980s.

⁸⁵ H. Morse Payne, “Welcome,” in Boston Architectural Center, *Architecture and the Computer* (Boston, MA: Boston Architectural Center, 1964), 1.

⁸⁶It was hosted by the Boston Architecture Center, a night trade-school that trained technical architects who were working often in architectural firms during the day. Reflective of the ways that computers would enter architecture as tools for drafting and the new paradigm of manual production in architecture. See Daniel Cardoso Llach.

⁸⁷ To see this in action one might turn to Stan Van Der Beek’s 1972 film *Computer Generation* made while he was in residence at MIT Architecture Machine Group. While Van der Beek had earlier described the freedom of animation to liberate the animator from the constraints of Industry, the film captures the less visible form of entanglement when he entered the computer research lab. The film depicts him sitting in front of a computer screen while introducing the coder of the software he was about to demonstrate. Left unspoken, a distinction in the specificity of knowledge of the designer of the software and the artist who was demonstrating the possibilities prescribed by the code was present. The scene foreshadowed the somewhat under-acknowledged divide between those who would write the that prescribed the potentials of architectural expression. See also Lev Manovich, *Software Takes Command* make note and cite

⁸⁸ Sanford R. Greenfield, “Foreword,” in Boston Architectural Center, *Architecture and The Computer*, xi.

⁸⁹ Many sources for this cite. Hyungmin Pai, *The Portfolio and the Diagram: Architecture, Discourse, and Modernity in America* (Cambridge, MA: MIT Press, 2002), 46.

⁹⁰ The appeal of infiniteness that Eisenman and others who examined seriality was embedded in the fantasies of computation. For instance, Stan VanDerBeek, who worked with Architecture Machine Group at MIT, talked about the computer’s ability to produce “rivers” of endless images taking on the language of flows and circulations. Starr and Russett, *Experimental Animation*, 201.

⁹¹ These concerns around what Bruno Latour calls the ‘black-box’ in which technically specific forms of electronics or formula were purposefully compartmentalized and made invisible while the engagement with the user was foregrounded- what inputs or outputs were required to ‘run’ the object. Within this formulation the operations of invisibility worked as a diversion of attention until one was faced with the collapse of the machine. Based on a term he claims applied in this context by cyberneticians to compartmentalize specific knowledge about complex function into black boxes. The level of invisibility was on the one hand material, often literally encapsulating the technologies of a computer within a plastic shell, but also conceptual because the computer parts themselves became increasingly complex and illegible in relationship to a mechanical history of functioning parts. This invisibility and gap partially explain Eisenman’s reluctance to use the computer in animating his process. See Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, MA: Harvard University Press, 1987).

⁹² Hand written note dated 28 Sept 1973 discussing flicker film and color in film. Film File DR: 2007: 0031. Eisenman File, IAUS Fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁹³ Hand written note dated 28 Sept 1973 discussing flicker film and color in film. Film File DR: 2007: 0031, Eisenman File, IAUS Fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁹⁴ A receipt from 1973 shows that Eisenman purchased two 'sets' of Color-aid which retailed at forty dollars. See receipts file included in House VI files DR1994:0135:029. Peter Eisenman fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

⁹⁵ *Inland Printer and American Lithographer*, vol. 123 (Chicago, IL: Maclean-Hunter Publishing Co., 1949).

⁹⁶ The set was also later used by Joseph Albers in his color studies, a fact highlighted on the Color-aid company history and evidenced by the presence of an undated folder of Color-aid paper and color stamps in the Josef and Anni Albers Papers at the Josef and Anni Albers Foundation.

⁹⁷ For more, see catalog essay Anne Temkin, "Color Shift," in *Color Chart: Reinventing Color, 1950 to Today*, ed. Anne Temkin, Briony Fer, Nora Lawrence, and Melissa Ho (New York: The Museum of Modern Art, 2008), 26.

⁹⁸ Temkin, "Color Shift," 26.

⁹⁹ For a short survey of research in U.S architecture schools refer to "Research" in Ockman, Joan, and Rebecca Williamson, eds. *Architecture School: Three Centuries of Educating Architects in North America*. Cambridge, Mass. : Washington, D.C: MIT Press ; Association of Collegiate Schools of Architecture, 2012. See also Avigail Sachs, "The Postwar Legacy of Architectural Research," *Journal of Architectural Education*, Vol. 62, No. 3, Criticism in Architecture (Feb., 2009): 53-64.

¹⁰⁰ Turpin Bannister, ed., *The Architect at Mid-Century: Evolution and Achievement* (New York: Reinhold Publishing Corporation, 1954), 408.

¹⁰¹ Bannister, *The Architect at Mid-Century*, 114.

¹⁰² Eisenman, Diana Agrest, Mario Gandelsonas and Duarte Cabral de Mello applied for a grant with the National Institute of Mental Health to research 'generative architecture'. For an account of this collaboration in 1973 see Joy Knoblauch's coverage of the NIMH grant in *The Architecture of Good Behavior: Psychology and Modern Institutional Design in Postwar America*. (Pittsburgh: University of Pittsburgh Press, 2020.) There are several documents related to this research in the IAUS Fonds, in particular the application for the grant see "Program in Generative Design," Folder B6-2, IAUS Fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

¹⁰³ Letter from Peter Eisenman to John Entenza, Jan 4, 1974. See DR:2007:0091 Film Folder. Peter Eisenman Fonds. Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

¹⁰⁴ Starr and Russett, *Experimental Animation*, 9.

¹⁰⁵ Reflecting the economics of independence Janet Vrchota listed the "survival route" of Van derBeek's funding sources: "As he still does not make and distribute his films commercially, these invitations and grants are VanDerBeek's means of survival. The "survival route" of this one-man film production migrant looks like this; Ford Foundation grant for experimental films, 1963-64, Rockefeller grant for experimental films and studies in non-verbal communication, 1967-8, associate professor in animation and film production at Columbia university 1963-5, associate professor in film projects at New York State University at Stony Point, 1967-73, MIT fellowship in the

Center for Advanced visual Studies, as artist/fellow with Gyorgy Kepes, 1979-70. Add to this an impressive list of mixed-media performances, awards, published articles, and guest lectures and screenings at colleges, and a video workshop at NET New York City. He jokingly admits that he would like to be “artist in residence to the world,” only he doesn’t know where to apply...” Janet Vrochota, “Technology’s Migrant Fruitpicker,” *Print Magazine*, March/April 1973, also excerpted in Starr and Russett, *Experimental Animation*, 200.

¹⁰⁶ This idea of financial models and alternative forms of practice was a key aspect of Lavin’s definition of postmodernization in architecture see Lavin, Sylvia. *Architecture Itself and Other Postmodernization Effects*. Leipzig: Spector Books, 2020.

¹⁰⁷ These activities can be read against what Bruno Latour describes as *mobilization*, in the production of objects of persuasion and proof that reshape existing knowledge. According to this definition Latour suggests that one must invent objects that can sustain and circulate such that they too can be taken on by others in order to perpetuate transmission. In his definition of immutable mobiles Latour describes the history of architectural drawing because the tools of architects including maps, perspectives and orthogonal drawings allow for the recording of information into a standard set of conventions—one can make a drawing of an existing object which is already one step of mobilization and then reproduce again what the drawing as a replica. What would it mean however to consider the ways that Eisenman began to establish methods such as the use of film as an immutable mobile. “If you wish to go out of your way and come back heavily equipped so as to force others to go out of their ways, the main problem to solve is that of mobilization....In sum, you have to invent objects which have the properties of being mobile but also immutable, presentable, readable and combinable with one another.” See Bruno Latour, *Drawing Things Together*.

¹⁰⁸ Sean Keller, *Automatic Architecture*.

¹⁰⁹ Mario Gandelsonas and David Morton “On Reading Architecture,” *Progressive Architecture*, no. 3 (March, 1972): 80.

¹¹⁰ Ibid.

¹¹¹ Hand written draft letter to Carter Manny regarding the Graham Foundation grants, final copy dated 28 December 1973, see DR2000:0091, IAUS Fonds. Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

¹¹² As it turns out, the project of collecting architectural images as visual tools was an important and foundational aspect of MoMA’s image library which had been established in a somewhat ad-hoc manner within MoMA’s library services. The image library had grown in a significant way out of problem of how to exhibit architecture which required new forms of storage, circulation and display. The library was established in 1932 in the same year as the famous *International Style* exhibition, the research material for which made up a significant portion of the early gifts. Later contributors of architectural material included Serge Chermeyoff and Dr Fred Block. That the library began with architectural material is significant perhaps because buildings already represented an issue of exhibition, how to show them within a museum and an imperative therefor to make buildings accessible via images. MoMA’s library saw it as one of their functions to make these resources accessible to museums and colleges and by 1944 they also circulated a slide catalog to publicize their collection and rental options: “since this division of the library serves as coordinating agency for ordering, collecting, and documenting negatives within the Museum, and for canalizing all requests for photographs, photostats, black-and-white color slides, it faces an unusual opportunity to convert a formerly restricted activity into an educational service on a national scale... *The latent photographic resources of the Museum must be directed to the educational purpose of widespread distribution of visual materials at the lowest possible cost.*” See Bernard Karpel, “The Library,” *The Bulletin of the Museum of Modern Art* 11, no. 3 (January 1944), 3–9.

¹¹³ Sylvia Lavin who has written about this grant and the context around little tools of knowledge in the 1970s including this letter from Drexler which she suggests makes evident the infrastructure around disseminating architectural images that influenced the thinking of those like Venturi’s Complexity and Contradiction that would

later be funded by the MoMA publishing project. For more, see Sylvia Lavin, *Architecture Itself and Other Postmodernization Effects*.

¹¹⁴ Hyungmin Pai has written about the ways that architectural library formation was one of the key tasks to the education system as far back as the turn of the nineteenth century. At this time there was much discussion around the connection between the library and the atelier linked by portfolios and historical treatises. Pai, *The Portfolio and the Diagram*, 39.

¹¹⁵ Bannister, *The Architect at Mid-Century*, 219.

¹¹⁶ Each of the winning slide sets were held in the AIA Headquarters library available to rent by the chapters for their own meetings. In 1969 the jury for the previous year's competition included some extra rules for the following year "the shows should not be too long or have to much dialogue; they should be positive in nature, offering constructive suggestions; photography should be imaginative and allowed to speak for itself where possible; novel presentation schemes (eg. Twin screens, packaged projectors, etc.) should not be used, and subject matter should hit on the pressing issues of the day, such as the urban crisis, the ghettos, or the decay of our cities." (AIA Memo #384/September 30, 1968; AIA Memo #391 January 1969; AIA Archive). The jury for 1970 in Boston included James Marston Fitch who was renowned for his scathing critiques of architectural image use. Graphic Designer Ivan Chermeyeff and architectural photographer Julius Schulman.

¹¹⁷ Ernest Burden, Slide Presentations in Architectural Business, *Architectural Record*, July 1971, 55.

¹¹⁸ Margaret Richardson, "Architectural Drawings: Problems of Status and Value," *Oxford Art Journal* 5, no. 2 (January 1983): 13–21. And

¹¹⁹ Richardson, "Architectural Drawings: Problems of Status and Value."21.

¹²⁰ Richardson, "Architectural Drawings: Problems of Status and Value,"21.

¹²¹ There is no record of a receipt on either drawing. The Johnson annotation by Eisenman suggests that perhaps the drawing was a gift rather than a sale. It is unclear the terms of the Gilman as both were directly acquired by the collectors from Eisenman rather than through galleries as he would later organize through the Max Protetch Gallery. For more, see Jordan Kauffman, *Drawing on Architecture: The Object of Lines, 1970–1990* (Cambridge, MA: MIT Press, 2018).

¹²² The annotated note on the drawing was dated to when the drawing was given to Johnson rather than when it was drawn, a common practice of retrospective signing of drawings by Eisenman. Thank you to Evangelos Kotsioris for his assistance with this material.

¹²³ While Johnson had gifted his drawing to MoMA in 1980, the other drawing circulated somewhat before being given by the Gilman Foundation to MoMA in 1998 after Howard Gilman's death. Gilman's drawing was kept in the Gilman Foundation offices in New York and was loaned out twice in 1984-5 to exhibitions in Berlin and Milan. These twin drawings that circulated differently and were slightly different provide a conundrum of formatting.

¹²⁴ There are a 'set' of drawings for House VI on yellow trace made in black marker with the freehand trace method one 'transformation' per sheet of trace. See 920049 Peter Eisenman, Getty Research Institute.

¹²⁵ Xerox document titled "Background to my proposal," December 28, 1973. DR2000:0051. Peter Eisenman Fonds. Canadien d'Architecture/Canadian Centre for Architecture, Montréal.

¹²⁶ In making his films, Eisenman spoke of the 'Score' document, which he described as "the instruction which key the number, sequence and nature of each frame." However a score was not a document that came before the film according to his conceptualizing of the film but rather it was derived from analyzing the film or "watching and

rewatching the film over and over.” There are several examples of documents related to score making in his archive. These correspond with other information organization systems of this moment including indexes and other forms of list making.

Conclusion

At the outset of this research I thought the objects of my study was post-war architectural drawing instruments. I soon realized there was a study of an array of graphic supplies on the architect's desk that weren't accurately accounted for in the existing literature. Similarly, when I entered the CCA archive to study Eisenman's house drawings it became apparent that these were not singular objects but were part of a technical world of networks and flows. An important part of this research was recognizing that these two shifts—from instruments to supplies and from objects to networks—converged at the same historical in the coordination a critical architectural authorship between 1960 and 1987. These dates are bookends to the epochal measures of the late mechanical drafting and the introduction of personal computing in architectural offices. I argued that between these dates one might begin to speak of an alternative scale of instrumentality on the architect's desk that was the various small in interchangeable items purchased from the supply store. These supplies went hand in hand with the transformation in architectural practice in that moment related to the changes in work, increased opportunities for exhibiting drawings, lecturing.

To exist within this discursive circuit architects sought to package their work as a 'project' that one could demonstrate a continual research and theoretical framing. The supplies were part of that fashioning and packaging, they were used in the production of graphic materials that were circulated in the new media contexts of discourse. Though architects claimed to critique the technocratic bindings of their practice model by escaping into these spaces of autonomy and theory, I demonstrated that the work done at the desk was inescapably bound to other forms of technical, economic, and institutional infrastructures.

Methodologically I worked to bridge the historiographical gap around the graphic supplies finding information sources in technical locations befitting my argument. I examined advertising across several journals before settling on *Progressive Architecture* as the most useful set because of the way it was partially reflecting its origin as a drafting room journal and the postwar role it played in shaping the

growing culture around drawing. The advertising was supplemented with research into the manufacturing companies, and other technical manuals. Charrette provided an important chapter in the transformation of culture around tools in this period. Because of its origination in an architecture school and founding by architectural students, Charrette was an important scaffold to assemble together the disparate evidence around the ever changing and technologized world of tool manufacturing. Understanding the store nesting within academia also provided an interface with the studio and the ways that students were engaging with tools in this moment—how they learned about tools and supplies. Drawing manuals both referred to the constellation of supplies available to architects and yet reinforced this same gap that existed in the historiography. This was because the number of new items and the speed at which they were updated meant that this was better suited to catalogs, drawing tool exhibitions and trade shows or visiting charrette. However, this temporality was also what led to the neutralization and obfuscation of this category of architectural equipment from consideration as influential in the ways that other instruments were accorded.

To counter-balance the technical archives related to supplies I opted to work on materials from the Eisenman's Fonds at the CCA for the following reasons: 1) he is still associated with an actively dominant form of authorship in many architecture studios, 2) to expose authorship's mechanisms. Because of these two points I argue that to expose the mechanisms of authorship in Eisenman's work is also relevant to those educated in the U.S academia over the past fifty years. Furthermore, Eisenman's archive involved not just drawings, but his writings, institutional work, and a wide range of ephemera and everyday marks on paper. And the two houses, II and IV, in particular bought in the widest possible range of materials; from working drawings to construction to things intended only for exhibition but never shown, from the widely circulated to the failed launch.

Reflecting on this dissertation it is important to discuss the way that this research was positioned between a monographic focus of a single author and a more dispersed synoptic view of these technical

items I called supplies, which were persistently shaped by a relationship to rationalization and depersonalization. By introducing the technical context of the first chapter with the monographic following chapters I showed Eisenman not as an originating figure but someone who was contextually working alongside others on similar problems, making material choices with what was possible in that period, and often coming up against obstacles. At the same time, as a strong author, it was important way to track the discursive parameters—economic structures, institutional and individual affiliations, and formats of circulation—that allowed him to produce such an enduring hold on the terms of architectural pedagogy in particular. The difficulty with the monographic focus was the risk of reinforcing authority and mastery rather than the deflation by examining the author as a conditioned subject making everyday decisions within a prescribed context of technical possibility. The documents for House II and IV, which are produced according to my framing with and out of the everyday items purchased as graphic supplies from stores like Charrette, register the negotiation and struggle of issues related to expression and personalization.

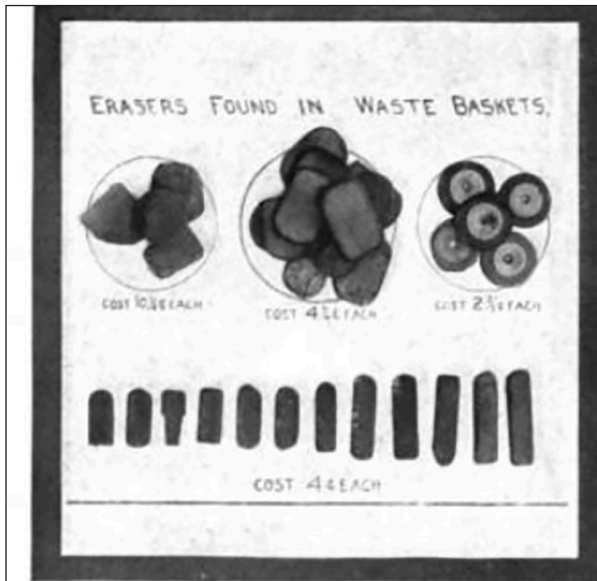
The close focus on these two single houses by Eisenman offered the study of tools and supplies something crucial. While the first chapter focused on the rationalization of architectural drawing production and the intrinsic technocratic foundations of these supplies as logistical office items, it was imperative for my purposes to examine an architect who was actively resistant to this aspect of architecture. There would not have been traction to examine the ways that the field was forming and reinforcing divides between artful and rational aspects of design production were I to have examined the supplies at a bureaucratic office. It was precisely in the study of a subject so actively involved in the shaping and mobilizing of his own image that thinking through these questions of material seemed to gain most traction. This was primarily because in the tradition of protesting too much, it turned out that there was much to know when one resituated Eisenman's autonomous project into a longer series of banal material decisions and responses. Not only this but understanding that autonomy equally involved the disavowal of drawing production as did building production. While it was by then clear the entanglements

of professional architecture it was less apparent the ways that the desk was an already entangled site as well.

There were many unexpected questions that came out of this research were only made possible via a study of Eisenman-as-subject. These related to the ‘roles’ of the architect-client and the architect-critic that I would argue expanded his control over the work that have left his own mediated interpretation of his work so entrenched until recently. This is also likely a condition of the institutional and discursive networks that were formed in that time and the questions of generational influence. These questions are crucial in the overdue conversations we are having today related to understanding the exclusions structured into the concepts and terminology of the architectural ‘discipline’. An important aspect of this control is related to Eisenman’s rhetorical interest the structural approach to architecture as a language system in the late 1960s. The intention behind this, in line with the period, was to shift the focus from genius and connoisseurship to analysis and methods, which promised to expand the accessibility from the few to the many. However, it was the coincident efforts to isolate this architectural language as autonomous that dislocated the discussion from the socio-political and technical context.¹ This isolation and the circulation of disciplinary discussions in the rarified milieu of the ivy league meant that these initial ambitions were undermined.

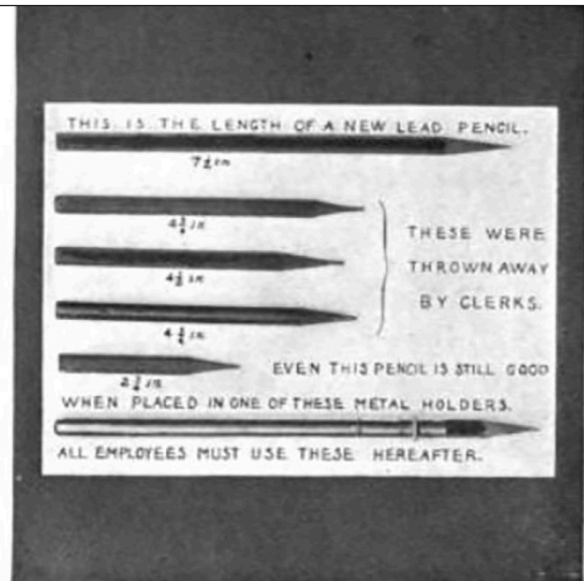
In this study Eisenman was a useful case study not just because he was a strong author but because he worked so hard to redefine authorship in specific ways. The subject of the study was less about his intentions and more about the efforts that he made across various media formats that were indicative of where the concept of authorship, as something that could be constructed and shaped, failed. The effect of the dissertation was to demonstrate in the deep technical history, that made ink, tape, and emulsion that supplies were key agents in making things visible on paper.

¹ François Cusset has discussed the problem of elitism in American New Criticism in Cusset, François. *French Theory: How Foucault, Derrida, Deleuze, & Co. Transformed the Intellectual Life of the United States*. Minneapolis: University of Minnesota Press, 2008.



ONE RESULT OF AN "ECONOMY CAMPAIGN"

Here we see how one manager made a saving in office supplies - he photographed supplies found in waste baskets. The camera is a good educator. This bulletin was a lesson to the workers, not a reproof



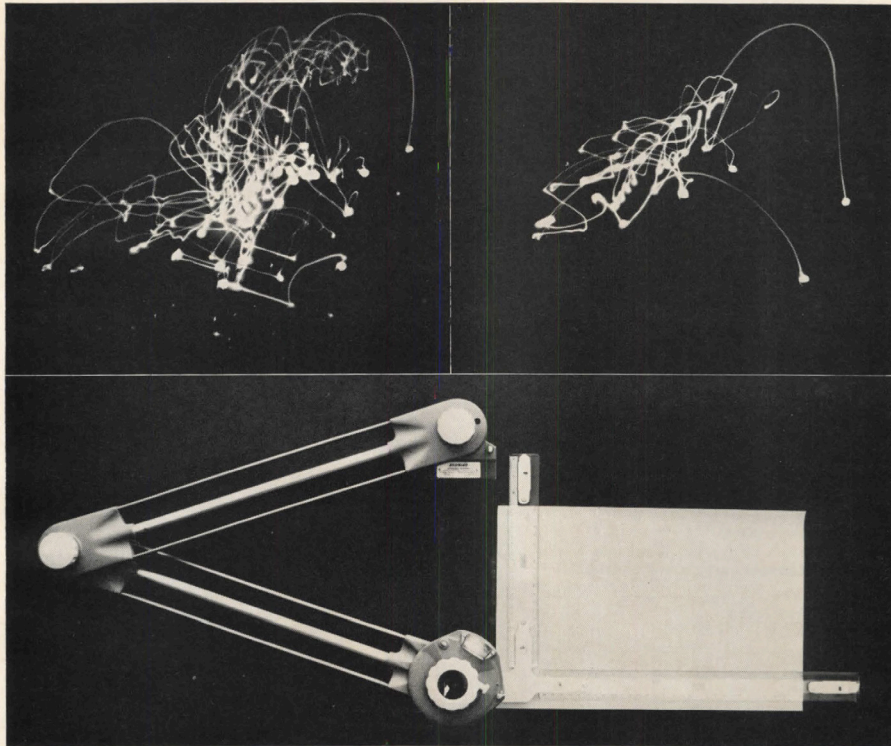
ANOTHER "ECONOMY CAMPAIGN" RESULT

This indicates how one manager got more use out of his pencils. These photographs were placed on the bulletin board. Little savings soon mount up to an astonishingly large total, as these two photographs show

Does a Bruning drafting machine really save time and labor? Here's proof!

The top two pictures were taken with a time exposure and lights on the wrist of a draftsman. Here are the number of movements necessary to make a simple drawing with a T square, straightedge, triangle, protractor and scale. Time: 2 hours, 11 minutes.

Here the same drawing was made with a Bruning Equipoise drafting machine. Note that considerably fewer movements were required. Greater accuracy was also obtained. Time: 1 hour, 31 minutes.



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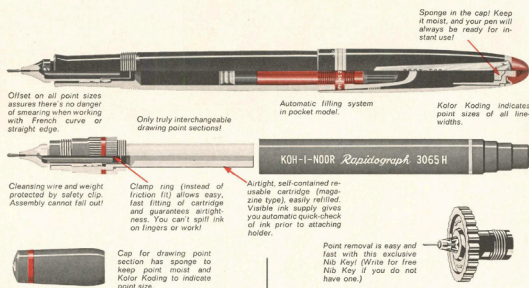
247

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1.2 Bruning drafting machine advert in Progressive Architecture

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Offset on all point sizes assures there's no danger of smearing when working with French curve or straight edge.

