PAPETERIES CANSON & MONTGOLFIER S.A. FABRIQUE EN FRANCE

SARAH OPPENHEIMER

With contributions by
Julian Rose
Stephanie Weber

Mills College Art Museum
September 13–December 14, 2014

This catalogue is published on the occasion of *Sarah Oppenheimer*, an exhibition organized by the Mills College Art Museum from September 13 through December 14, 2014.

The exhibition is supported by the Graham Foundation for Advanced Studies in the Fine Arts and the Agnes Cowles Bourne Fund for Special Exhibitions.

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Curator and Editor: Stephanie Hanor
Publication Coordinator: Maysoun Wazwaz
Content Editor: Morgan Peirce
Designer: John Borruso
Printer: Solstice Press
Photography: All images courtesy of MCAM unless noted below.
Courtesy of Sarah Oppenheimer: p. 34–35, 36, 37, 38, 41, 116, 151, 176
Courtesy of Mel Bochner: p. 61
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ISBN: 978-0-9854600-1-3
LCCN: 2014948380

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INTRODUCTION AND ACKNOWLEDGMENTS

Stephanie Hanor

Sarah Oppenheimer's work spans the disciplinary boundaries between sculpture and architecture, exploring how space is animated and experienced in order to provide a deeper understanding of architecture as a constructed social environment. Oppenheimer's work complicates the way we see. Her investigations are particularly relevant to spaces of viewing where architecture frames and guides how inhabitants see and interact with both space and, importantly, the people and objects in that space. The exhibition *Sarah Oppenheimer* and this accompanying publication offer an intriguing parallel to Oppenheimer's process by examining the artistic research and development that is intrinsic to Oppenheimer's interventions.

The exhibition *Sarah Oppenheimer* presents a unique examination of the artist's work through previously unseen archival materials. For every spatial intervention that the artist has created, an extensive archive of material is generated. This material includes drawings, prototypes, physical models, light studies, and customized computer code. For this exhibition, Oppenheimer has developed a series of tables, each highlighting a specific area of investigation. Inquiries include mapping spatial arrays, exploring the dynamics of multiple sightlines, predicting the movement of bodies through space, disrupting surface continuity and direction through material manipulation, and testing the impact of lighting variables on spatial differentiation.

This exhibition and publication include materials from a cross-section of Oppenheimer's projects, but focus primarily on the extensive research that led to the development of two related pieces: *D-33*, at P.P.O.W, New York (2012), and *33-D*, at Kunsthaus Baselland, Switzerland (2014). The publication highlights the physical and conceptual specificity of her practice and reflects the complexity of her methods for manipulating the built environment.