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Kolor Koding indicates point sizes of all line-widths.

Cleansing wire and weight protected by safety clip. Assembly cannot fall out!

Clamp ring (instead of friction fit) allows easy, fast fitting of cartridge and guarantees airtightness. You can't spill ink on fingers or work!

Airtight, self-contained reusable cartridge (magnazine type), easily refilled. Visible ink supply gives you automatic quick-check of ink prior to attaching holder.

Point removal is easy and fast with this exclusive Nib Key! (Write for free Nib Key if you do not have one.)

Cap for drawing point section has sponge to keep point moist and Kolor Koding to indicate point size.

Now 48 Points to choose from!

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- 8 Rapidograph (transparent) hard-treated stainless steel points
- 8 Aceidograph hard-treated stainless steel points
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- 8 Koh-I-Noor Tungsten Carbide points, primarily for programmed automated drafting machines
- 7 Brushograph sizes for broad work, filling-in and opaquing
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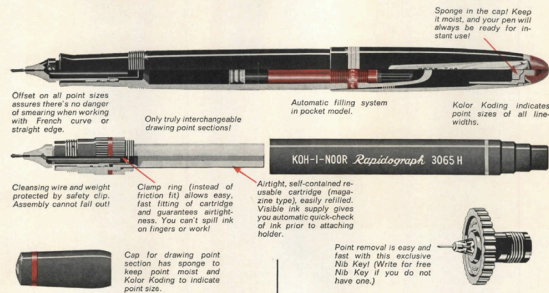
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9

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Clamp ring (instead of friction fit) allows easy, fast fitting of cartridge and guarantees airtightness. You can't spill ink on fingers or work!

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329

1.3 Koh-I-Noor Rapidograph pens

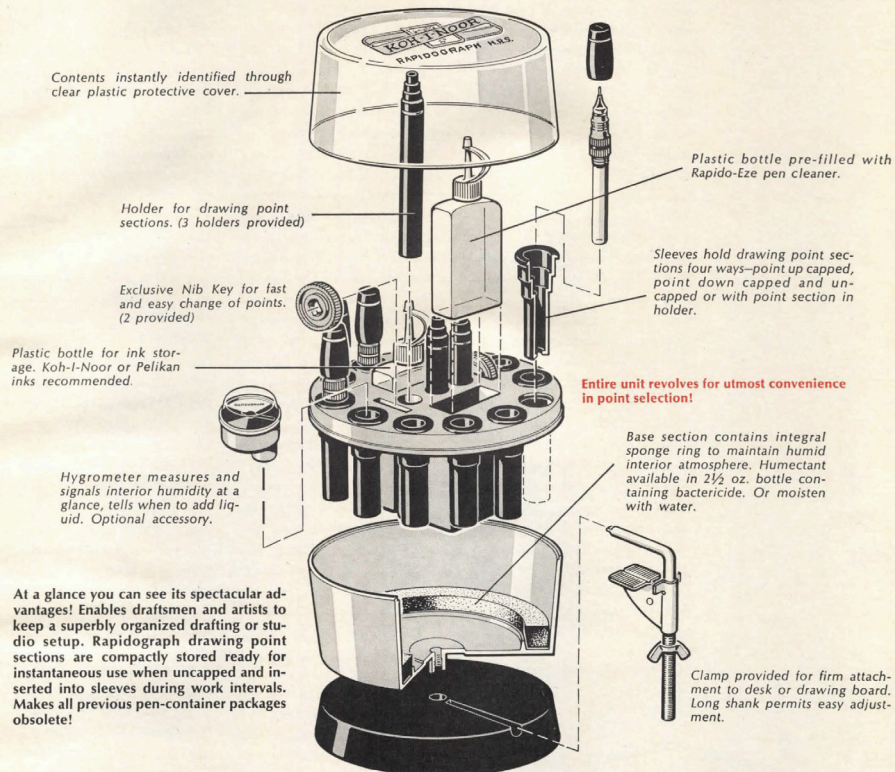
Between July 1966 and October 1966 the number of pen tip variations expanded from 48 to 64, see advertising in Progressive Architecture

**New Koh-I-Noor Rapidograph Jewel Point
will draw "over a mile on Mylar*."**

*(*DuPont registered trade mark.)*

1.4 Inset from Koh-I-Noor Rapidograph advert in Progressive Architecture 1964

KOH-I-NOOR Explodes its Newest Idea!

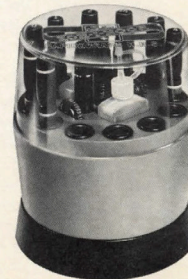


The Rapidograph H.R.S. (Humidified Revolving Selector)

Here's a miracle of compact design for your work-space! No groping around—everything you need is right at hand—when you have the Rapidograph H.R.S. clamped to your desk or drawing board.

And it comes to you without charge when you purchase sets of 6, 7, or 8 drawing point sections. The three holders, the two nib keys, the plastic ink bottle, the plastic bottle of Rapido-Eze pen cleaner, the unit itself—all are included in the price of 6 or more drawing point sections alone! (If purchased separately, without drawing point sections, the list price is \$5.) Hygrometer and liquid Humectant are optional accessories.

Note that the Rapidograph H.R.S. contains a total of 12 sleeves. The extras are for the additional drawing point sections you may choose from the wide Koh-I-Noor selection, or for those you may already possess. Set yourself up with a Rapidograph H.R.S.—a whole assortment of the precision points and line-widths you need for precision drafting—always at your finger-tips, safe and ready, organized for easy selection and use. See your Koh-I-Noor dealer or, for descriptive literature, write to Koh-I-Noor, Inc., 107 North St., Bloomsbury, N. J. 08804.



YOU GET MORE FROM **KOH-I-NOOR**

MARCH 1967 P/A

On Readers' Service Card, Circle No. 360

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1.5 Koh-I-Noor Explodes it's Newest Idea! In Progressive Architecture 1960s

QUICK DRAW



The Rapidograph H.R.S. (Humidified Revolving Selector) makes all previous pen containers obsolete! The H.R.S. is a design marvel that creates one revolving work-center with an entire assortment of the drawing points and line widths you need for your most efficient board work—plus all you require to give your precision Rapido-graph points the care and protection they deserve!

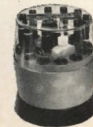
This revolutionary pen package accommodates up to 12 Rapidograph drawing point sections, and contains three holders, two Nib Keys for quick point replacement, a plastic bottle for Koh-I-Noor or Pelikan drawing ink, another filled with Rapido-Eze pen cleaner, and a clamp to attach unit to board or table. As illustrated, the H.R.S. also holds your #3060 Rapidograph pocket model pen.

An integral sponge ring maintains a humid interior to keep open pens ready for instantaneous use during work intervals. Base is removable for easy cleaning or replacement of sponge. The H.R.S. is all yours without extra charge when you purchase sets of 6, 7 or 8 Rapidograph drawing point sections. (H.R.S. container without contents, list price \$5.) Optional accessories are a purifying moisture-retaining liquid Humectant, and a Hygrometer to measure interior humidity (two models available). See your Koh-I-Noor dealer or write for detailed literature.

Koh-I-Noor, Inc. 107 North Street, Bloomsbury, N.J. 08804. In Canada: Koh-I-Noor/Canada/Ltd., 4180 Ave. de Courtrai, Montreal 26, Quebec.

YOU GET MORE FROM

KOH-I-NOOR



SEPTEMBER 1967 P/A

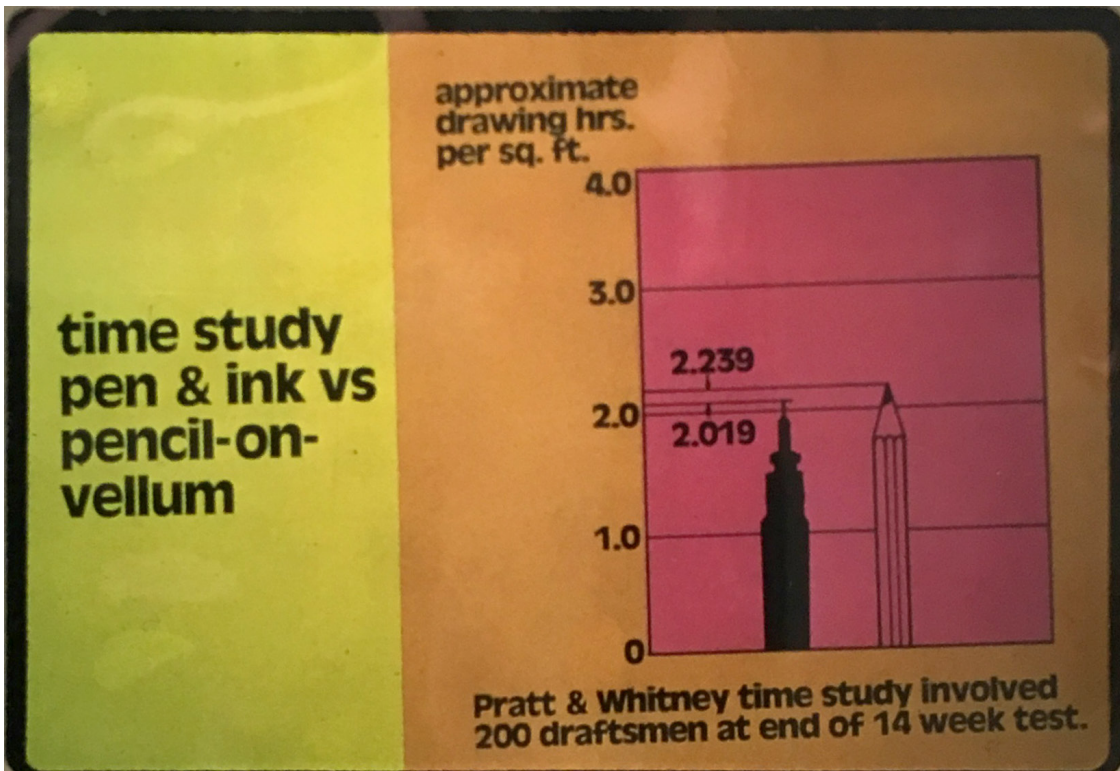
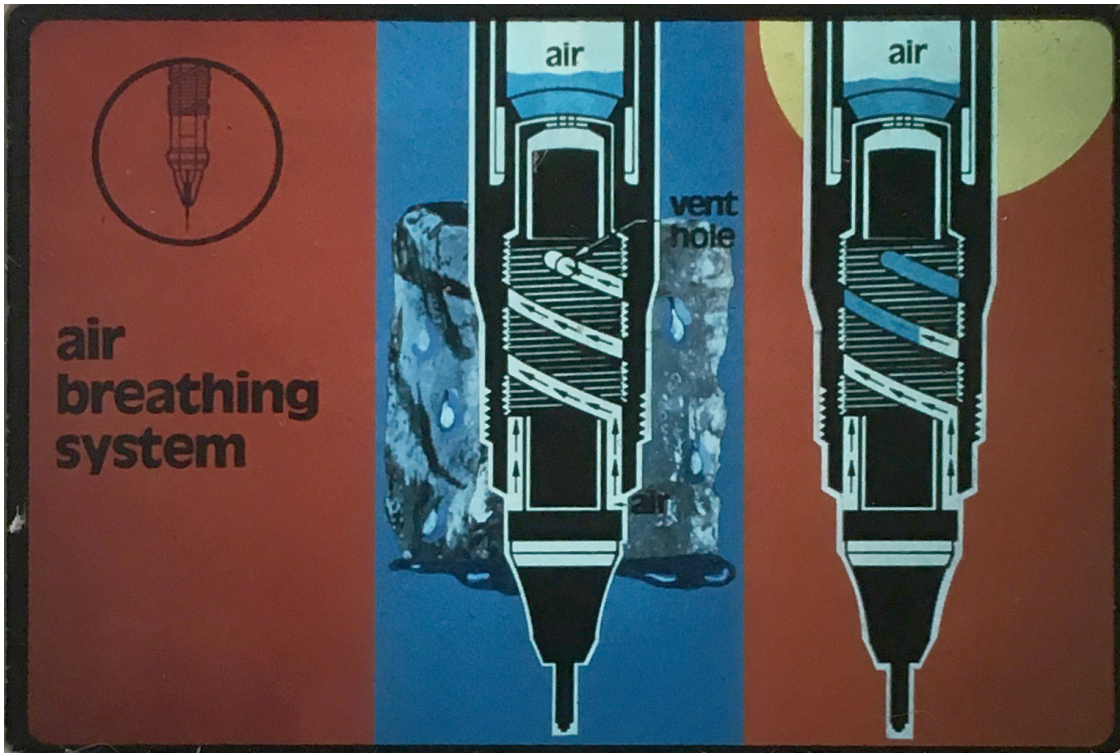
On Readers' Service Card, Circle No. 416

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◀ On Readers' Service Card, Circle No. 377

On Readers' Service Card, Circle No. 424 ▶

1.6 Koh-I-Noor Rapidograph Quick Draw in Progressive Architecture



1.7 Rapiddraw Ink-on-film drafting learning program slide example



“PMT” is now the big news in drafting rooms!

PMT in use at Western Electric Company drafting operations.

**“PMT”
preventive maintenance technique
based on daily use of the KOH-I-NOOR
Rapidograph Ultrasonic Cleaner
for technical fountain pens**

Speed up drafting operations with Koh-I-Noor's preventive maintenance technique. An occasional dip of your technical fountain pen into Koh-I-Noor's Rapidograph Ultrasonic Cleaner gives you immediate pen cleaning, flushes away accumulating drafting-surface particles and other unseen trouble-starters.

You don't have to take apart your Rapidograph Technical Fountain Pen for on-the-spot ultrasonic cleaning. You don't even have to remove the ink. Just dip your Rapidograph pocket model pen or drawing point section up to the cap threads on the barrel, and millions of energized bubbles—generated by 50,000 cycle ultrasonic action—carry cleaning solution into the smallest openings, “scrubbing” your pen points inside and out. Koh-I-Noor's prescribed PMT based on daily use of the Rapidograph Ultrasonic Cleaner is fast—10 to 30 seconds per cleaning. And PMT saves money because time spent at washbasins for general and corrective pen cleaning is time lost.

See your Koh-I-Noor dealer, or write for descriptive literature. Koh-I-Noor, Inc., 107 North St., Bloomsbury, N.J. 08804. In Canada: Koh-I-Noor/Canada/Ltd., 4180 Ave. de Courtrai, Montreal 249, Quebec.



3069 USC2. 5" x 5" x 5" cast aluminum housing. Stainless steel tank. Completely transistorized solid state circuitry. No moving parts. Suggested retail price \$66.00, including 3/4 oz. plastic bottle of cleaning concentrate and small-parts cup with strainer.

YOU GET MORE FROM **KOH-I-NOOR**

OCTOBER 1970 P/A

On Reader Service Card, Circle No. 355

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1.8 Photograph showing desk set ups with Rapiddraw system installed

Drafting shortcut kit.



Put camera, tape and scissors to work for you.

Using them—and Kodagraph films and papers—you can eliminate hours of drafting in preparing new drawings or revising old ones.

Ask your Kodak Technical Sales Representative to tell you about photo-drawing and scissors-drafting techniques that are part and parcel of the drafting shortcut kit. Or write Eastman Kodak Company, Business Systems Markets Division, Dept. DP 786, Rochester, N. Y. 14650

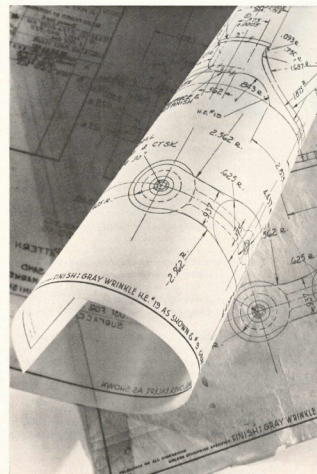
DRAWING REPRODUCTION SYSTEMS BY KODAK

Kodak

122 Progressive Architecture 4:71

On Reader Service Card, circle no. 342

Rejuvenator.



Give worn-out drawings new life with KODAGRAPH Films.

The secret in turning an old, soiled, or weak-lined drawing into a sparkling second original is knowing what to ask for: a reproduction on Kodagraph Ester base film.

Your Kodak Technical Sales Representative will be happy to show you how these films can not only improve on the quality of your drawings, but also make drafting and revision a lot easier.

For literature write to Eastman Kodak Company, Business Systems Markets Division, Dept. DP825, Rochester, N. Y. 14650. Remember, the drawing you save may be your own.

DRAWING REPRODUCTION SYSTEMS BY KODAK

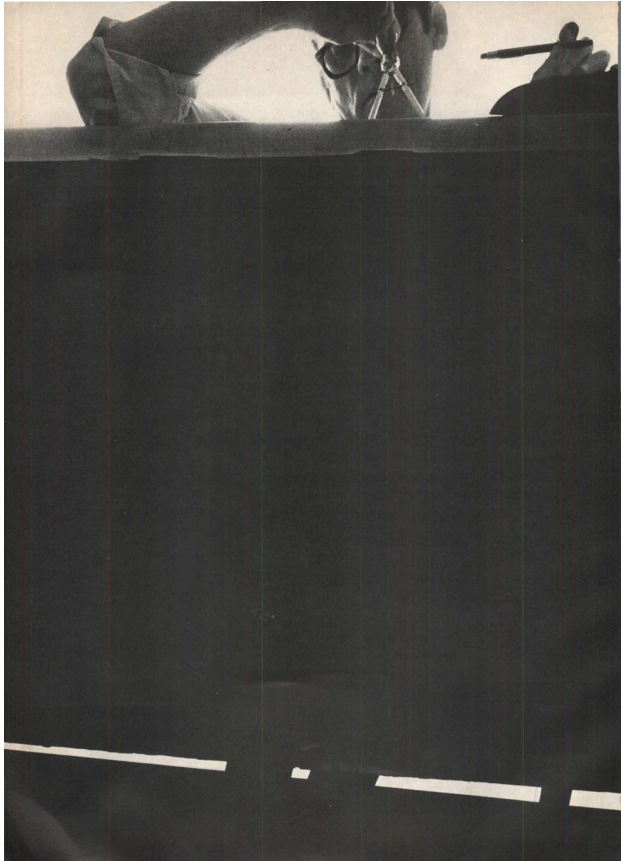
Kodak

64 Progressive Architecture 10:71

On Reader Service Card, circle no. 346

1.9 Kodak drafting systems advertising 1960s, "Drafting shortcut kit"

1.10 Kodakgraph "Rejuvenator" circa 1960s



At \$7.35 an hour he should spend his time creating new drawings not redrawing old ones.

With the Xerox 1860 printer around, a draftsman has time to do a lot more important things than drawing drawings that have been drawn before.

Instead of redrawing from scratch, you make a same-size print of the original on the 1860.

Then draw just the portion that's changed, paste it on the 1860 print, and run that through the 1860 again. There's the new drawing.

Drawing restoration without redrawing? Run the original through the 1860.

Fuzzy and faded lines come out crisp and black. Yellowed backgrounds come out white and clean.

(Sometimes you might want to make an intermediate, touch that up, then make a final copy from that.)

The Xerox 1860 makes prints at 100%, 95%, 75%, 62%, 50%, or 45% of original size. For reduction,

it accepts originals up to 36" wide by any length and 1/4" thick.

All this on ordinary bond paper if you want paper prints. Or translucent intermediates or offset master stock.

If you're interested in turning your re-draftsmen back into draftsmen, write for more on the 1860 to Xerox, Dept. A67, Xerox Square, Rochester, New York 14603.



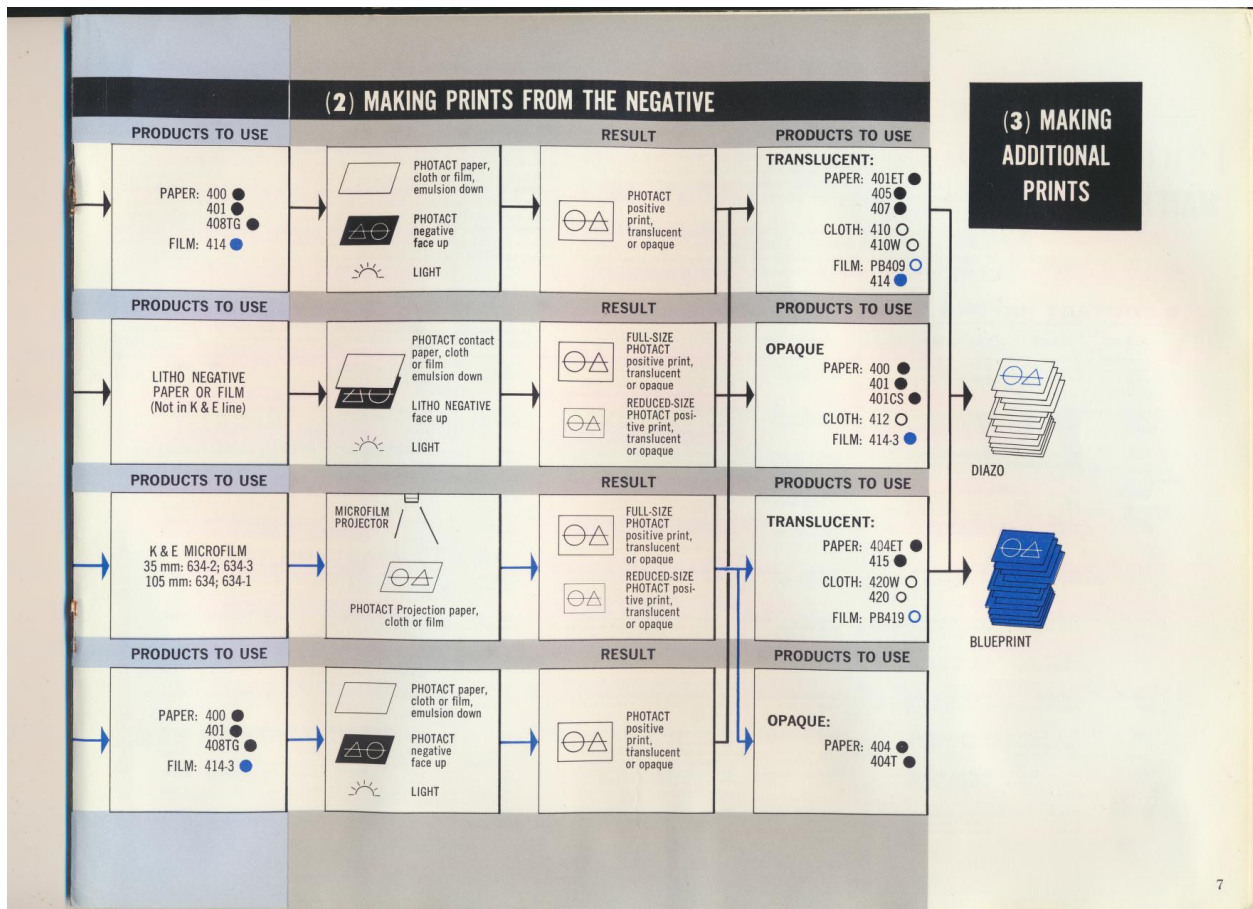
XEROX

APRIL 1969 P.1A

On Readers' Service Card, Circle No. 408

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1.11 Xerox Ad circa 1969



1.12 Keuffel & Esser scissor drafting diagram, Keuffel & Esser Co. 1963

EAGLE PENCIL A DIVISION OF BEROL CORPORATION DANBURY, CONNECTICUT, U.S.A. BEROL



**To Hell
with Individuality.**

Individuality is for people not pencils. When you open a box of Eagle Turquoise 2H you expect—and get—exactly the same shading quality. Pencil after pencil. Today or next year. You'll find this same consistency in all of Eagle's 17 grades. Every grade is so distinct, its difference in shading is clearly visible. Yet every pencil or lead of the same degree is so similar in performance, you'll never know where one starts and the other leaves off.

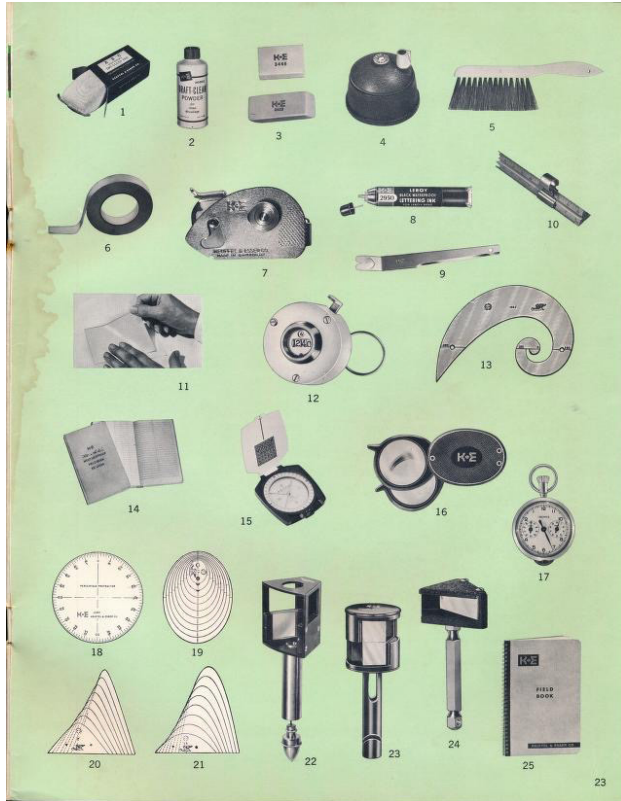
And if you use film, you'll like Turquoise Filmograph leads. Specifically designed for use on coated film, these flexible, plastic leads offer the uniformity you need for perfect grading.

When it comes to individuality, Eagle draws the line. Eagle Turquoise. The nation's largest-selling drafting pencils and leads.

Eagle Turquoise

On Reader Service Card, Circle No. 341

1.13 Turquoise pencils “to hell with individuality” advertising 1960s



K+E SOME USEFUL ACCESSORIES

① **58 0660 ABC® DRY-CLEAN PAD**
A sure-fire way to keep engineering drawings clean. Gum eraser particles, sifted through a mesh cover eliminate need for tedious clean-up erasing.

② **58 0664 ABC DRY-CLEAN JR.™ PAD**
Same as 58 0660 but approx. one-half size.

③ **58 0684 DRAFT-CLEAN™ POWDER**
The same gum eraser particles, these a little more finely ground and packaged in a handy, squeeze-bottle. One or two squirts will cover an entire drawing.

④ **ERASERS**
Nothing is more galling than a smudgy eraser. To lift the graphite from your drawing, we recommend the PINK, PEARL, 58 0508 or the new vinyl eraser TAD 58 0500.

⑤ **58 0510 TRU-POINT LEAD POINTER**
In every drafting room you'll see a Tru-Point. Puts a perfect point on a mechanical lead pencil with just one or two twists of the rotating head.

⑥ **58 0710 DUSTING BRUSH—10-INCH**
Why waste valuable breath trying to blow away all the stuff that seems to gravitate to the surface of your drawing board? A good brush does it far better.

⑦ **58 1596 DRAFTING TAPE**
The four corners of an engineering drawing shouldn't be without their little swatches of drafting tape. And you'll find plenty of other uses for this tape.

⑧ **58 0800 PAPER CUTTER**
Let's face the facts: cutting paper or illustration board is a job for a paper cutter, not for scissors. Especially good for inset cut-outs.

⑨ **58 0005 LEROY® INK CARTRIDGE**
There was a time when drawing pens were painfully filled by ladling ink from a bottle. But no more—with this cartridge you simply aim and squeeze.

⑩ **58 0824 TACK LIFTER**
Once a good thumb-tack is pushed into a good drawing board a union is created, aimed, if necessary, at the destruction of your finger nails. Use a tack-lifter! It also serves as a paper-cutter.

⑪ **56 3864 SCALE CLIP**
This bright little item makes it easier to pick up your triangular scales, gives you the scale graduation you are using every time.

⑫ **58 1360 DULSEAL™**
Here is a transparent film with a delayed-action adhesive. You can slide it down, lift it, move it around. An excellent protector . . . good in dozens of other ways too.

⑬ **89 1100 HAND TALLY REGISTER**
For count-downs or count-ups, you'll appreciate the convenience and accuracy of a tally register. Ideal for any course where figures are important—it lets you think what you're doing while it counts what you're doing.

⑭ **57 1000 LOGARITHMIC SPIRAL CURVE**
This curve is constructed on mathematical principles and contains every curve within the limits of its size. It is a tool of large scope and useful for various calculations.

⑮ **"RITE IN THE RAIN" WEATHERPROOF FIELD & LEVEL BOOKS**
The answer for making entries in a damp environment. Both stock and printed lines are moisture resistant to prevent smearing or washing.

⑯ **82 0004 Field Book, 4 1/2 x 7 1/2 in.**
82 0006 Level Book, 4 1/2 x 6 1/2 in.

⑰ **80 0090 RECON™ COMPASS**
A versatile compass designed for accuracy and convenience in rough surveying use, timber cruising, boundary locations, etc. Upper ring designed for determining the bearing of a line graduated in quadrants and from 0° to 360° in a counter-clockwise direction. Lower ring designed for determining direction in a conventional manner; provided with magnetic declination adjustment. Diameter 3 1/2 in.; thickness 1/2 in.; weighs 2 1/2 in. long; weight about 6 ounces.

⑱ **83 0354 POCKET MAGNIFYING GLASS**
As a student engineer you're going to be exposed to a host of minutiae. For closer inspection of this matter we suggest a magnifying glass.

⑲ **62 0320 MAP MEASURE**
For measuring map distances—quickly and accurately. Simply run the wheel of the instrument over the map following the line of distance to be measured. The distance will appear in feet, inches, eighths and tenths of inches on the dial while the measuring wheel reads to 1/32 or .05 inches.

⑳ **64 0548 PERCENTAGE PROTRACTOR**
Many times you will be required to work with charts and graphs. The K&E Percentage Protractor will be of particular value here since it can be employed in the construction and measurement of "par" charts and similar graphs.

㉑ **57 1001 TEACHERS ELLIPSES**
Set of 10, major axis 1 1/2 to 6 in., increasing by 1/2 in.

㉒ **57 1002 TEACHERS HYPERBOLAS**
Set of 8, base approximately 3 1/2 in., height 2 to 5 1/2 in., increasing by 1/2 in.

㉓ **57 1003 TEACHERS PARABOLAS**
Set of 8, base approximately 2 1/2 in., height 1 1/2 to 3 1/2 in., increasing by 1/2 in.

㉔ **80 0243 ANGLE MIRROR**
For angles of 90°, field of view 10.0°; equipped with small plumb bob, threaded for enclosing in the instrument. Furnished in leather case.

㉕ **80 0248 DOUBLE RIGHT ANGLE PRISM**
For sighting 90° angles in either direction; field of view 9.5°; extremely accurate, cannot disalign. Furnished in leather case.

㉖ **80 0259 RECTANGULAR PRISM**
For sighting 90°; field of view 7.5°. Furnished in leatherette case.

㉗ **FIELD SURVEY NOTEBOOKS**
High precision, red cloth cover, with waterproofed surface, printed in red and blue from engraved plates, for accuracy of spacing and clear lines, with waterproof ink; right hand pages, 8 vertical lines to the inch.

⑳ **82 0018 4 1/2 x 7 1/2 in., 32 leaves, spiral bound. Will lie absolutely flat back to back.**
㉑ **82 0022: The same as 82 0018, but with non-rusting wire stitched heavy cloth backbone.**

1.14 Educational Supplies and Equipment - Keuffel & Esser Co. 1963

CHARRETTE

SUPPLIER TO ARCHITECTS
 279 BROADWAY CAMBRIDGE, MASS 02139
FALL 1964 UN 8 - 8 8 7 7

PAPERS AND VELLUMS

		list price	net
<u>Sketching Papers</u>			
Charrette Canary	14" X 50 yds.	1.45	1.00
Consistently strong, high transparency,	21" X 50 yds.	2.15	1.65
uniform deep yellow tint. Low prices re-	42" X 50 yds.	4.15	3.00
flect a little known but high quality manu-	42" X 100yds.	7.90	5.25
facturer.			
Charrette White	14" X 50 yds.	1.45	1.00
Same quality as Canary	21" X 50 yds.	2.15	1.65
	42" X 50 yds.	4.15	3.00
Dietzgen 161Y Arki-Sketch	42" X 50 yds.	5.75	4.25
pale yellow tint			
Dietzgen Lupton thin 100% rag	36" X 20 yds.	3.60	3.05
Charrette white tracing paper #99H	36" X 20 yds.	5.60	3.95
Heavy weight, medium transparency,	42" X 20 yds.	6.35	4.60
very high quality, fine for prints, pre-	20" X 30" shts.	16.50	10.90/10
sentation paper, for both ink and pencil,			
excellent for routine work when an age-			
proof paper is not required.			
<u>White Tracing Vellum--age-proof (will not yellow)</u>			
Charrette #80M	36" X 20 yds.	8.60	5.85
Medium weight, good transparency,	42" X 20 yds.	9.45	6.35
corrected tinted, for ink and pencil, fine			
for prints.			
Dietzgen 198M	30" X 20 yds.	8.00	6.25
Medium weight, for ink and pencil.	36" X 20 yds.	8.90	7.35
	42" X 20 yds.	10.10	8.45
<u>Special Papers</u>			
Strathmore 2-ply drawing board	30" X 40"	1.00	.95
Bristol Board, matte finish, 120 pound	22 $\frac{1}{2}$ " X 28 $\frac{1}{2}$ "	.30	.20
Strathmore Alexis drawing paper	36" X 10 yds.	2.25	2.10
Medium weight, matte finish with fine			
tooth.			
<u>Color-Aid papers in over 200 colors</u>	18" X 24" each		.30
	six	1.80	1.50
	dozen	3.60	2.75
Color-Aid swatch book (one swatch each color)		3.75	3.25
Color-Aid Office Packs--one 6"x9" sht. ea. color		7.58	6.00
Construction paper--50 assorted colors--9" x 12"		.60	.50

1.15 Charrette 1964 catalog
 Lionel Spiro Papers, The Wyner Family Jewish Heritage Center



MARS TECHNICAL PENS

Designed primarily for board and desk use, Mars technical pens are the world's best. Each pen is furnished with barrel, cap and pocket clip, resulting in a time-saving tool that is easy and convenient to use. The stainless steel points provide a steady non-clogging flow of ink and give longer and smoother wear.

RANGE OF MARS TECHNICAL PENS AND POINTS

Line Width	Technical Pens		Technical Points	
	Mars Code	Price	Mars Code	Price
Ultra Fine 0000	Brown 700 UF	\$6.50	750 UF	\$4.50
0.1 mm 000	Violet 700 01	\$5.50	750 01	\$3.50
0.2 mm 00	Red 700 02	4.50	750 02	2.50
0.3 mm 0	Blue 700 03	4.50	750 03	2.50
0.4 mm 1	Green 700 04	4.50	750 04	2.50
0.5 mm 2	Yellow 700 05	4.50	750 05	2.50
0.6 mm 2½	White 700 06	4.50	750 06	2.50
0.8 mm 3	Grey 700 08	4.50	750 08	2.50
1.0 mm 4	Black 700 10	4.50	750 10	2.50
1.2 mm 5	Orange 700 12	4.50	750 12	2.50
1.4 mm 6	Lt. Green 700 14	4.50	750 14	2.50
2.0 mm 8	Dk. Green 700 20	4.50	750 20	2.50

700 TECHNICAL PEN SETS

700 S9
Contains nine pens, one each 700 01 through 700 12. \$38.00

MARS TECHNICAL PEN SET

700 S9 Contains nine pens, one each 700 01 through 700 12. \$38.00

TECHNICAL PENS

700 S7
Contains seven pens—one each 700 02 through 700 10 plus one empty 700 21 ink bottle. \$27.00

700 S4
Contains four pens, one each 700 02 through 700 05 plus one empty 700 21 ink bottle. \$18.00

700 S3
Contains three pens, one each 700 02 through 700 04 plus one empty 700 21 ink bottle. \$14.00

591 13 (327 00) LARGE BOW INSTRUMENT SET

The 591 13 set has been specially developed for use with Mars 700 Technical pens. Knee-joint construction and micro-adjustment. Circles up to 18 1/4" in diameter are easily produced. Instruments are of brass, nickel plated and highly polished. The 591 13 set consists of 6" large bow compass, beam extension and 742 00 Adaptor. Packaged in velvet lined elastic case. Each elastic case is individually boxed. \$14.50

KOH-I-NOOR

3175 KOH-I-NOOR RAPIDOGRAPH COMPASS
A precision engineered chrome-plated compass designed for use with Rapidograph and Acetograph drawing point systems or with lead attachment. Compass is equipped with a special quick-set feature plus micro-screw for fine adjustment. \$22.50

3175B KOH-I-NOOR RAPIDOGRAPH COMPASS BEAM ATTACHMENT
Beam attachment is engineered for use with #3175 compass and is for use in making large circles. Large ink supply in Rapidograph and Acetograph drawing point sections assures uninterrupted completion of large circles. \$6.00

Charrette 51

1.16 Charrette 1969 catalog
Lionel Spiro Papers, The Wyner Family Jewish Heritage Center



1.17 Charrette Store interior photograph, undated.
The Wyner Family Jewish Heritage Center



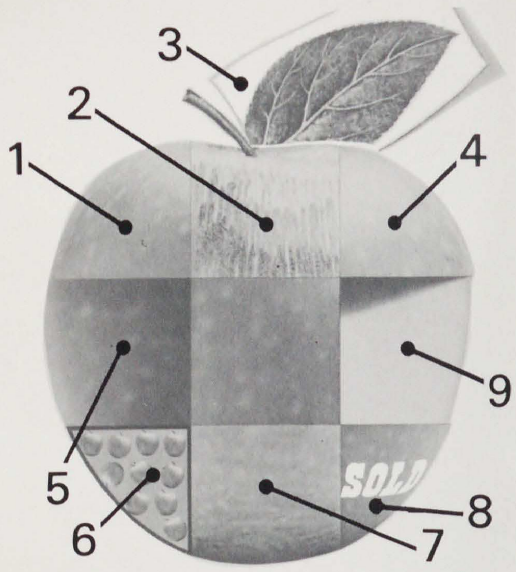
1.19 Charrette Store interior photograph, undated.
The Wyner Family Jewish Heritage Center



1.19 Charrette Store interior photograph, c.1980s.
The Wyner Family Jewish Heritage Center



1.20 Trade show exhibition Charrette Company
The Wyner Family Jewish Heritage Center



See a "Dyechrome" in colour of our ad, on stand No. 10.

01-437 3283
01-437 6336

These telephone numbers give you IMMEDIATE access to the most comprehensive Production Services and sophisticated equipment, under one roof, in the UK. This list details some (but not all) of the things we can do for you ...

- 1 colour transparencies
- 2 presentation visuals, storyboards, mock-ups
- 3 illustration, and Complete Studio Services, creative design, presentation, art-work, typography, lettering, photocomposing, mechanicals ready for scanning
- 4 dye transfers, and other colour prints
- 5 transparency retouching (need a Red apple?)
- 6 photocomposed transparencies
- 7 dye transfer retouching. This lemon is an apple
- 8 type strip-ins and special effects
- 9 cut and butt and page planned transparencies

COMBINED GRAPHIC SERVICES LTD
12/26 Lexington Street, London W1R 3HR and
5 Back Grove Avenue, Gosforth, Newcastle-upon-Tyne NE3 1ND
Tel: 0632 858208

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THE NATIONAL GRAPHIC DESIGN AND DRAFTING EXHIBITION

HOTEL INTERCONTINENTAL

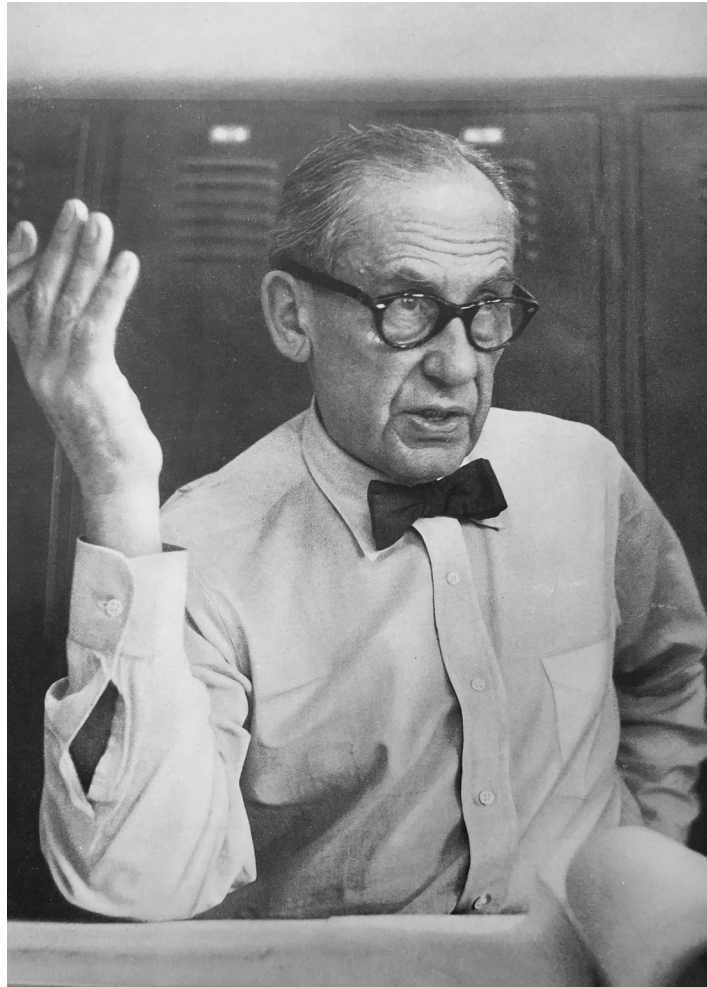
MONDAY 13 NOVEMBER 2-8 p.m.

TUESDAY 14 NOVEMBER 10-8 p.m.

WEDNESDAY 15 NOVEMBER 10-6 p.m.

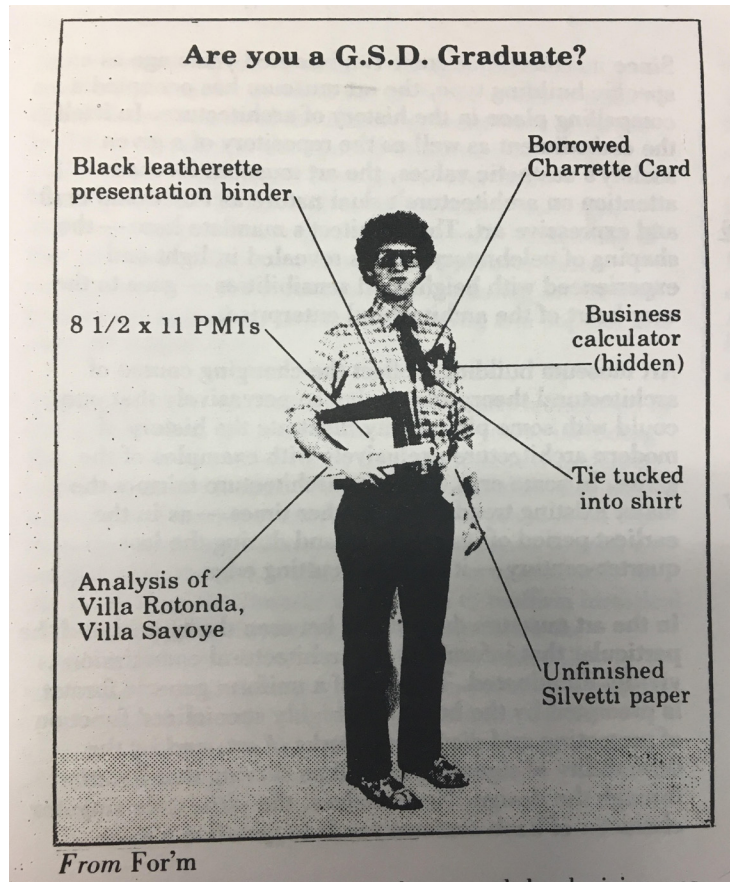
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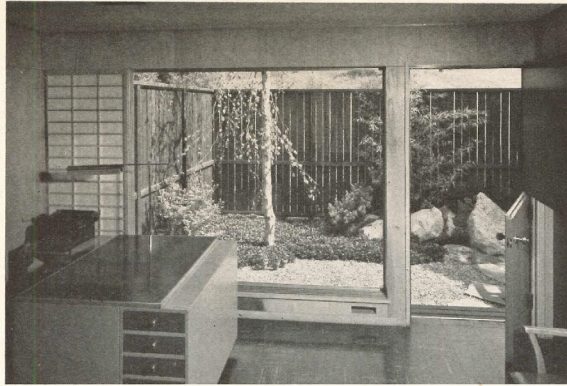
1.22 Portrait of Walter Gropius in the locker room

One of three sources cited in Eisenman's paper was Siegfried Giedion's *Walter Gropius Work and Teamwork* which was the product of a long history of friendship, professional support, and ideas exchanged between biographer and subject. Giedion, better known for his 1948 'anonymous history' of the mechanical infrastructure of American life at the turn of the century, returned to the human subject for this biography or what he described as "perishable material men." Framed with family genealogy and descriptions of character and innate creativity, the biography painted a deeply personal and personality-driven picture of the architect. The book opened to a full-bleed black and white portrait photograph of Gropius, wearing a bow tie and looking deeply in thought over his glasses, as he gestured off the page with his cigar. Behind him was not a drafting table or office that was a conventional backdrop for architectural portraits but a locker room, designed for the storage of personal effects as one changes into the uniform and uniformity of a team. But with Gideon so prominently sharpened in the foreground of the photograph, there could be no mistaking the tone of the book's celebration. In his review of the book for the *Town Planning Review* in 1955 architect D.Prys Thomas suggested; "If one were to coin a somewhat melodramatic title for this long-awaited book 'The Greatness of Gropius' would appear apposite, for between these slim covers is distilled the essence of his genius as a creative man."



1.23 Cartoon “Are you a GSD Student?” in Skyline Magazine, 1982.

The above cartoon, published in the IAUS magazine Skyline’s special edition looking at various schools in the United States is a cartoon depiction of the ideal architecture graduate. From this cartoon we might infer the tool kit of the early 80s architect. The tie is prominently shown tucked into the shirt, signifying that this architect was still working at the drawing board not yet the white-collar computer worker that would soon follow. The business calculator is hidden, suggesting the continuation of pressures between the architecture of bureaucracy and the architecture of genius that were best articulated by Henry Russell Hitchcock in 1947. PMT or rather Photomechanical transfer paper in the standard sheet sizes of 8.5 x 11 is tucked away under the student’s arm. The PMT paper was a direct transfer system trademarked by Kodak and a system for reproducing and copying without requiring intermediary steps. Behind the PMT the student carries analysis of the Villa Rotonda and the Villa Savoy referring to the famous formal comparison made by Colin Rowe in his Mathematics of the Ideal Villa. The overlay of the PMT a reproducible medium and the reproducible method of Colin Rowe’s formalism both depict the way that these strategies of reading architecture often intersected with technologies of visualization. Perhaps most significantly the borrowed Charrette card, referring to the stationary store that was established by two architecture students at the GSD and grew by 1982 into a multi outlet store and catalog operation. The suggestion that it is borrowed perhaps relates more to the so-called student lack of responsibility, however it shows that begged borrowed or stolen the connection to the stationary store was one of the most important characteristics of the architect at this time. The cartoon suggests that through pedagogy (the Silvetti paper, analytical drawings of Palladian villas), tools (PMT paper and calculators), and sartorial yet pragmatic choices (sunglasses and tucked ties) the student was constituted out of their accoutrements more than anything else.



Charles R. Pearson

A garden entry with a large picture window leads into the office of Paul Thiry. Walls are plaster and plywood in natural finish; floors are brown-red asphalt tile; doors are olive green. Much of the furniture in the office designed by the staff. See plan, p. 159

Edward D. Stone has offices in a remodeled brownstone house in New York City. The main floor houses reception, office and drafting areas. Most furniture is architect's own design. Photos below show reception area

Floor is brown and terra cotta asphalt tile in large squares with carpet of cafe au lait. Lime colored burlap covers window wall opposite natural wood screen. Ceiling is finished in natural birch plywood squares



Ezra Stoller



Ezra Stoller

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2.1 The Architect's Office, Architectural Record 1953

ARCHITECTURAL INTERIORS

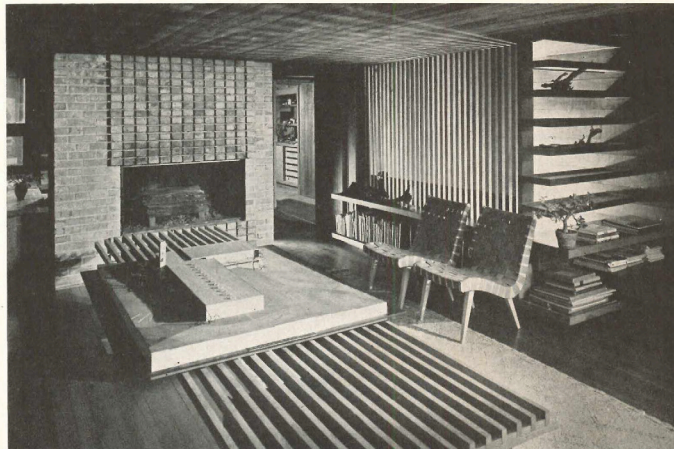
Design | Details | Materials | Equipment



J.B. Lindenhal

Staub, Rather and Howze's conference area overlooks garden. Concrete sun shades prevent glare in room. Walls are covered with natural textured cotton, also used as drapery fabric, creating a restful atmosphere as compared with the apricot and Chinese blue of reception area. Floor, cork; table, birch lacquered gray. Plan p. 166

Rough sawn redwood walls, floor of edge grain fir in a natural finish form the background for Schweikher and Elting, Roselle, III. Chairs designed by Hans Knoll, upholstered in green fabric, are grouped by fireplace for view of model displays (opp. page). Shelving and benches are polished redwood; ceiling rough sawn redwood boards



Bill Hedrick, Hedrick-Blaug

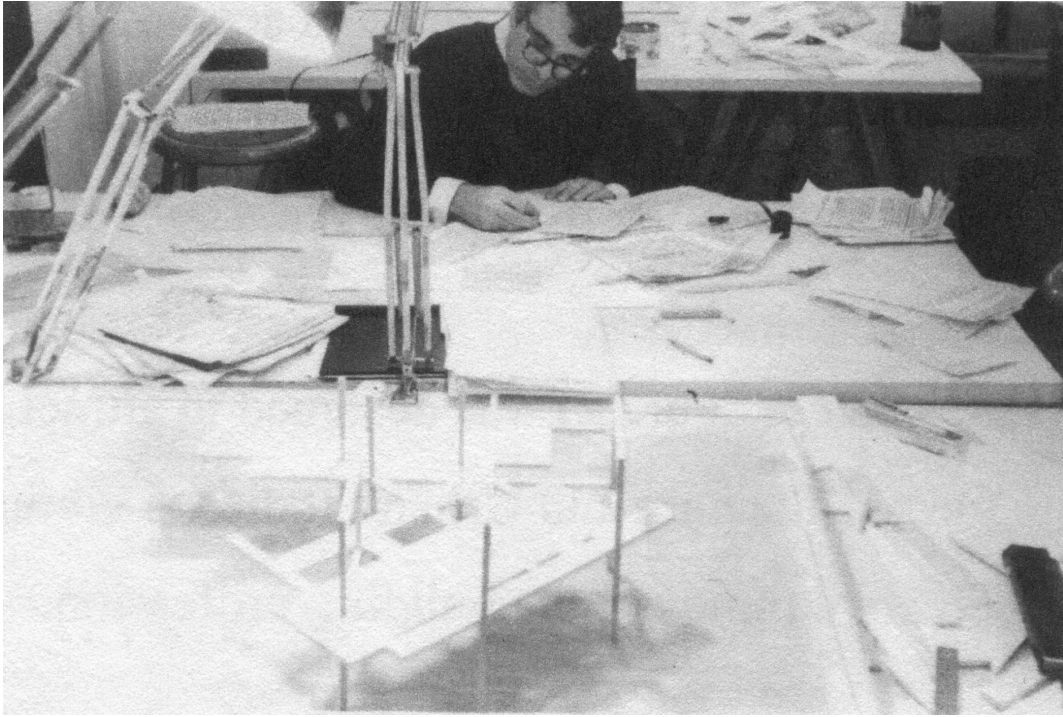
2.2 The Architect's Office, Architectural Record 1953



2.3 Halprin and Partners, "The Architect's Own Office" Progressive Architecture 1966



2.4 Polshek Partners, "The Architect's Own Office" Progressive Architecture 1966



2.6 Peter Eisenman in his director's office at the new 47th Street Institute in 1970 (above uncropped, below crop by author). Photograph: Gregory Gale, sourced from Suzanne Frank, *IAUS: An insider's memoir* (Author house, 2010)

Walker Art Center Library

May 23, 1970

John S. Margolies
299 West 12th Street
New York, New York 10014

Arch. Adolfo Natalini
Superstudio
Architettura E Industrial Design
Piazza Di Bellos Guardo, 1
50124 Firenze
Italia

Dear Mr. Natalini:

I am writing to you (your group) at the suggestion of Francois Dallegret. I understand from Samp of Haus-Rucker and others that I missed you while you were in New York. I hope that you will come by to see me the next time you are here.

My reason for writing you: I am an architectural writer (among other things) and I have been asked to prepare a double issue (64 pages) of the Design Quarterly of the Walker Art Center (a sample issue is being sent to you under separate cover). I am devoting a majority of the issue to direct expression of "conceptual architecture." The overall theme of the issue will be related to the following concepts: the communications environment; the psychological environment; the entertainment environment.

I am asking a number of people and groups to prepare a number of pages (usually four) a la Archigram to directly communicate their concepts and ideas. These pages belong entirely to those assigned them, and my function as editor will be to arrange the contributions alphabetically. Among those asked to contribute (or to be asked) include: Archigram, Dallegret, Hollein, Walker-Hodgetts; Haus-Rucker, Onyx, Ant Farm, Ed Ruscha, Les Levine, and Archi-Zoom.

I would like to include your group in this issue. Would you like to prepare four pages (two spreads) (each page almost exactly the size of this letter) (black and white only) (deadline: page-ready material to me by no later than August 1). Hopefully your material should be recent; somewhat abstract; and definitely unpublished in this country. Or perhaps you would like to prepare a special message to America. Please also include a glossy photo of the members of your group and biographical material.

Are you interested in being included? I hope so. Please let me know very soon (I am leaving town for a while on June 13) either way, so that I will know what I'm doing with all of those pages. Dallegret (who will supervise the overall design of the issue) tells me that he will be visiting your studio sometime around June 6-10. He will be glad to personally pick up your material and bring it to me (if you don't trust the mails).

The Institute for Architecture and Urban Studies

~~FIVE EAST FORTY SEVENTH STREET NEW YORK, NEW YORK 10018 TELEPHONE 212 785 1336~~
8 West 40 Street, New York City 10018

Peter D. Eisenman
Director

19 November 1970

Mrs. Mildred Friedman
Design Quarterly
Walker Art Center
807 Hennepin Avenue
Minneapolis, Minnesota 55403

Dear Mrs. Friedman:

Thank you for your letter of 17 November 1970 and the copy of Design Quarterly. It looks very nice.

As is the case with all articles on theoretical issues, if you allow them to age for a few months, one always finds that there are changes necessary. Hence my original article stands in front of me snipped, taped, red marked, etc. As soon as it is retyped, I shall send it to you.

It would be very nice to be able to talk with you in person about our Institute, your magazine, my work, etc. Is it possible to make a lunch on your next visit to town? In any event, we should stay in touch.

In closing, I probably will need in addition to my 10 free copies, 20 more for which I would appreciate your sending me a bill.

Again, thank you for your magazine.

Yours sincerely,



Peter D. Eisenman

PDE:akh

→ send and bill at 1/2 price

sell in 78/79 book

Walker Art Center Library

2.8 Letter from Peter Eisenman to Mildred Friedman, November 19 1970
Courtesy of Walker Art Archives

The Institute for Architecture and Urban Studies

Eight West Fortieth Street, New York, New York 10018. Telephone 212 947-0765

Peter D. Eisenman
Director

Trustees

Arthur Drexler
Chairman

27 April, 1971

Mrs. Mildred S. Friedman,
Editor
Design Quarterly
Walker Art Center
807 Hennepin Avenue
Minneapolis
Minnesota 55403

Mrs. Douglas Auchincloss
Armand Bartos
Gibson Danes
George A. Dudley
Peter D. Eisenman
John Entenza
Burnham Kelly
Dr. Frank Stanton

*John
26 22 Second St.
5 M 9470 S*

*Thanked
w/ postcard*

Dear Mrs. Friedman:

You have probably given me up for lost. My article was revised and revised and practically became a conceptual act in itself. In any case I send you two copies of the final draft. I have sent out over fifty such copies - so it was seemingly worth the effort.

While I tend to overcommit myself, and after the delay in producing the enclosed, why you should entertain my proposal, nevertheless I should very much like to discuss a number of Design Quarterly concerning some work in 'conceptual' architecture I have been doing - particularly in the relationship of form to meaning on syntax to semantics.

Since the work is complete the question of prolonged delay would not be a problem.

I would very much like to discuss the material with you, and if possible show it to you here in New York.

I trust that this delay has not caused you too much angst.

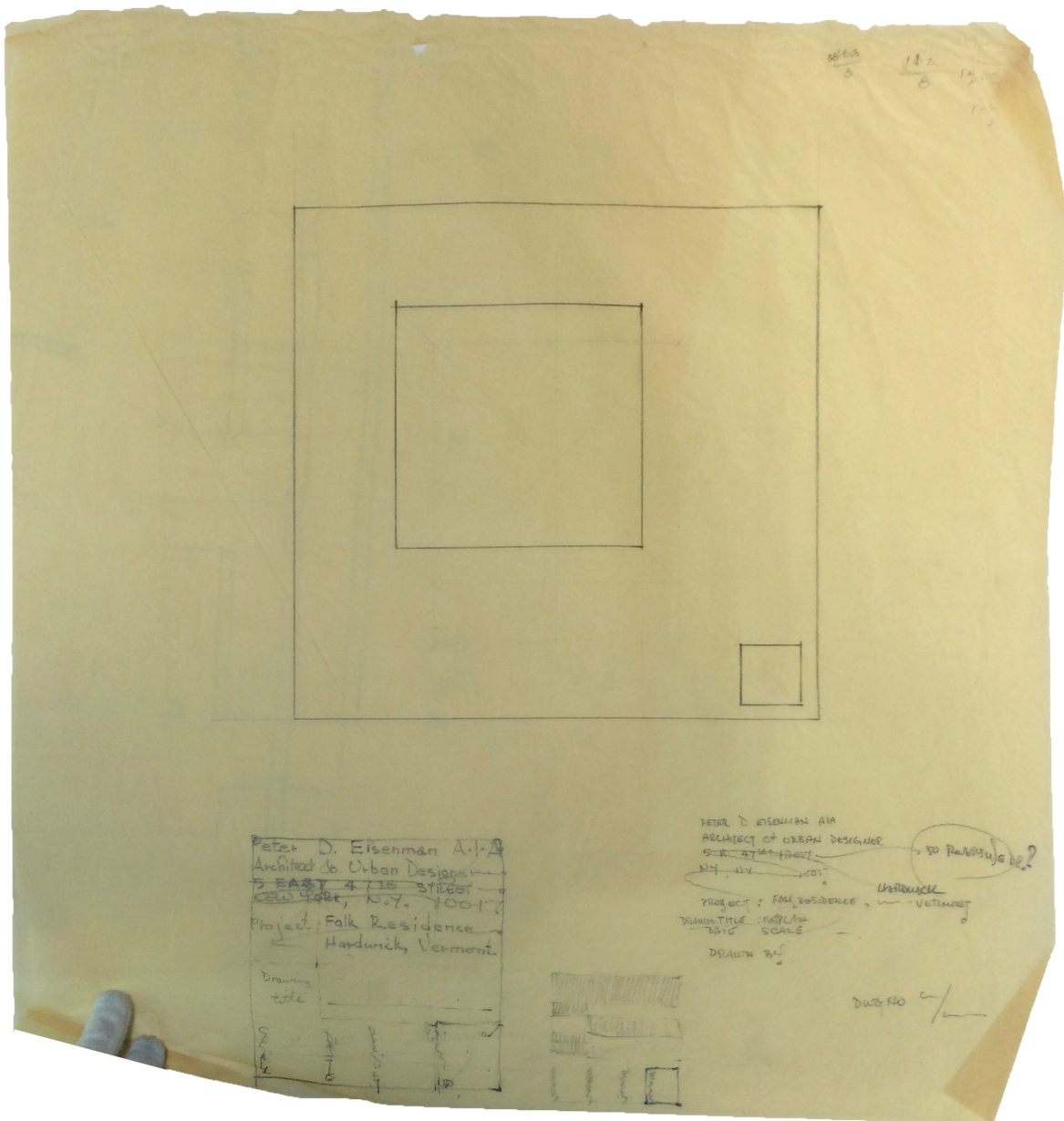
Yours sincerely,



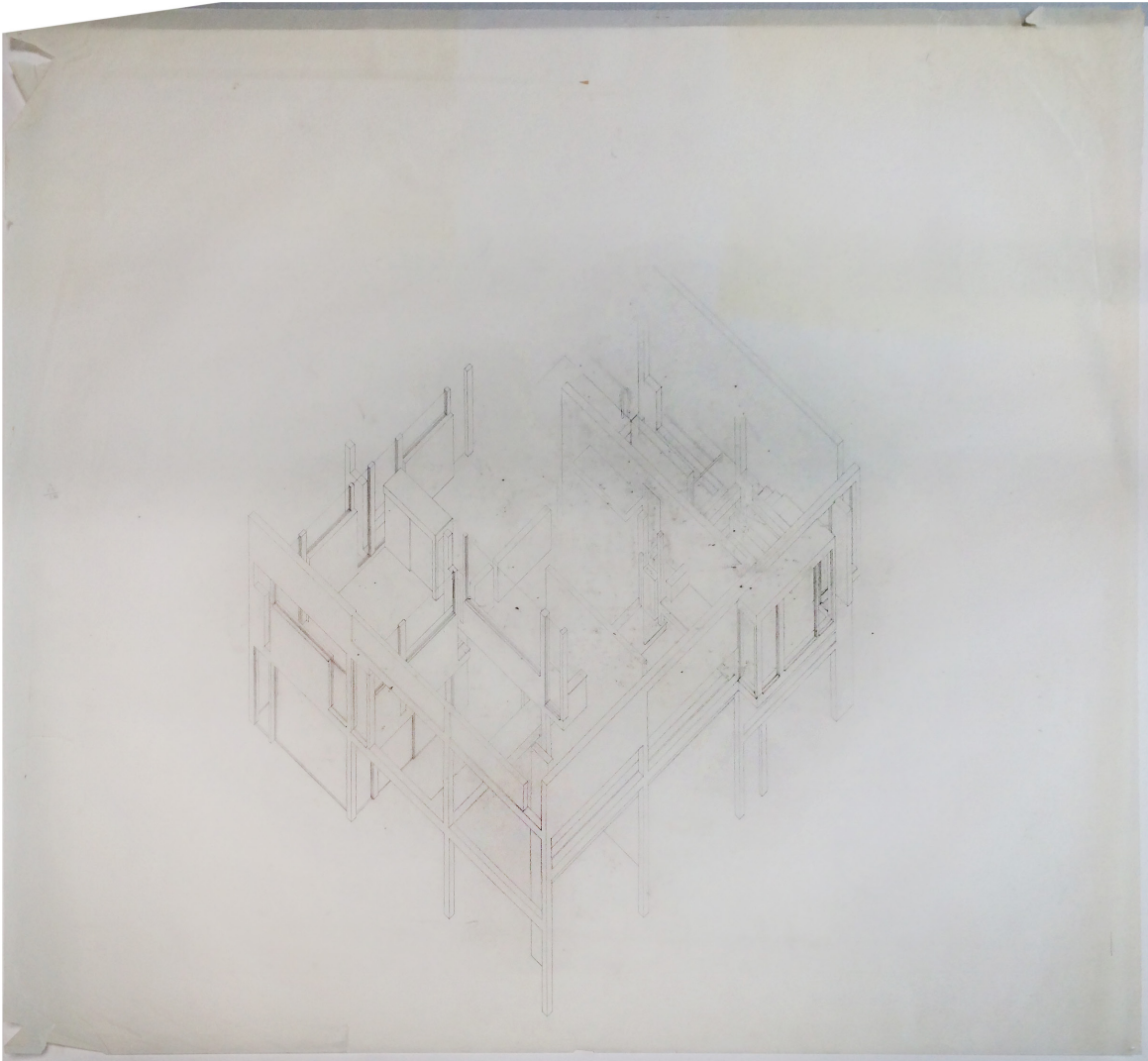
Peter D. Eisenman

PDE:jmb

Walker Art Center Library



2.10. Title block Peter D. Eisenman AIA
Peter D. Eisenman Title-block template
AP143.S4.D10 Falk House Conceptual Drawings, DR 1994: 0130:104-128
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for
Architecture, Montréal



2.11 House II axonometric drafted

Photographs and measured drawings from Falk House Correspondence of Peter Eisenman, Records of Peter Eisenman 1966-1982, AP057.S4.SS1

IAUS Fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.12 Falk's property, site visit photography circa 1969
Photographs and measured drawings from Falk House
Correspondence of Peter Eisenman, Records of Peter Eisenman 1966-1982, AP057.S4.SS1
IAUS Fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture,
Montréal



2.13/2.14 Falk's property, site visit photography circa 1969

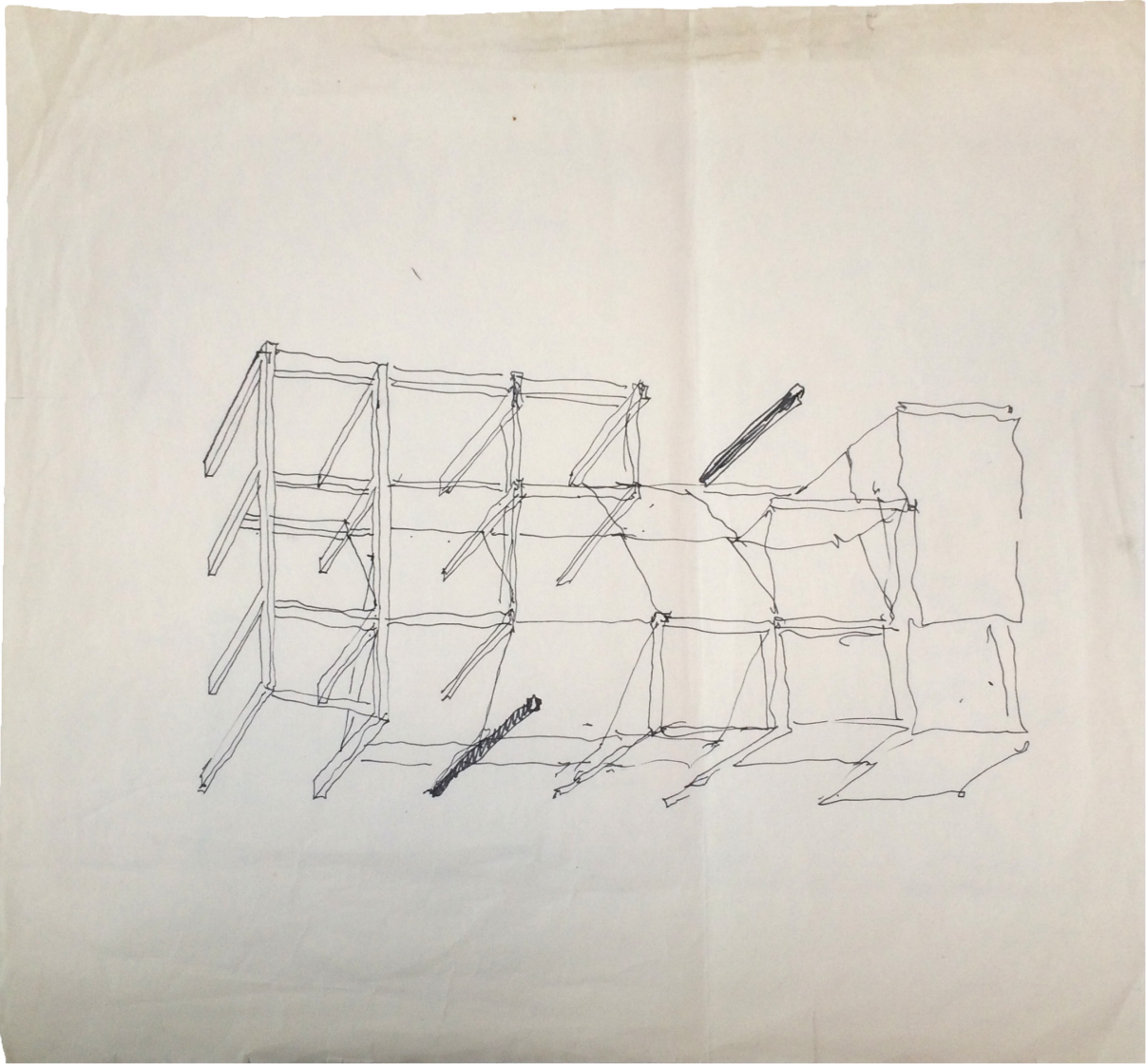
Photographs and measured drawings from Falk House

Correspondence of Peter Eisenman, Records of Peter Eisenman 1966-1982, AP057.S4.SS1

IAUS Fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.17 House II sketch 1969 (driveway) x
Peter Eisenman, House II (Falk House)
Perspective sketch, 2 January 1969
ink on paper
sheet 28.1- 21.5 cm (11 1/16-8 7/16 in.)
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture,
Montréal (DR1994:0130:002)



2.18 House II sketch 1969 (black columns and telescope)

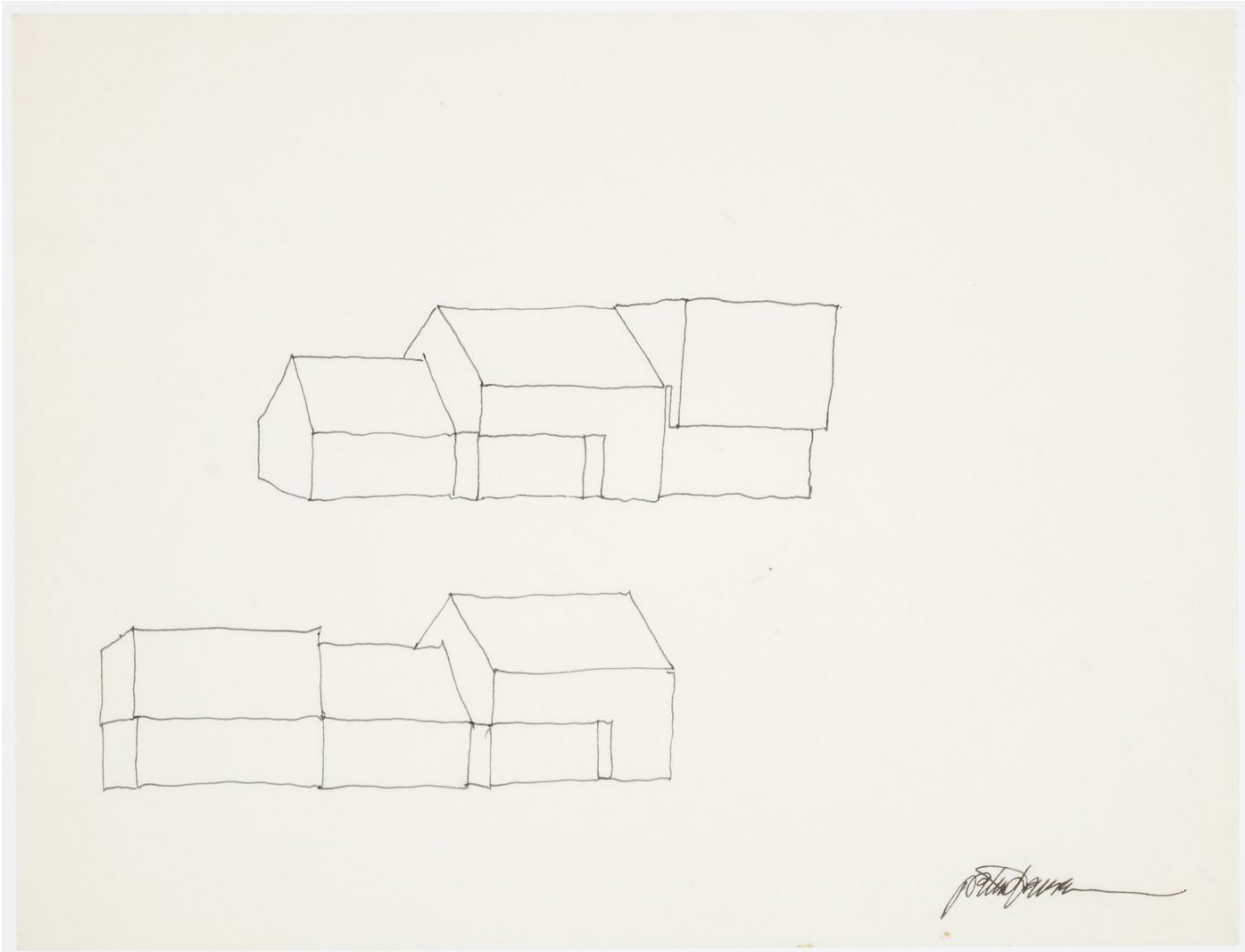
x

DR1994:0130:005

Undated sketch

Black ink on off white paper

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.19 Conceptual Sketch, Falk House (House II)

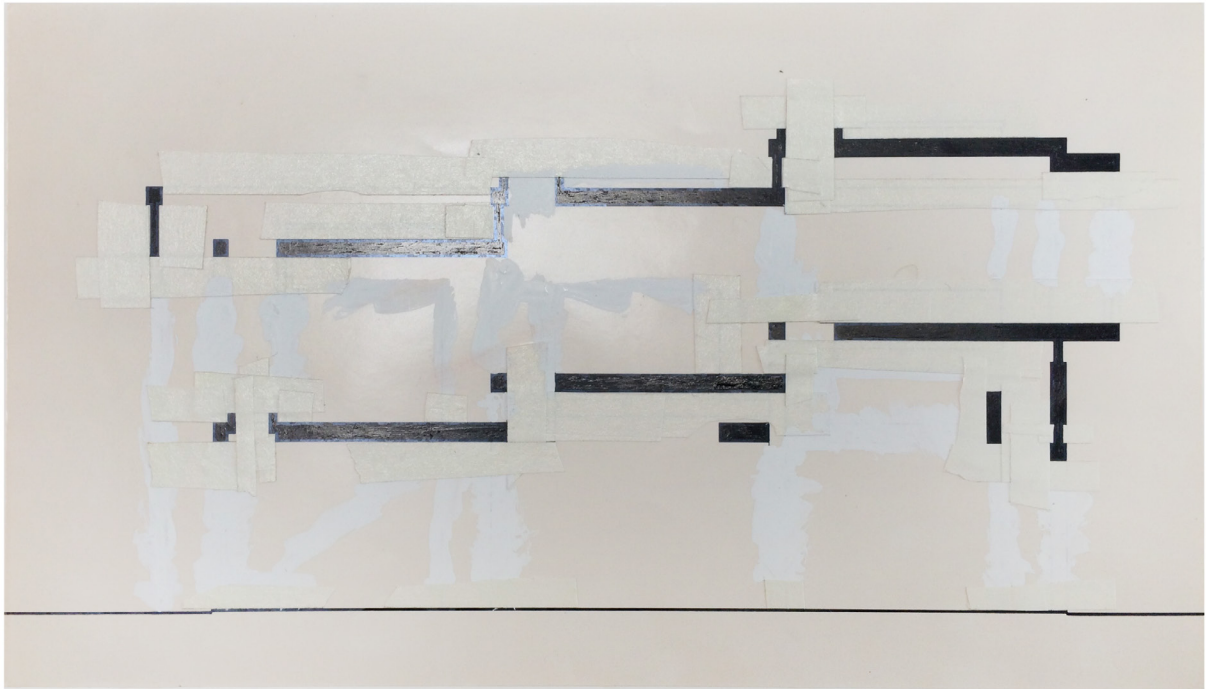
x

DR1994:0130:003

Undated sketch

Black ink on off white paper

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture,
Montréal

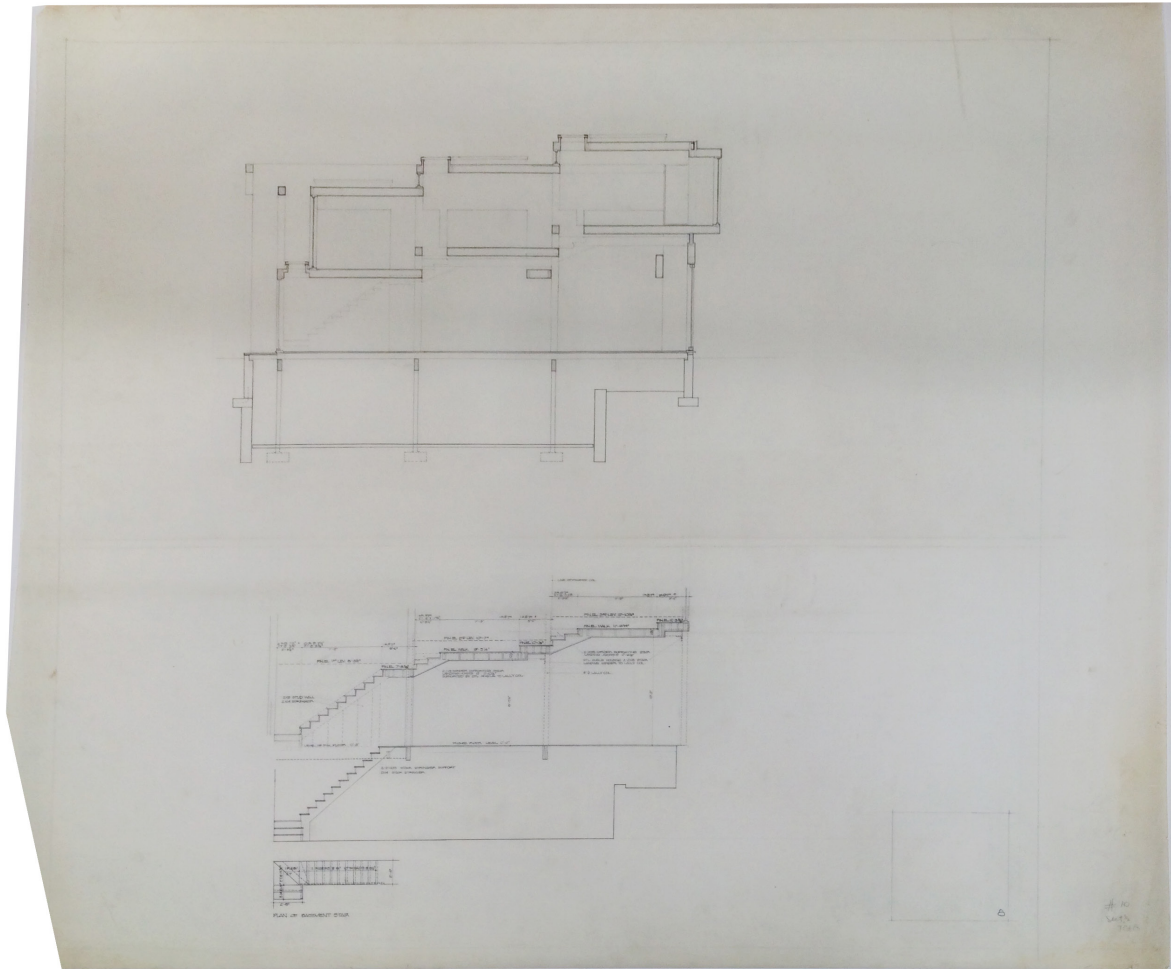


2.20 Masked Section (House II) x

Undated sketch

Black ink on off white paper

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture,
Montréal



2.21 Working Drawing Section (House II)

x

Undated sketch

Black ink on off white paper

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.22 Charrette paste up of site

DR1994:0130:456

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.23 Tadas Zilius photography of Falk's house circa 1970

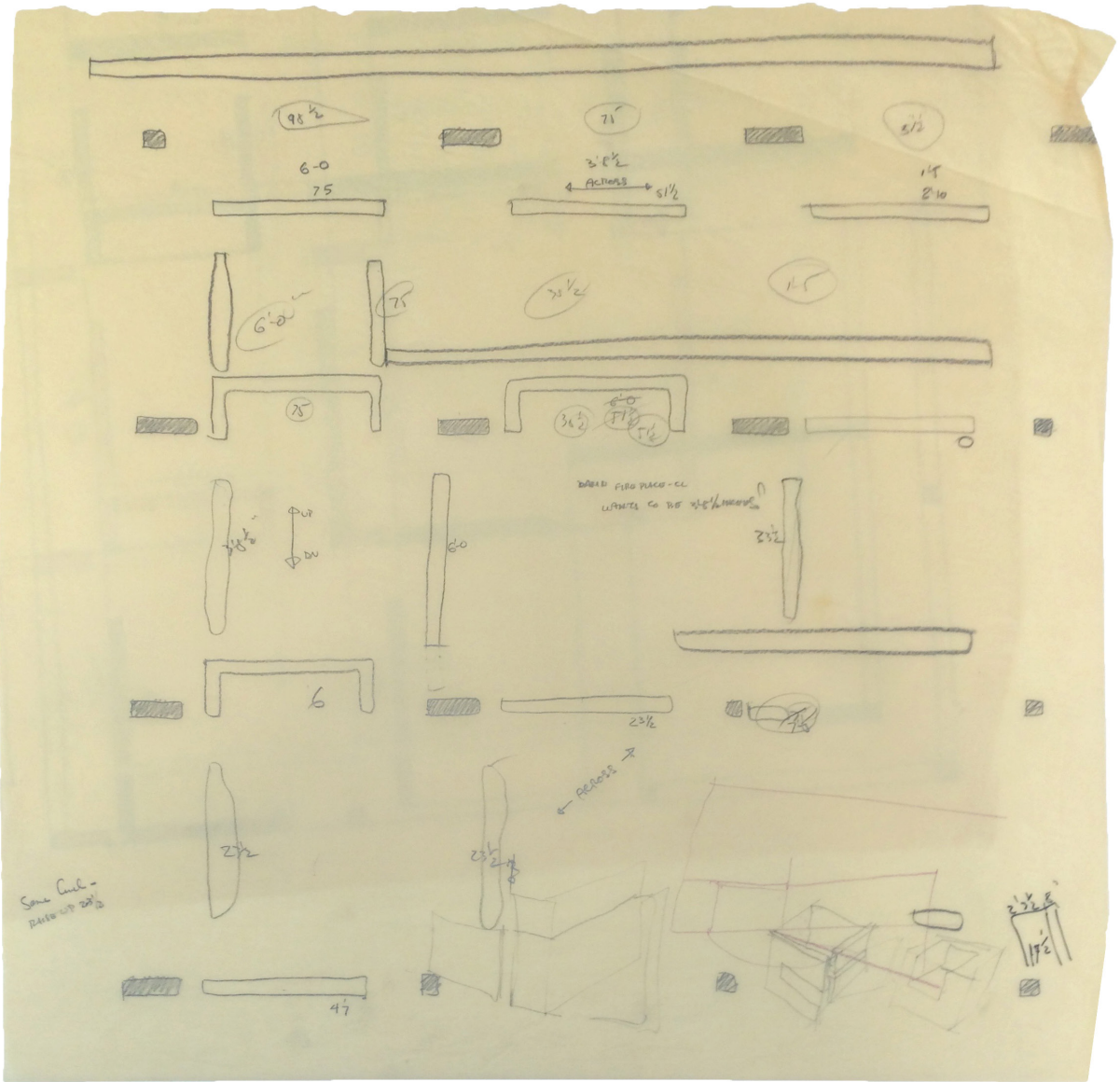


2.24 Casabella mock up

DR 1994: 0130: 104-128

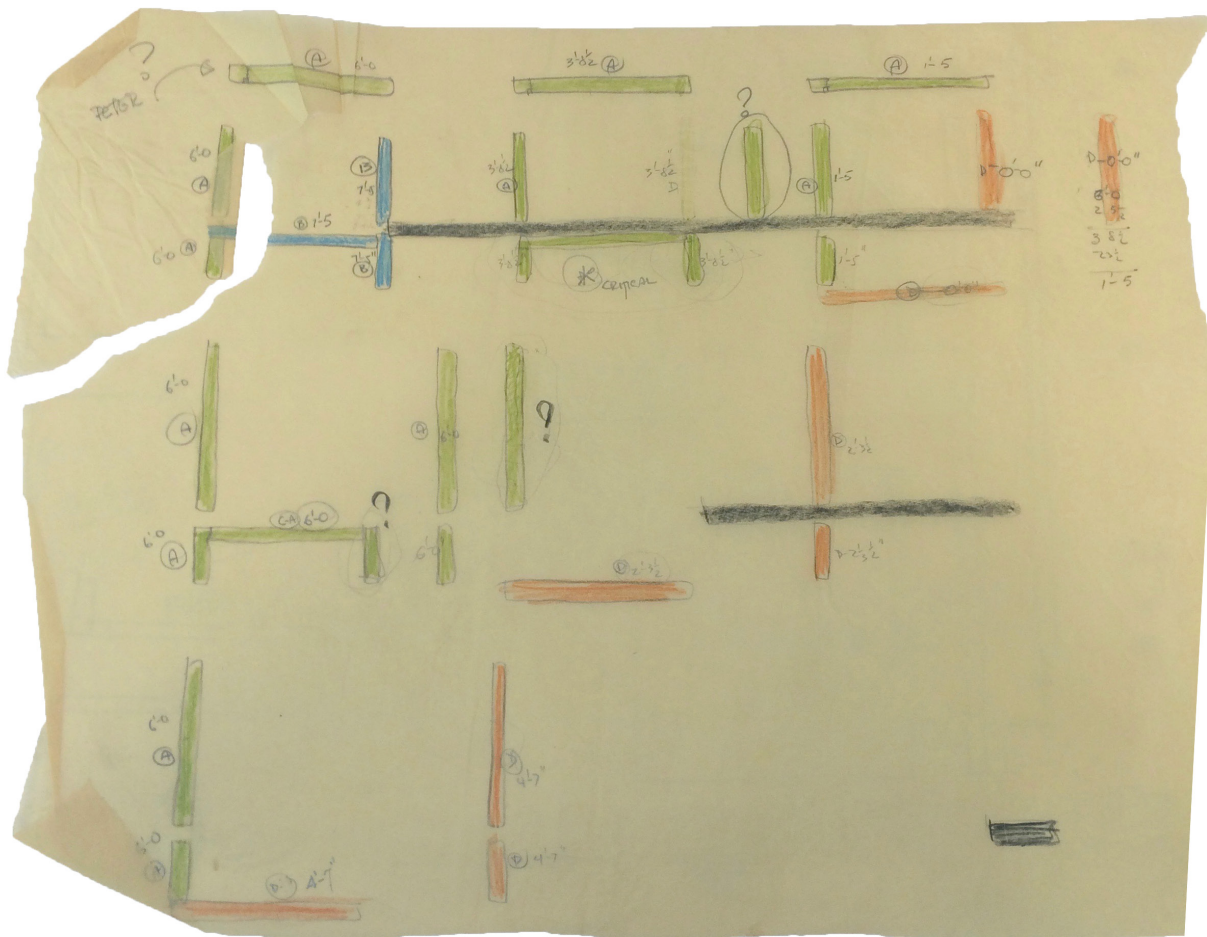
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal

x



2.25 Annotated Plan view

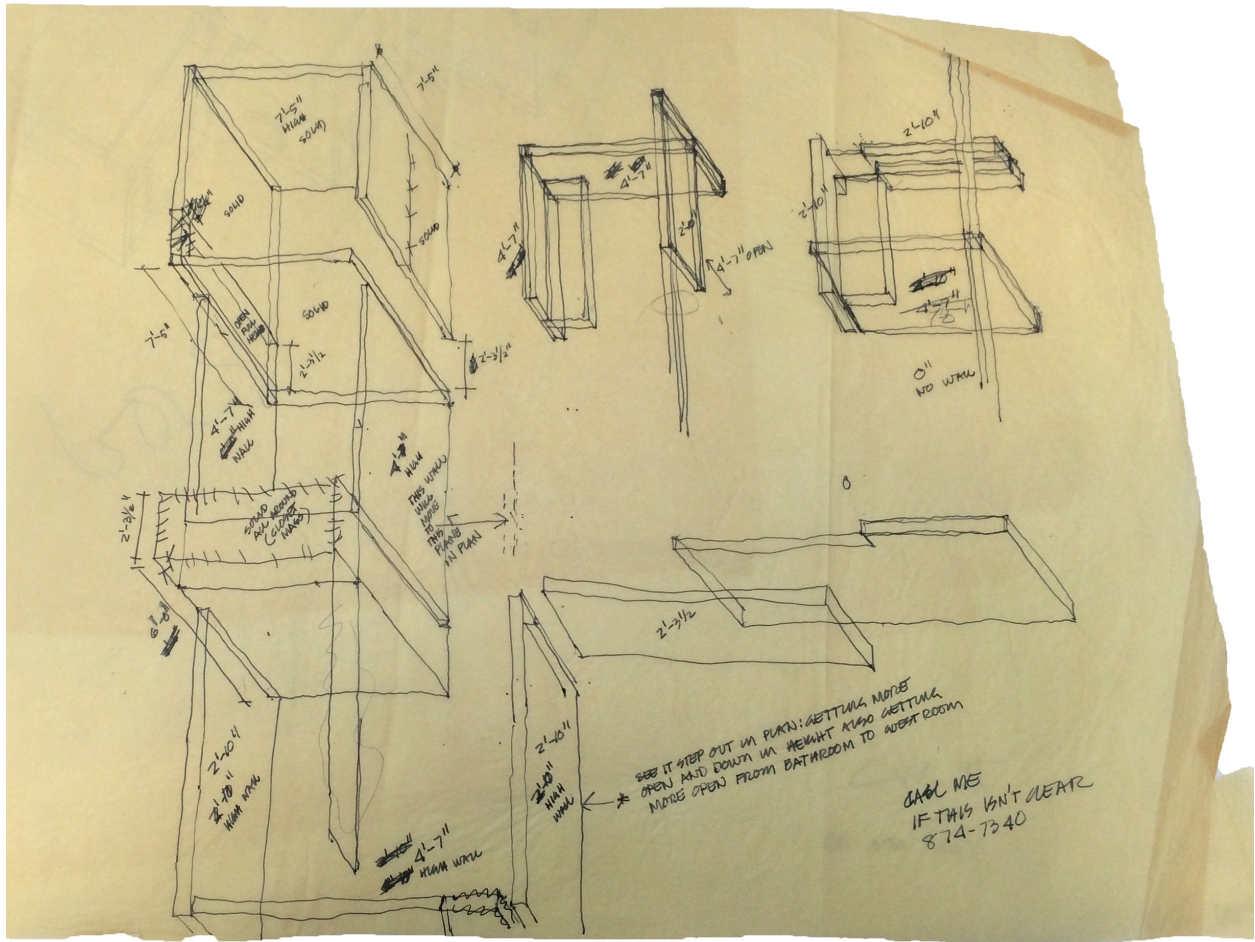
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.26 Plan view color coded

DR 1994: 0130:104-128

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal

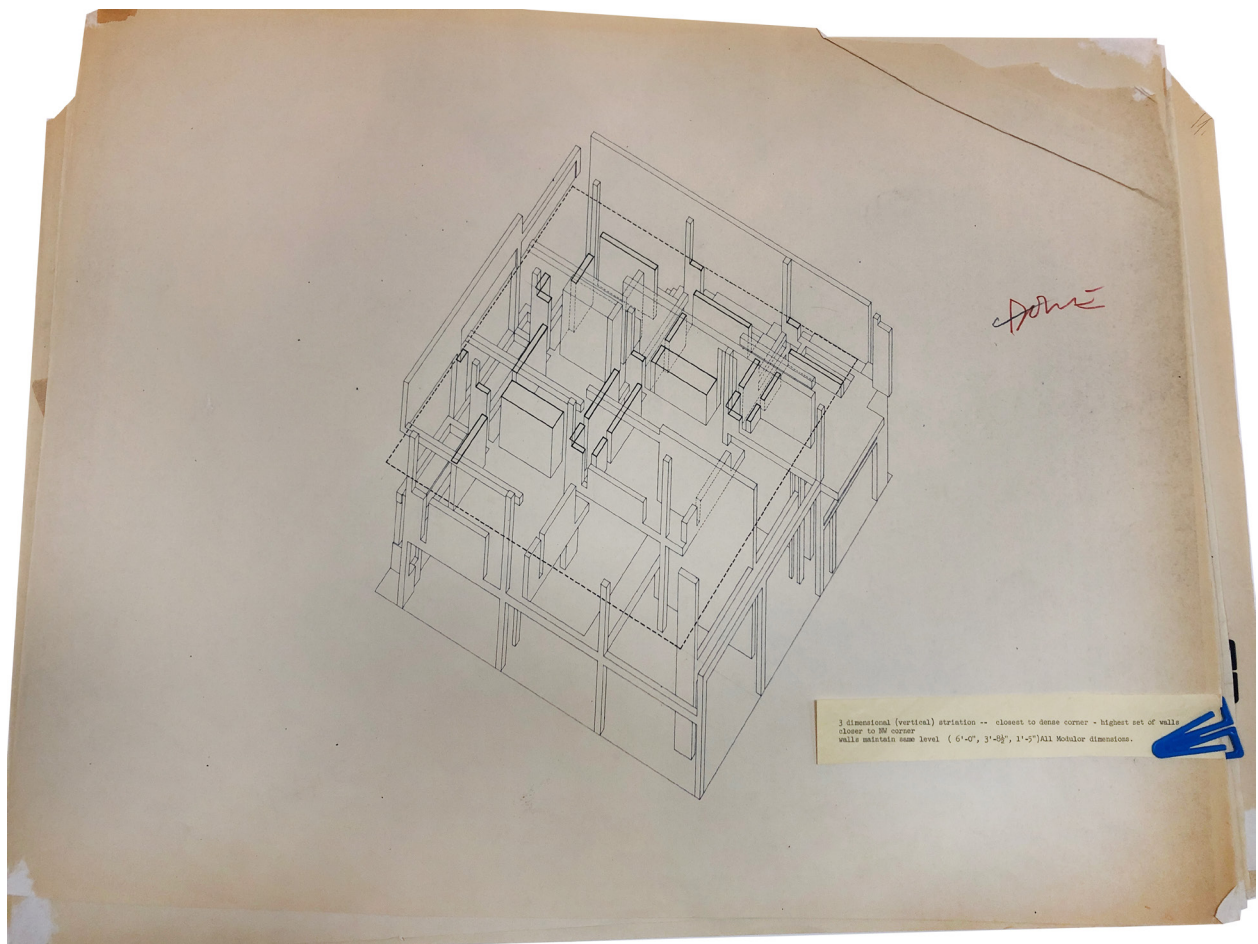


2.27 Plan with note to drafter

Falk House, Conceptual Drawings Axos by Office

DR1994:0130:129-160

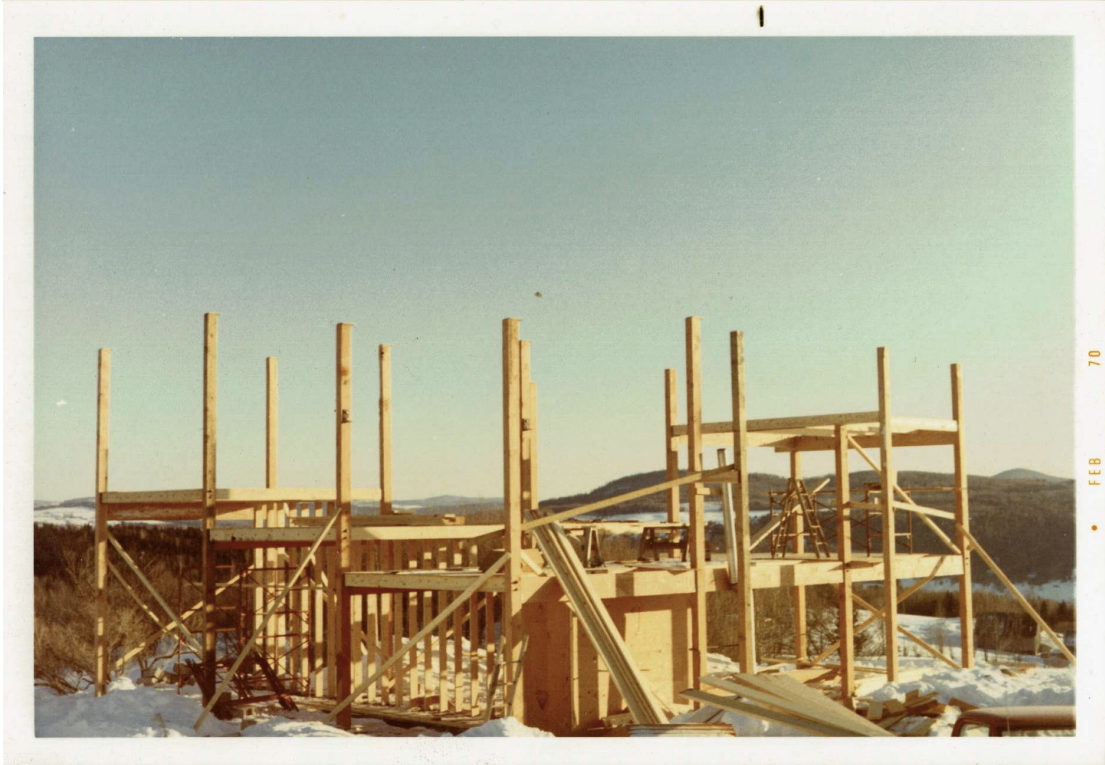
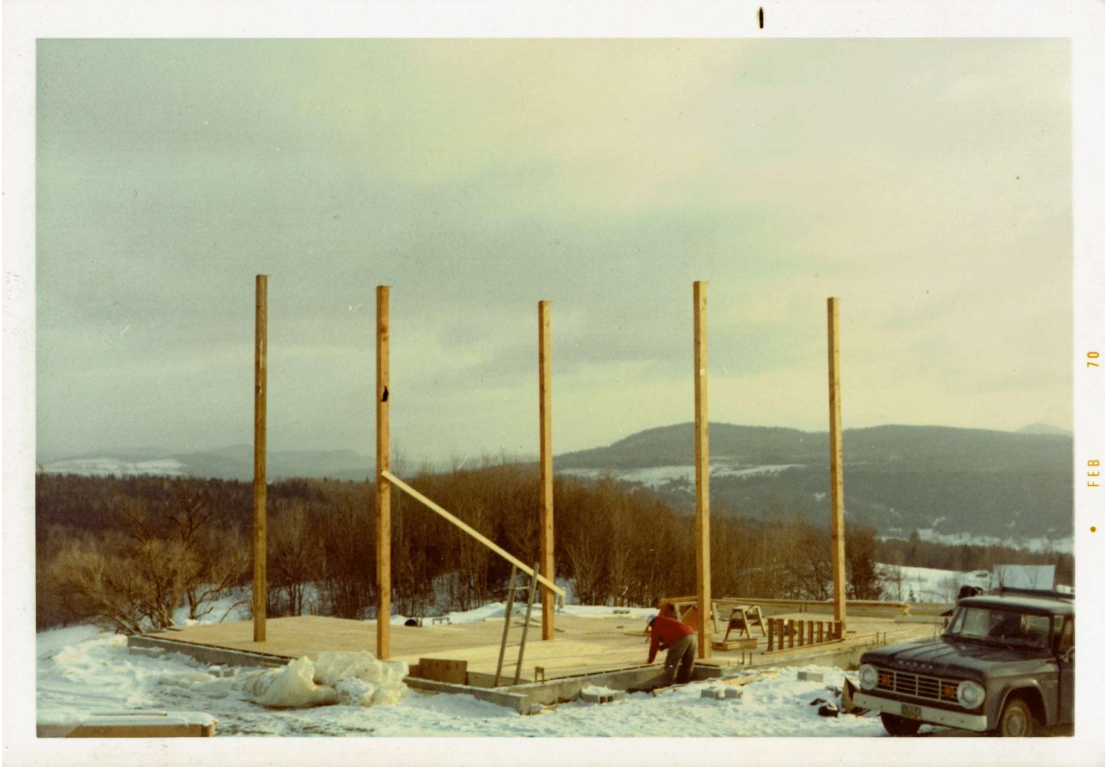
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



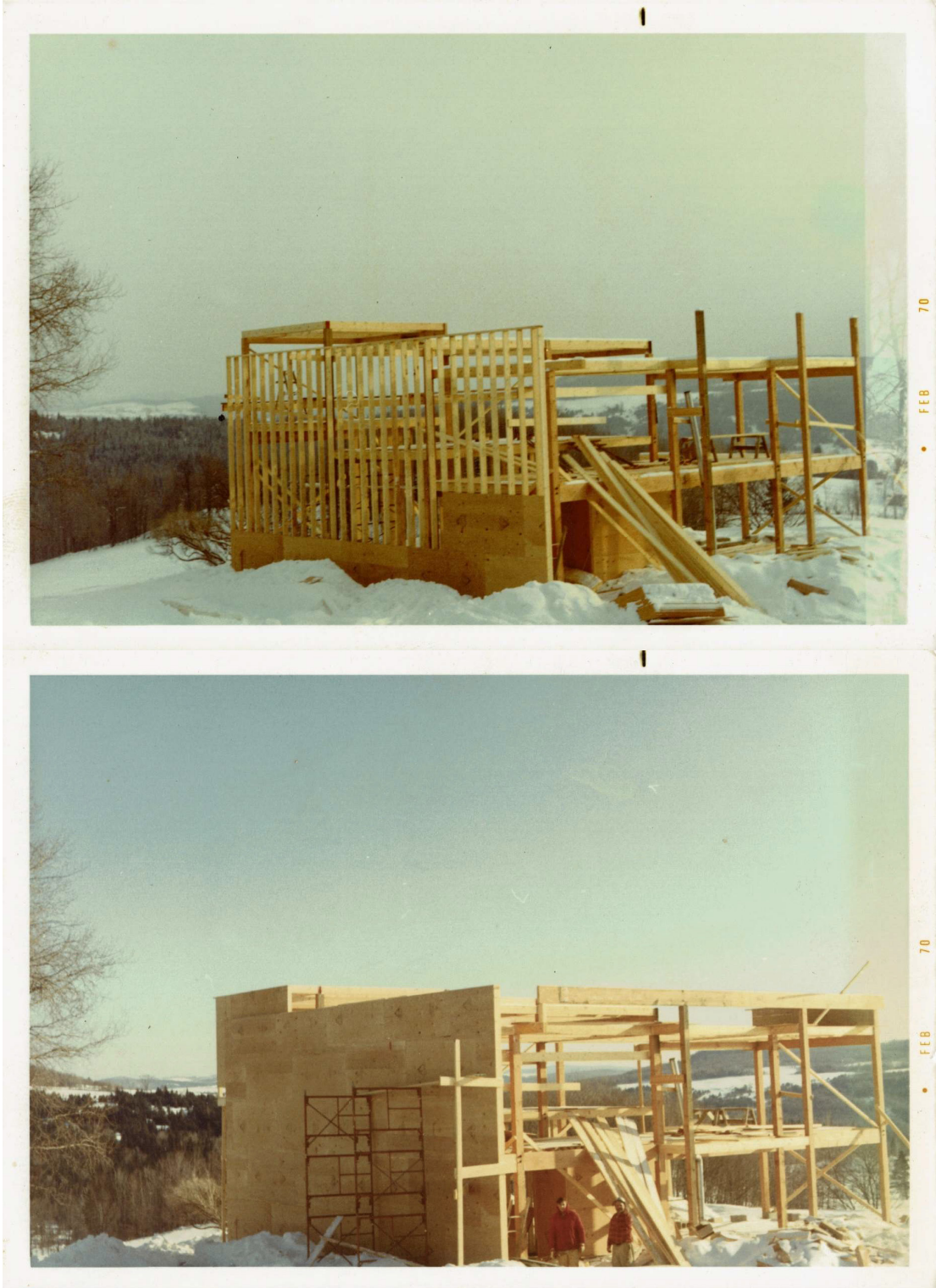
2.28 Mimeo with typed annotation

DR1994:0130:457-459

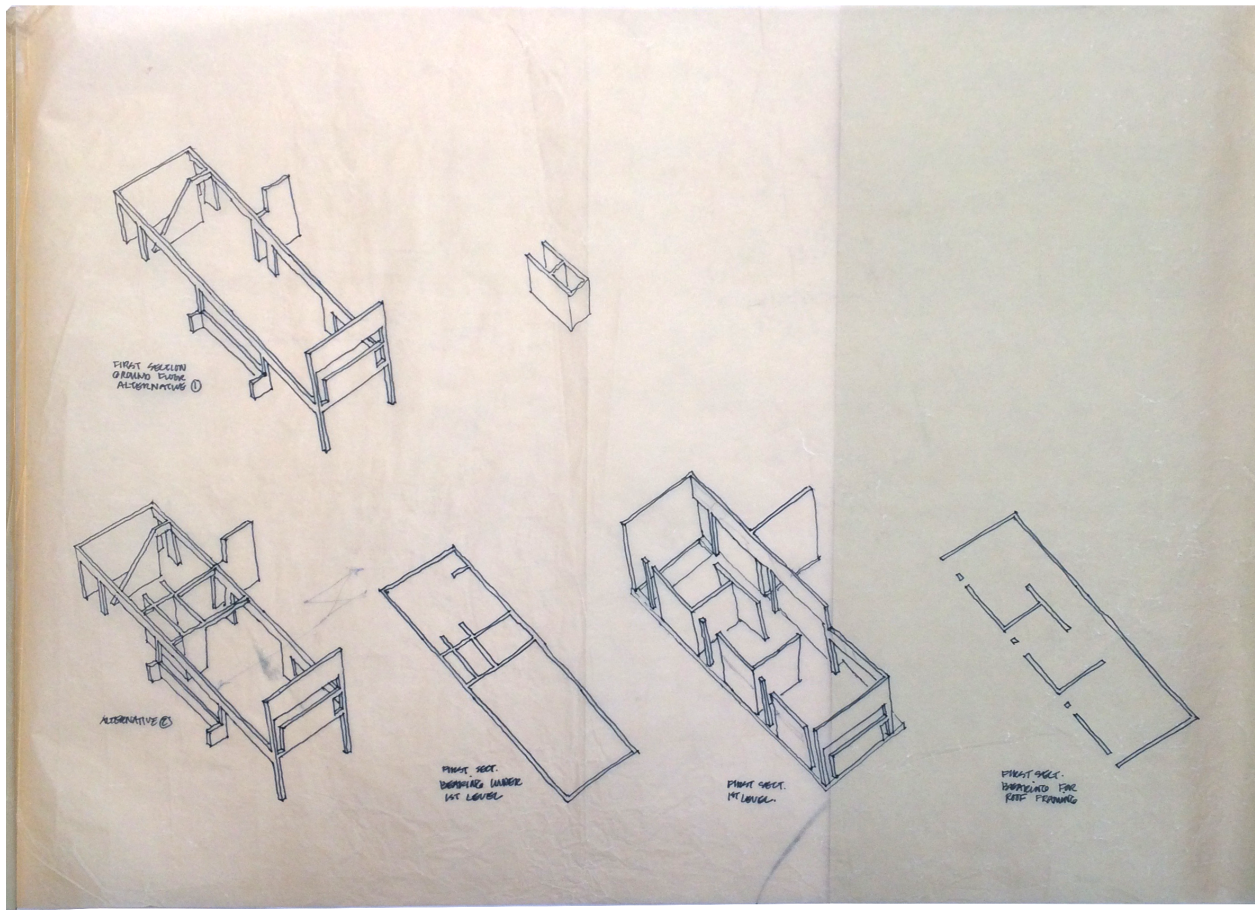
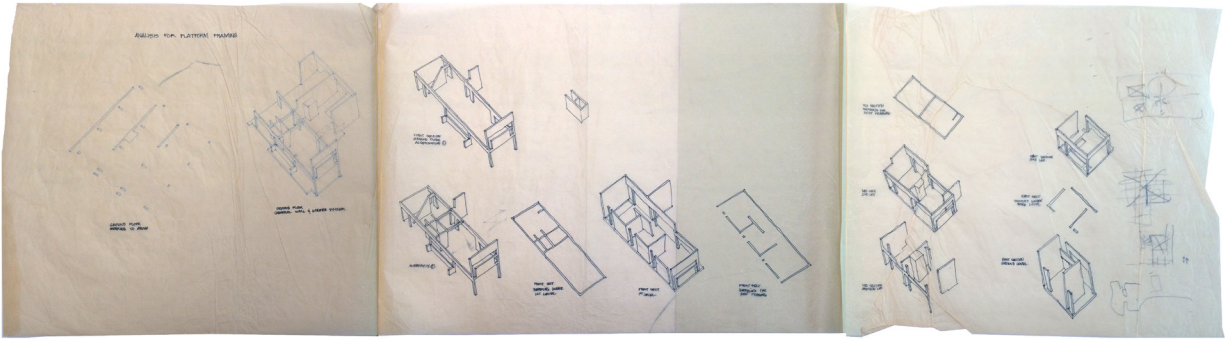
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.29 Ernie Malzak photographs of timber framing circa 1970



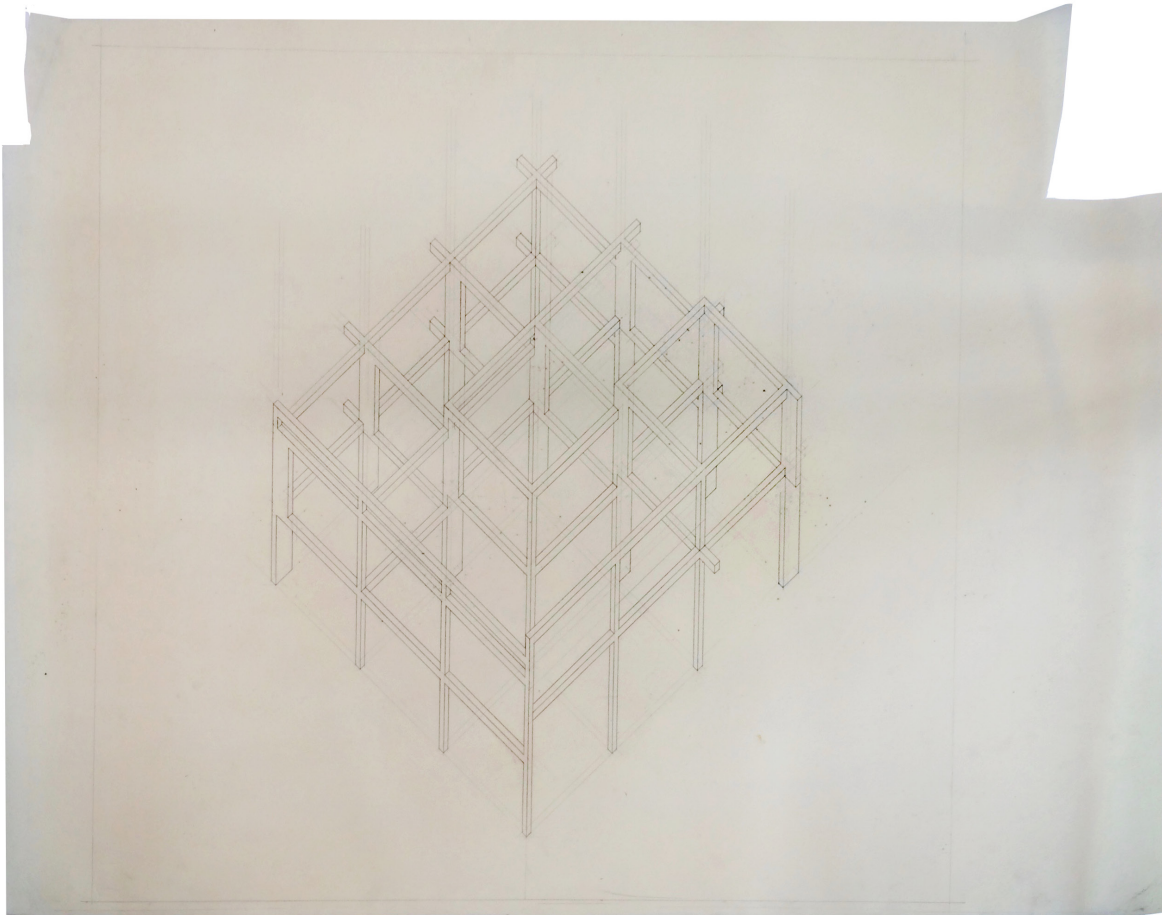
2.30 Ernie Malzak photographs of timber framing circa 1970



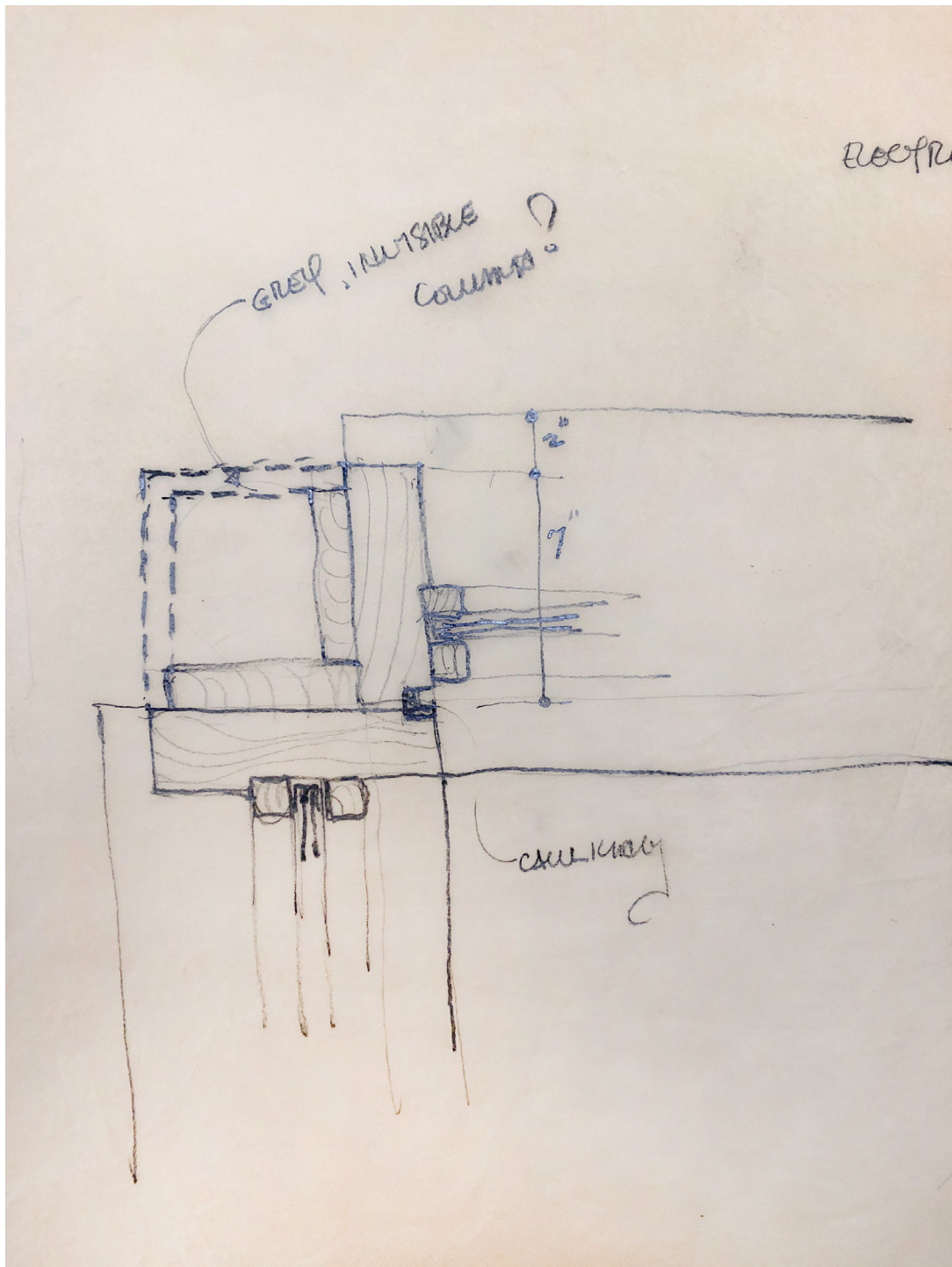
2.31 Analysis for Platform Framing (Overall and Detail)

DR1994 0130: 457-459

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.32 Frame Axonometric
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture,
Montréal



2.33 Invisible Column detail

DR1994:0130:409-440

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal

Jul 11

GOOD MORNING PETER

I TRUST THAT YOUR 2 WEEKS WERE AT LEAST SATISFYING
 IF NOT PROFITFUL. FALK DRAWINGS HAVE NOT PROCEEDED AS
 QUICKLY AS ONE MIGHT HAVE EXPECTED. A COMPLETE SET
 WILL NOT BE YOURS ON AUG. 1. THE WEEK I COME BACK,
 I INTEND TO BE ABLE TO LOAN EXTRA DIMENSIONAL DINGS -
 SPEC. WILL HAVE TO FOLLOW UP AT LEAST ONE WEEK.

AM NOW IN THE PROCESS OF SKETCHING DETAILS FOR
 ROB. TO DRAW UP NEXT WEEK. IF YOU EVER WANT
 THESE DRAWINGS, FORGET THE MILLER HOUSE
 FOR A WHILE! → NO MODEL-MAKING
 FOR ROB. — JUST DRAW DRAW DRAW DRAW ON...

A NUMBER OF DECISIONS HAVE BEEN MADE WHICH NEED
 YOUR APPROVAL OR DIRECTION. TO HELP POINT THEM
 UP, AN INCOMPLETE LIST FOLLOWS.

— CRITICISM FROM BILL — QUESTIONING FINICKY,
 UTTERAL DETAILS, HARD MARKINGS → SPEAR UPON HIM.

Dwg #2 - NE CORNER - 1ST FL. SHOULD WINDOW JOG IN? OR
 — SHOULD IT MARK PROTRUSIONS WHILE MAINTAINING AN
 INSIDE CORNER?
 — WINDOW & DOOR SILL PROJECT BEYOND BUILDING LINE
 — PIVOTING DOORS CHANGED IN HOW BAY.
 — SW & NE CORNERS - AWKWARD DETAIL - REQUIRES A
 COLUMN OF BOLTS → PAINT IT GREY?

2.34 Letter Gregory Gale with invisible column
 Photographs and measured drawings from Falk House
 Correspondence of Peter Eisenman, Records of Peter Eisenman 1966-1982, AP057.S4.SS1
 IAUS Fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



2.35 Tadas Zilius photography of Falk's house circa 1970 (kombi)



2.36 Tadas Zilius photography of Falk's house circa 1970 (desk)



2.37 Tadas Zilius photography of Falk's house circa 1970 (drywall)



2.38 Tadas Zilius photography of Falk's house circa 1970 (living)



2.39 Charles and Ray Eames, Still from "A Rough Sketch For a Proposed Film Dealing with the Powers of Ten and the Relative Size Of Things InThe Universe," 1968
© Eames Office LLC



2.40 Model photograph

Peter Eisenman, View of model for Falk House (House II), Hardwick, Vermont 1969 or 1970

gelatin silver print, mounted on board, overlaid with coloured pencil on plastic film

secondary support: 29.69~ 34.61 cm, image size: 7.25~ 9.38 cm

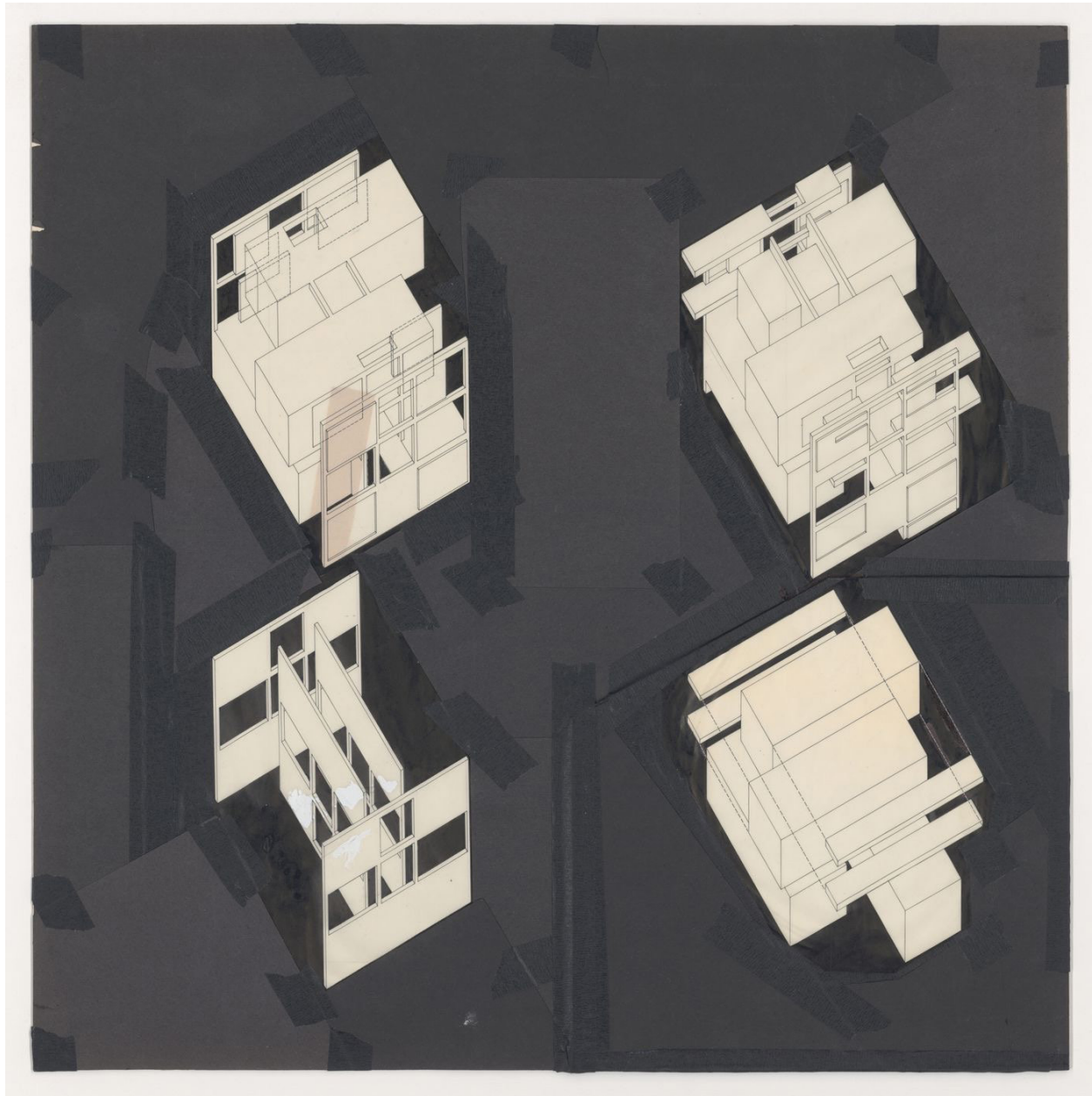
Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal (DR1994:0130:455)



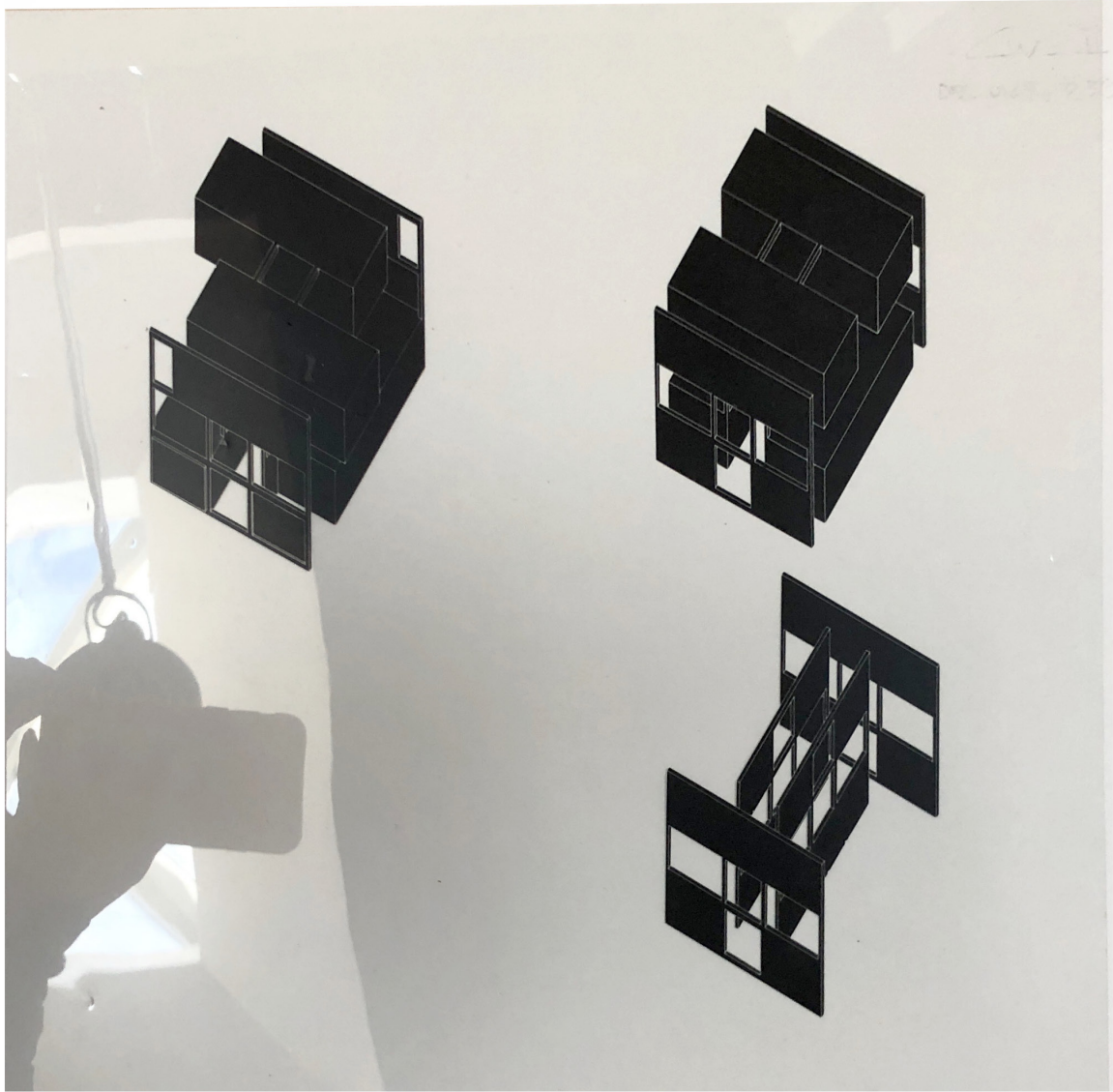
3.1 File of diazo and photoreproductions House IV files

DR1994:0132: 332

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



3.2 Paste up for House of Cards with black card, black tape in ad-hoc fashion.



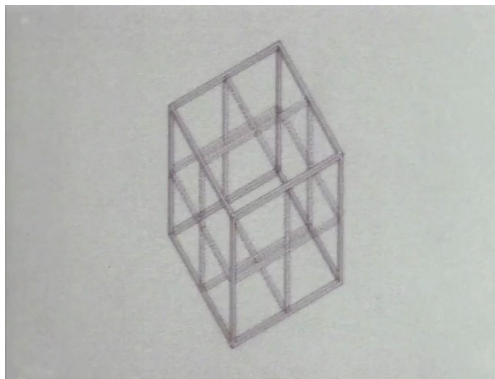
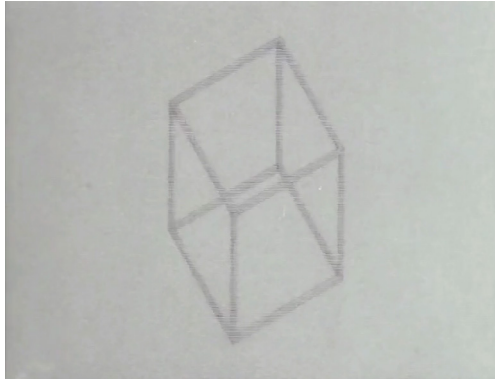
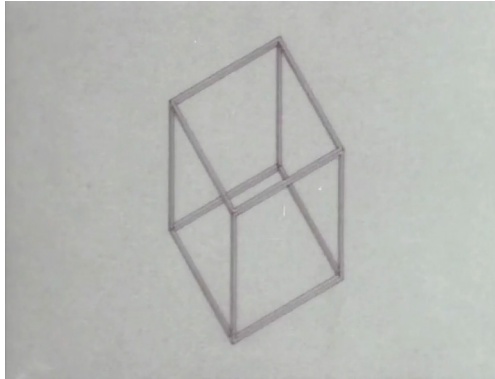
3.3 Negatives from House of Cards House IV diagrams



3.4 Model photograph

DR1994:0132:331

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Center for Architecture, Montreal

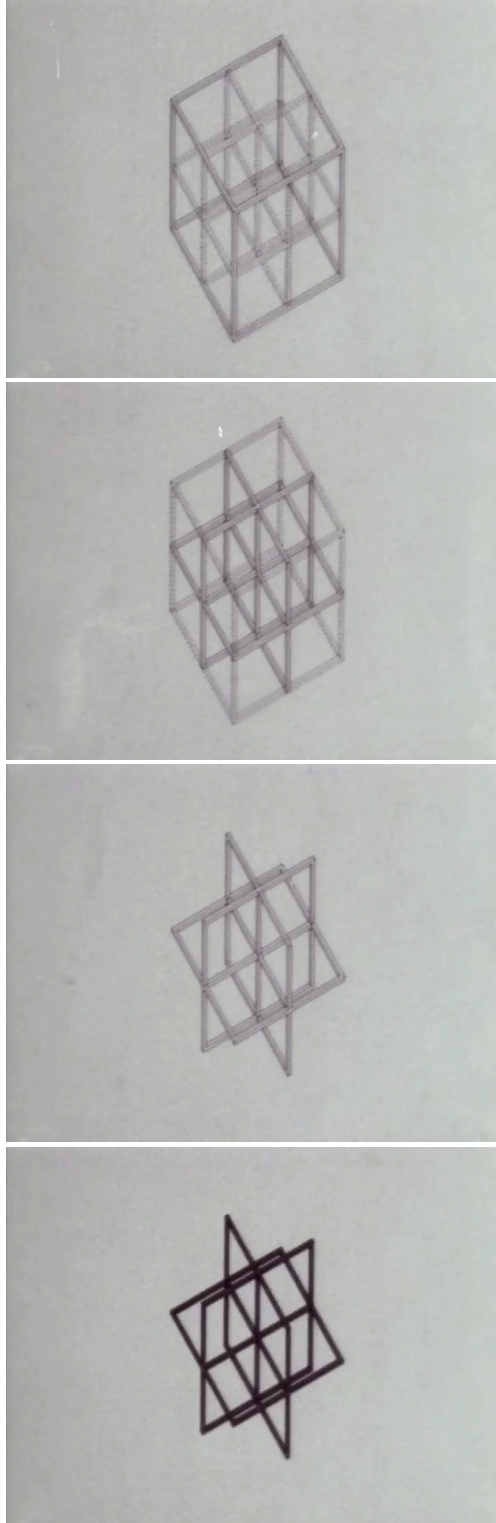


3.5 Film Stills (taken from digitized copy)

DR2001:0015:003

Positive film print for House IV, Falls Village, Connecticut (1970-1971)

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal

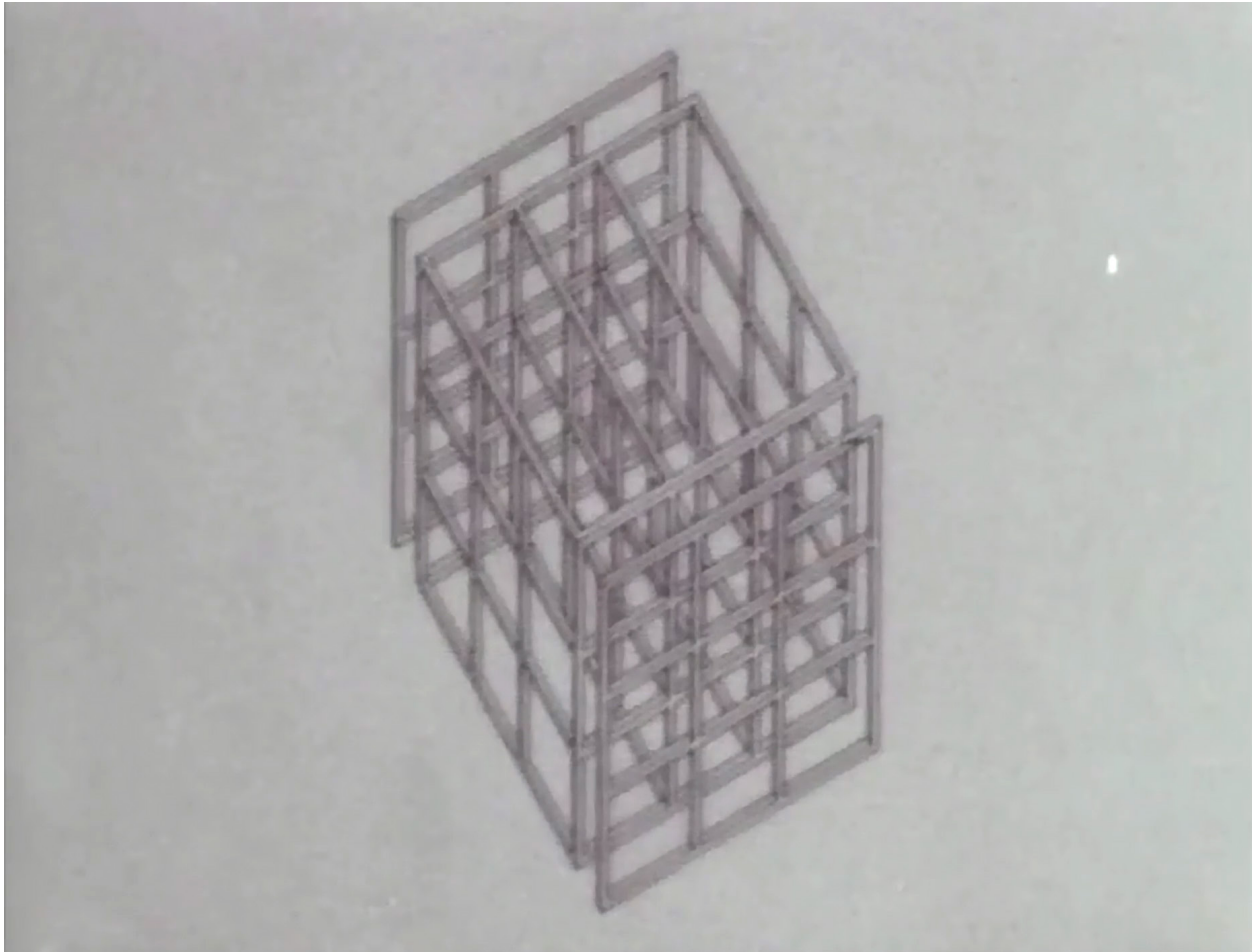


3.6 Film Stills (taken from digitized copy)

DR2001:0015:003

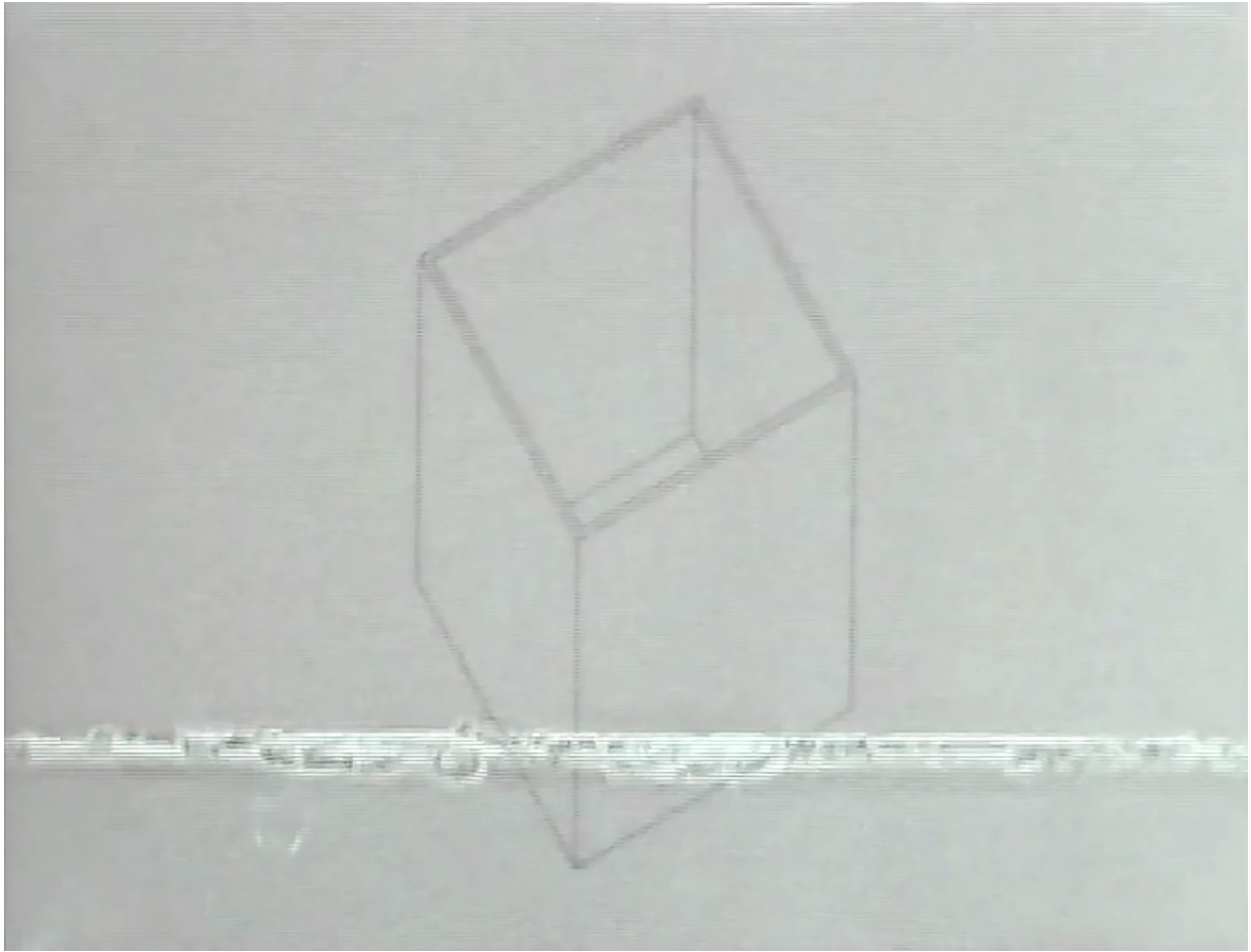
Positive film print for House IV, Falls Village, Connecticut (1970-1971)

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



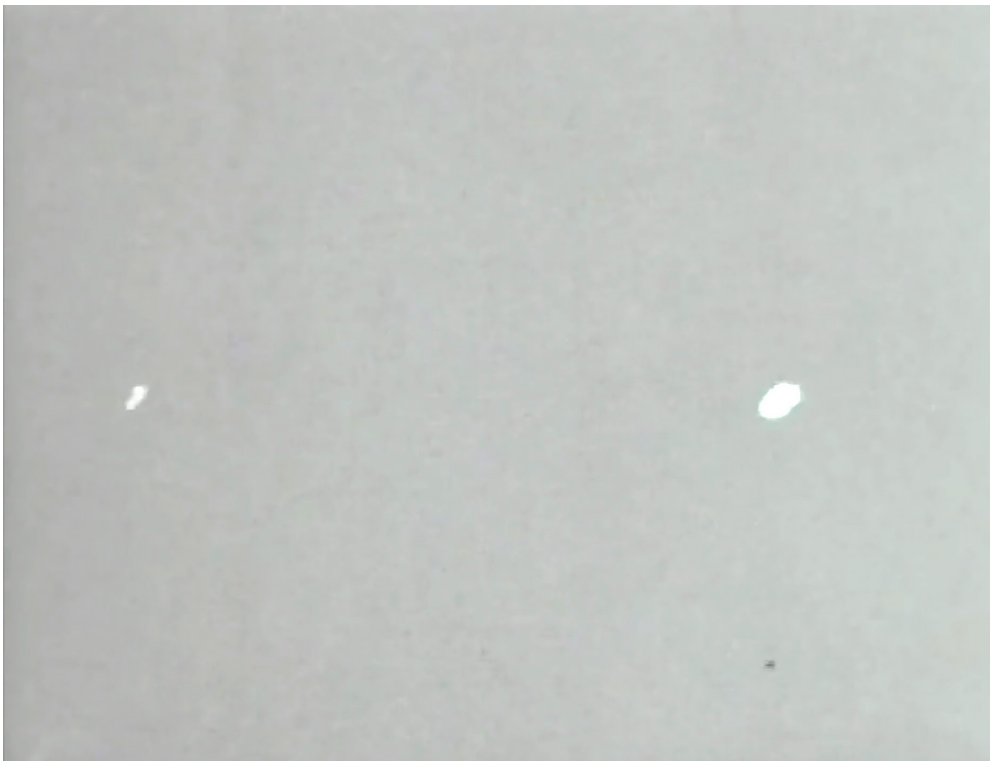
3.7 Film Still

Note the small black pen mark in the top right hand corner of the frame. This was an important piece of evidence that was used to match the film still to its animation drawing and also to show that these animation cels were reproduced for the House of Cards publication and thereby intersecting production systems.



3.8 Film Still

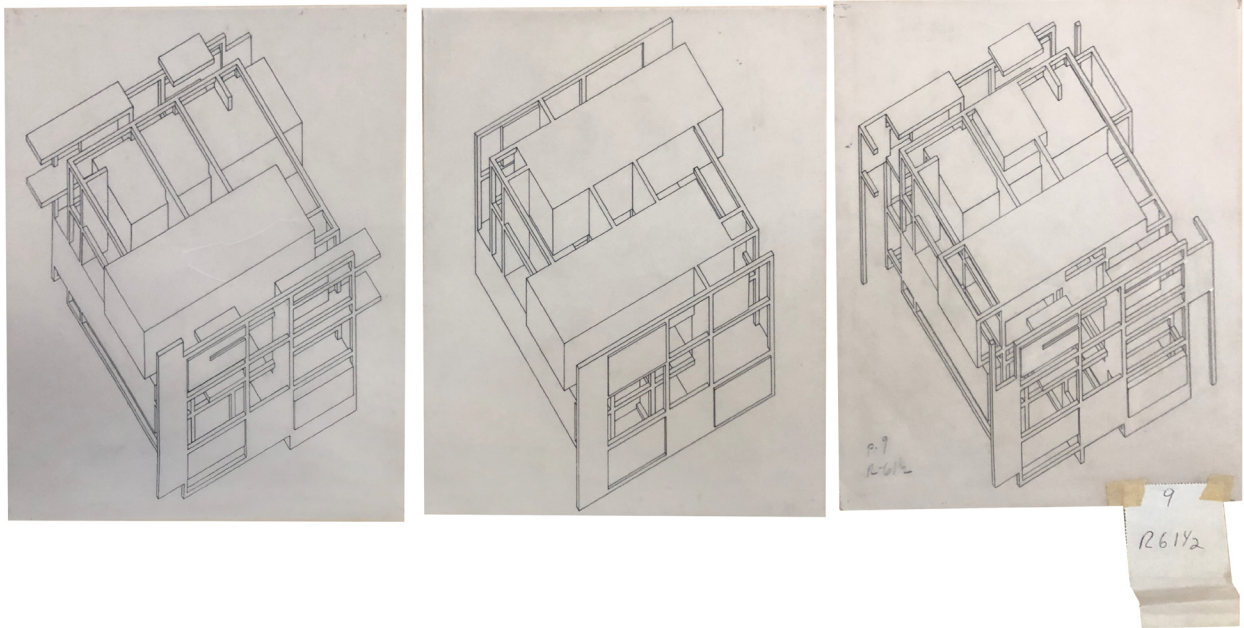
This still shows the point where the emulsion was scraped to allow for spliced together in transition. According to this still Abrahams suggested that the copy at the CCA was likely still a working draft.



3.9 Film Stills

x

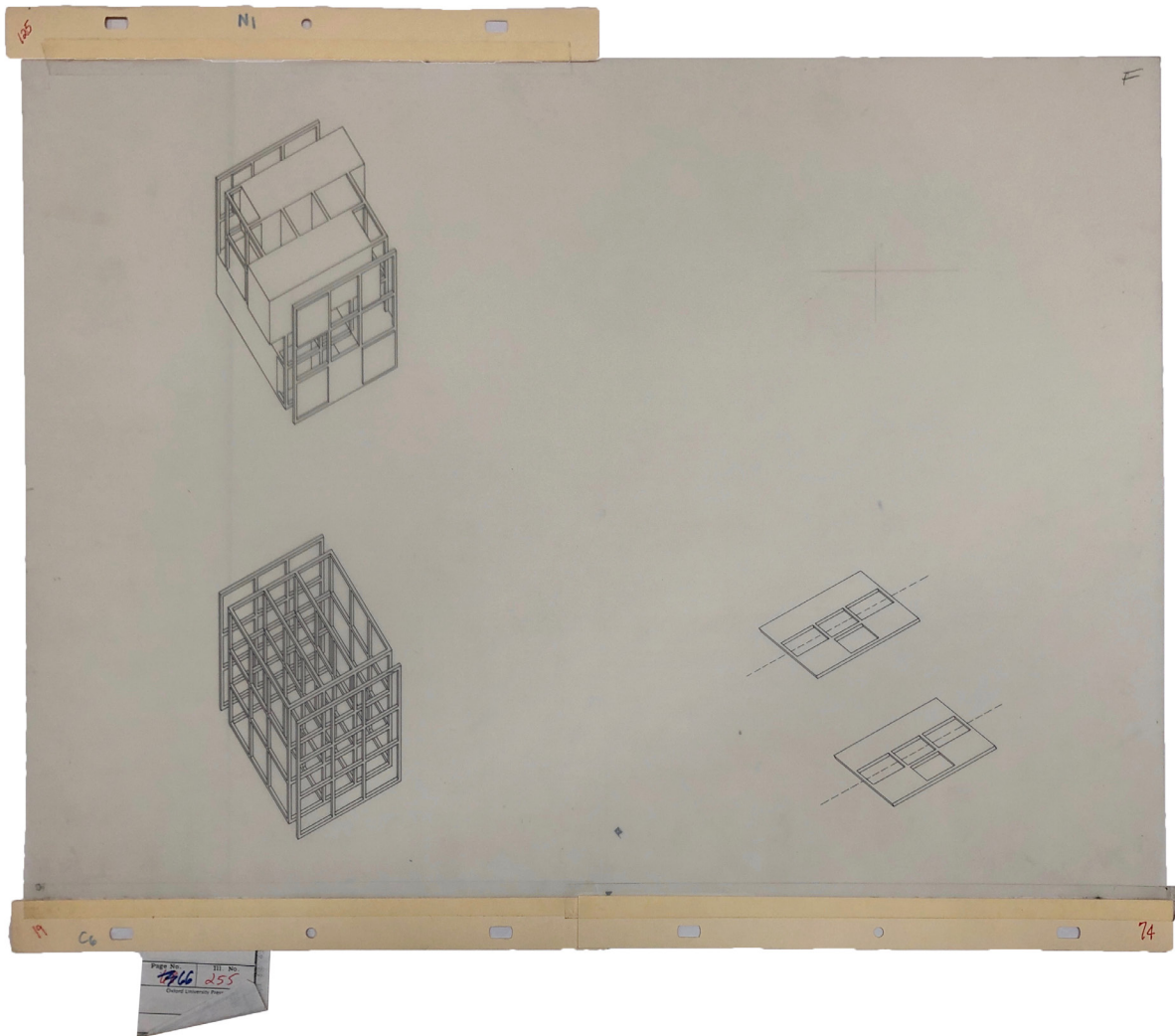
Frank's 'Frame by Frame' analysis of conceptualizing animation as a series of photographic snapshots also produced material confirmations like these ones, where the lights from the studio were captured reflecting in the glass press plates.



3.10 Rapidograph drawings on mylar with publication tags

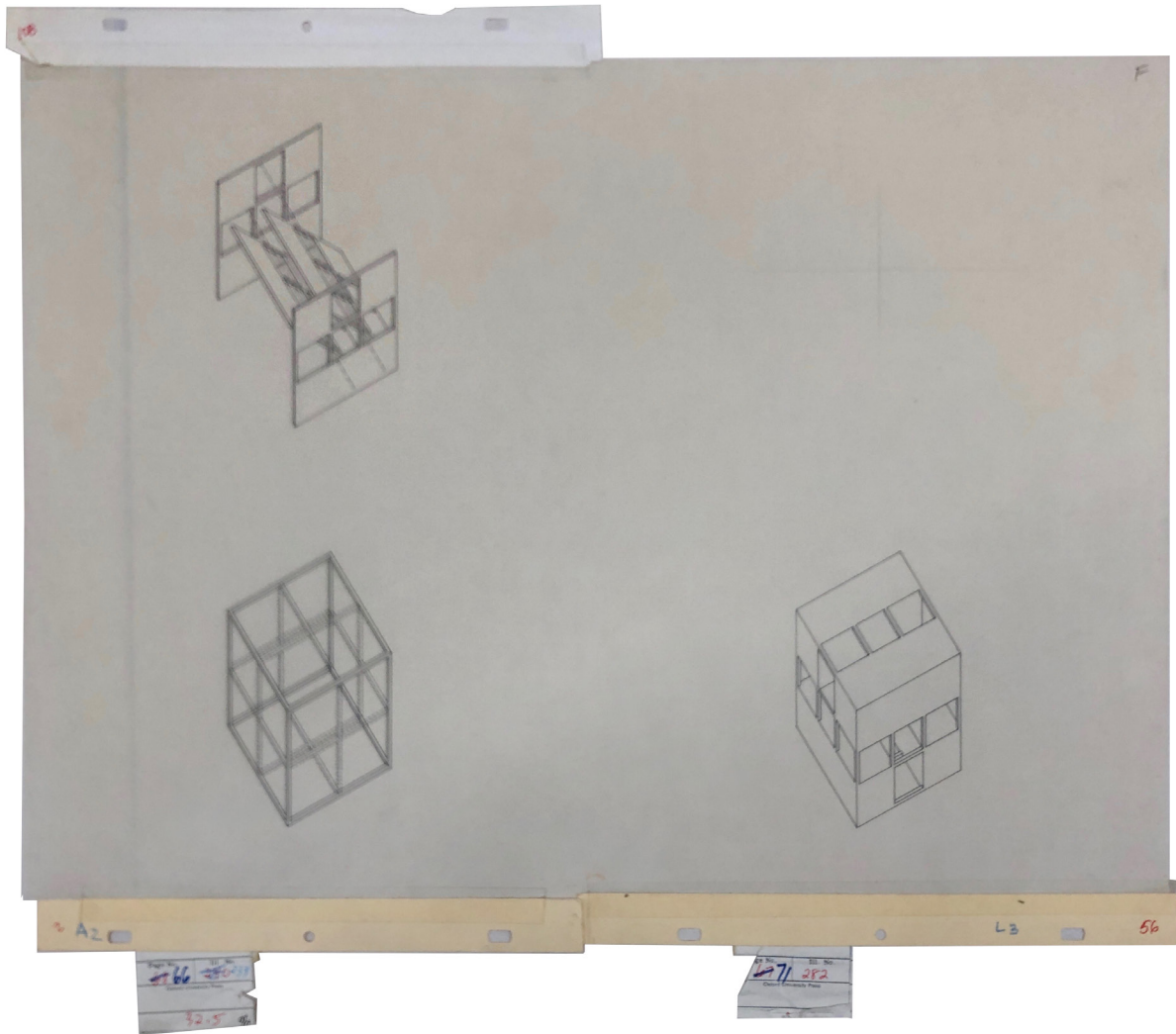
DR1994: 0132: 185-187. Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal

These stills do not match with those in the film, though they are likely to be the size and format of the drawings Cheng made, one per page. These appear to be made after the film and 'fill' some gaps in the existing sequence



3.11 Ellen Cheng Animation cells 1994: 0132: 150-177

These animation cels were likely made by drawing on a larger single sheet of mylar similar to page previous and then reproduced Kodalith photoprints on a sheet of film, three to a page. This is based on discussions with Cheng and Abrahams.



3.12 Ellen Cheng Animation cells 1994: 0132: 150-177.

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal

This cell shows the use of standard hole punched strips for registering the animation to the next page.

Note that there are three separate strips, each one corresponded with its own quadrant 'frame'. Several of these animation cels show their own publication tag that match up to the pagination of the House of Cards publication. There are also annotations that show the orientation around the cel in the sequence.

The Institute for Architecture and Urban Studies

Eight West Fortieth Street, New York, New York 10018. Telephone 212 947-0765

Peter D. Eisenman
Director

Trustees

Arthur Drexler
Chairman

January 3, 1974

Mrs. Douglas Auchincloss
Armand Barros
George A. Dudley
Peter D. Eisenman
John Entenza
Burnham Kelly
Richard Meier
Frank Stanton
Peter Wolf

Mr. Carter Manny, Director
Graham Foundation For Advanced Study in The Arts
4 West Burton Place
Chicago, Illinois

Dear Carter:

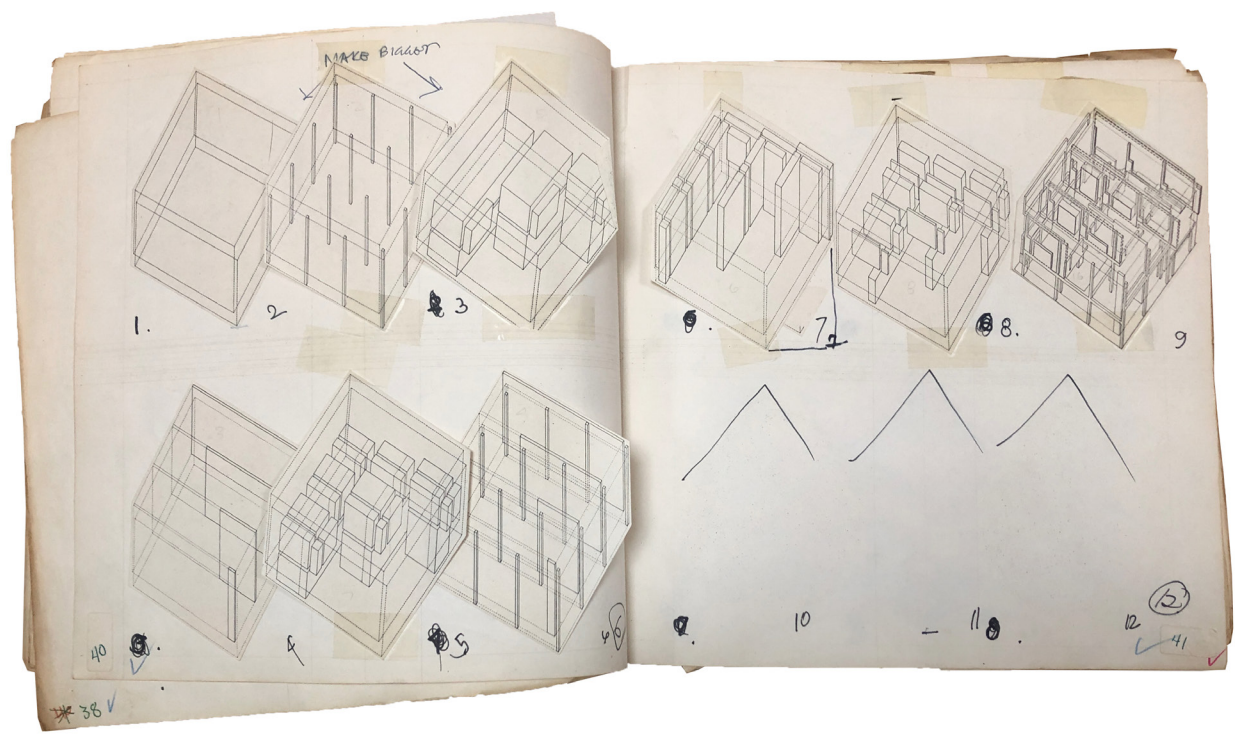
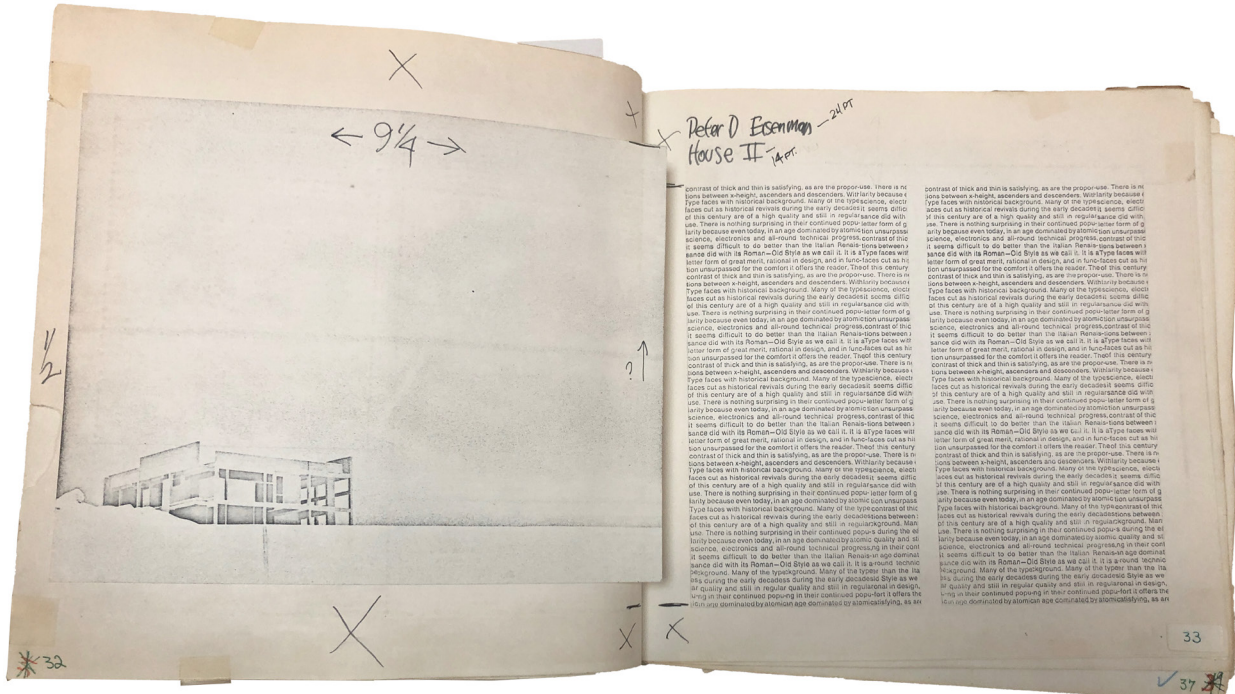
First I want to thank you for sending on the Philip Johnson article on architecture at Harvard. We will certainly include it in our bibliography even if we do not get a chance to use it in our next issue.

When I was in Chicago you mentioned some drawings you might have for an early project Philip did, I believe you said, for his father. We would very much like to see these, if you could take the time to dig them out for us. The magazine seems to be going well, and we should have a second issue out by the 15th of February.

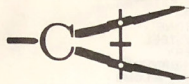
Second, I am enclosing a proposal for your consideration. I believe Arthur Drexler spoke to you about it and he has actively encouraged me to send it on to you. For lack of a more appropriate title it could be called "The Use of Film in the Design Process" or "The Development of a Design Tool." While it seems to be about making an architectural film, it is in reality quite the opposite. It is much more concerned with using film in much the same fashion as a computer to produce a fine grain visual analysis of the design process. In fact if the cost were not so prohibitive one might use a computer to do the drawing and even perhaps the analysis.

The reason for using film in this way, to show visual gradations of form transformations which occur in the design process, is that these cannot be shown in stills on a printed page or in slides. First, because in this form they omit too much, and second, the mind in an attempt to make sense or order of a sequence of drawings of design stages tends to fill in the gaps in this process unconsciously. However, when the same sequence is put onto film, because of the speed of the film the mind is no longer able to fill in the gaps. Rather the film tends to suggest an entirely new structure of perception and conception of design transformations previously hidden by traditional means of presentation. The slides I showed in Chicago represented the outline of some 200 drawings which I hope to produce which would then be animated and transferred to film.

3.13 Letter from Peter Eisenman to Graham Foundation Director Carter Manny. Eisenman discusses his application for research support to continue his work with film.



3.14 Five Architects Gallies
 DR2007:0005: 250. Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal
 These galleys show the reproduction and arrangement that went into describing the simple sequence of the transformation diagrams from House II.



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4	4				BASSWOOD 1/16 x 1/8	4	12	48
5								
6								
7								
8								
9								
10								
11								
12								

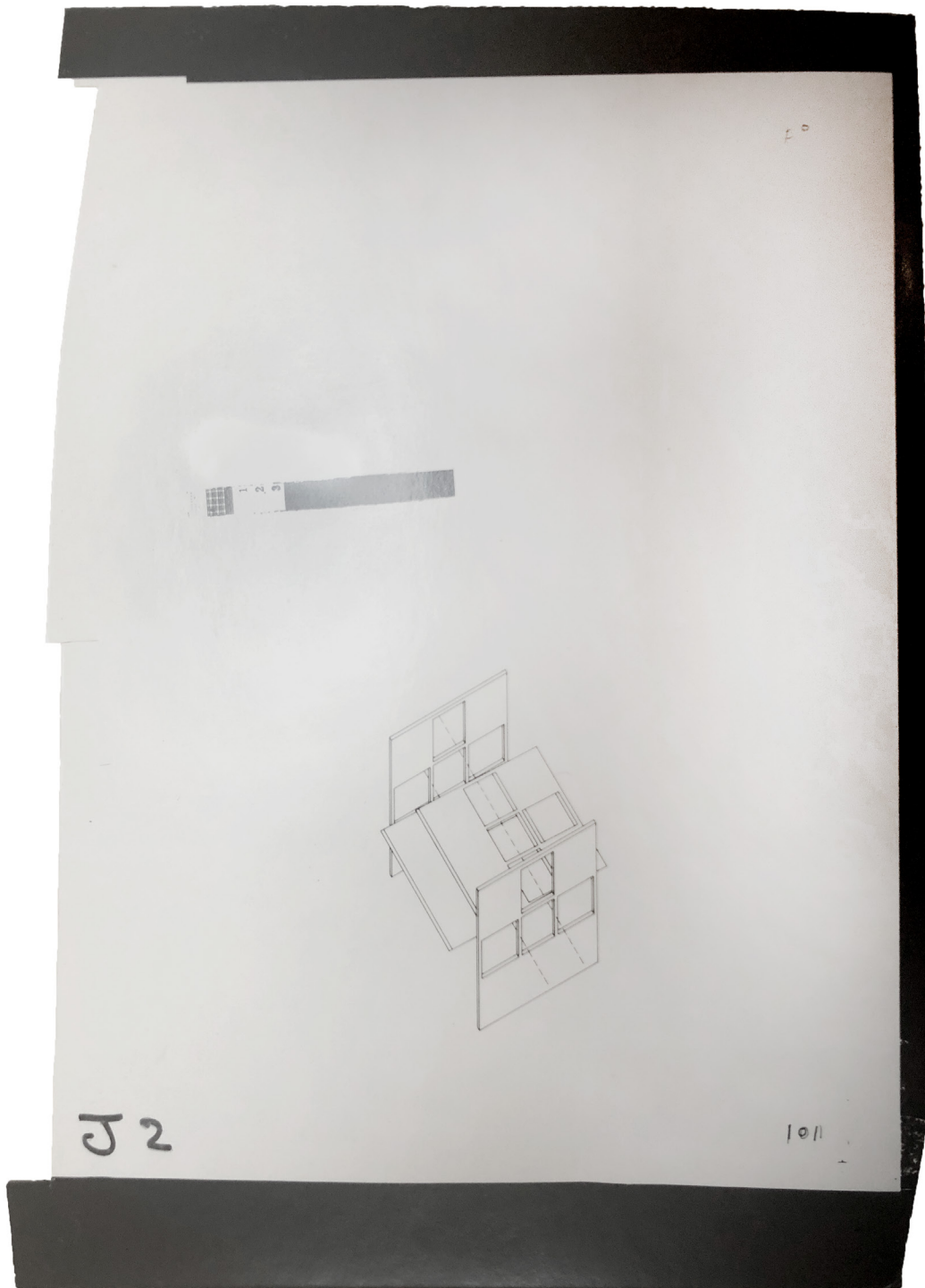
Terms: Net 30 days - 1% per month service charge on overdue accounts. 12% annual percentage rate. All sales are subject to Sales Tax. Claims for shortage must be made upon receipt of goods. No returns accepted without prior approval. 10% handling charge on any returned merchandise. No returns on special orders. No charge for delivery on orders exceeding \$10.00 in our delivery area. Delivery charges between \$2.00 and \$5.00 on orders under \$10.00. Items invoiced above were produced in compliance with the Fair Labor Standards Act of 1938, as amended.

Back Ordered To Invoice Number	Special Instructions	Sub Total	7.02
Back Ordered From Invoice Number		<input checked="" type="checkbox"/> 7% Tax	
Received By <u>K. Korman</u>	Tax Exempt	Trans. Charge	
4/72 Revised 11/72	INVOICE	Total	7.02

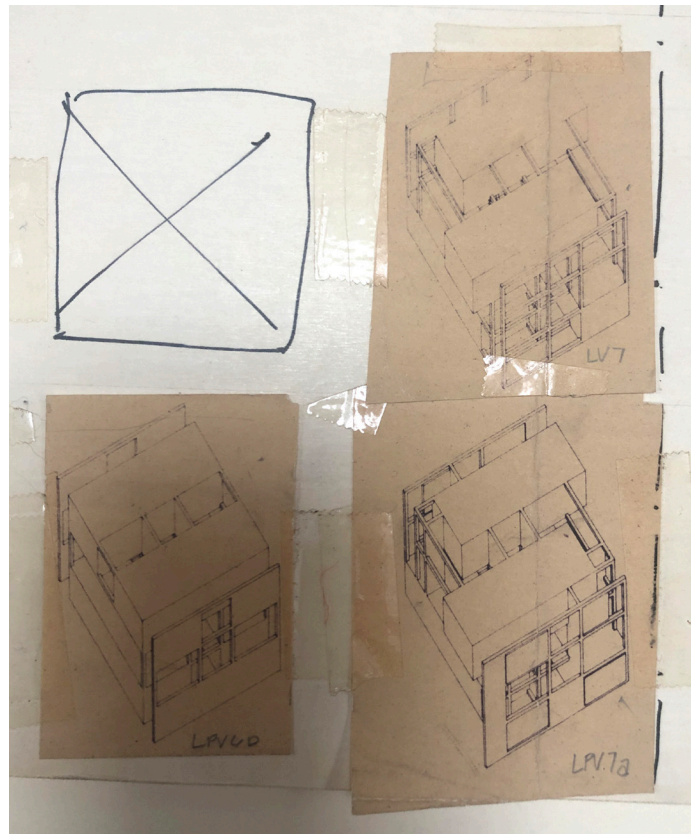
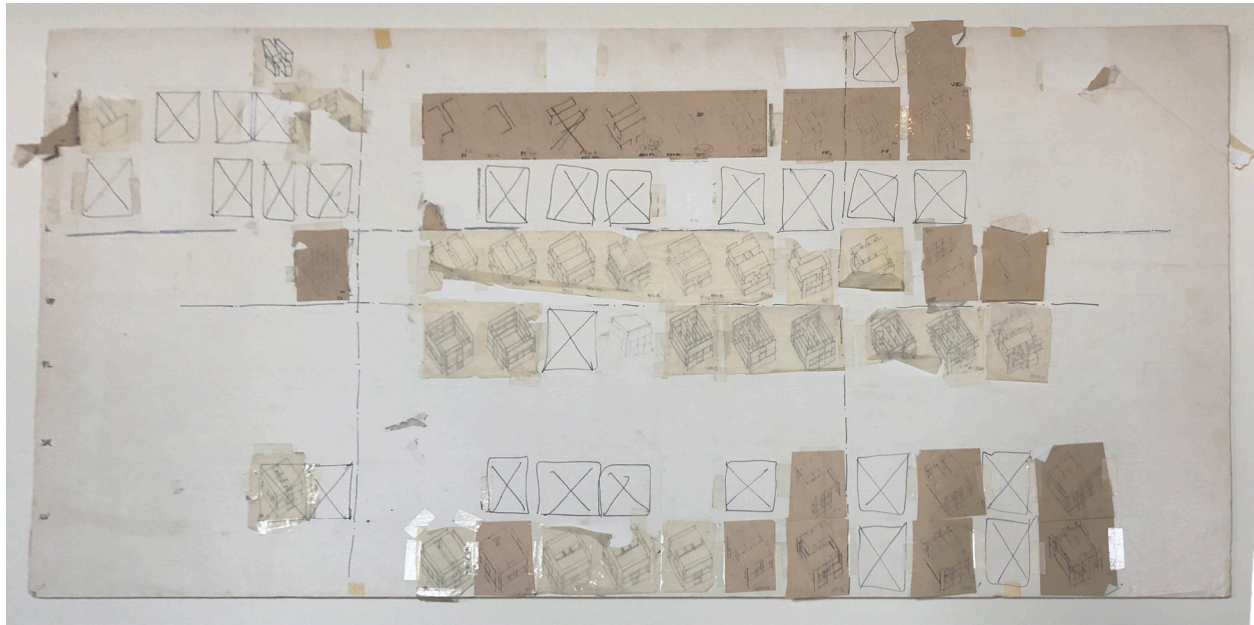
3.15 Receipt from Eisenman's office for film in 1973 shows the purchase of two Color-Aid sets for use in the films and drawings.



3.16 Richard Serra, Color Aid, 1971 (still from 16mm film)
Museum of Modern Art



3.18 There are many of these loose reproduced items of drawings that correspond to the film and Cheng's cels. Each of these comes with a small measuring tab with a grid in order to manage and measure the thickness of the lines when enlarging and reducing scales.



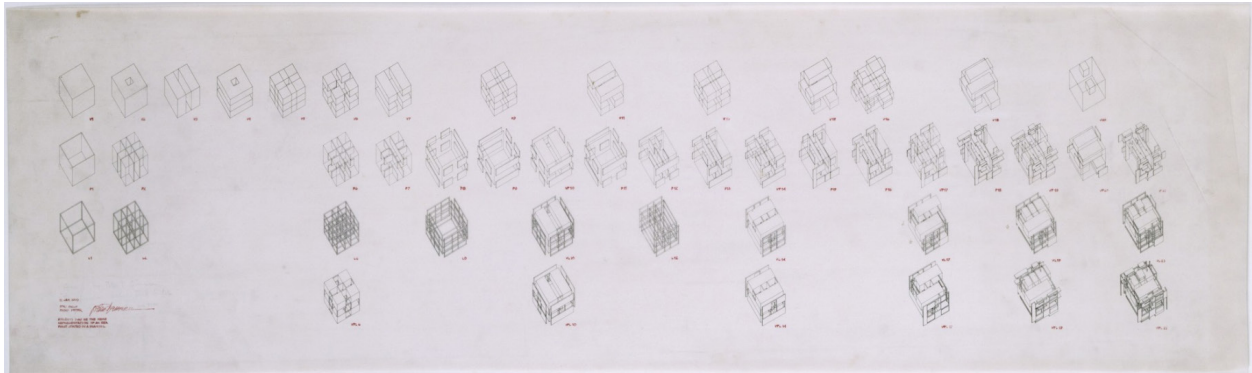
3.19 Document showing the a mix of hand drawn and mimeographed animation cels in paste up.



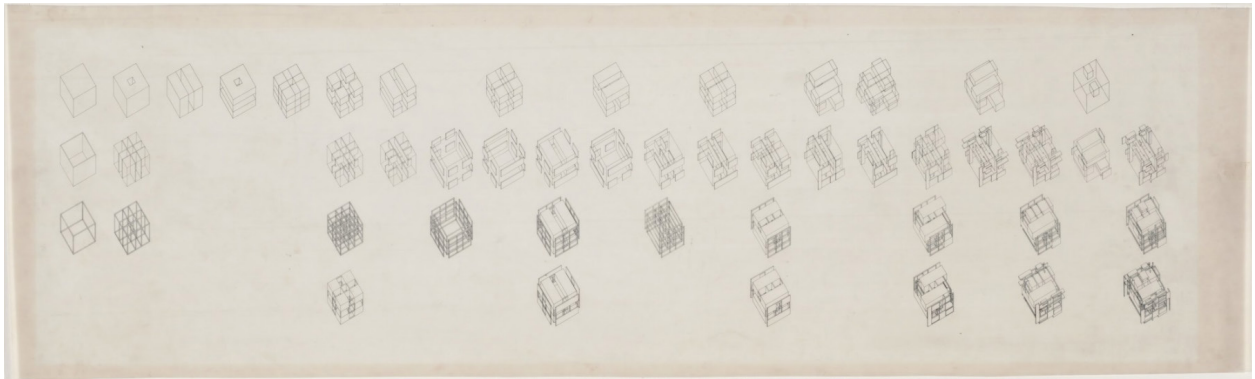
3.20 Negative for House IV drawing

DR 1994: 0132:330

Peter Eisenman fonds, Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montréal



3.21 House IV Project, Falls Village, Connecticut (Multiple axonometrics), 1975
Collection of the Museum of Modern Art
Gift of Philip Johnson



3.22 House IV Project, Falls Village, Connecticut (Axonometrics), 1975
Collection of the Museum of Modern Art
Gift of The Howard Gilman Foundation

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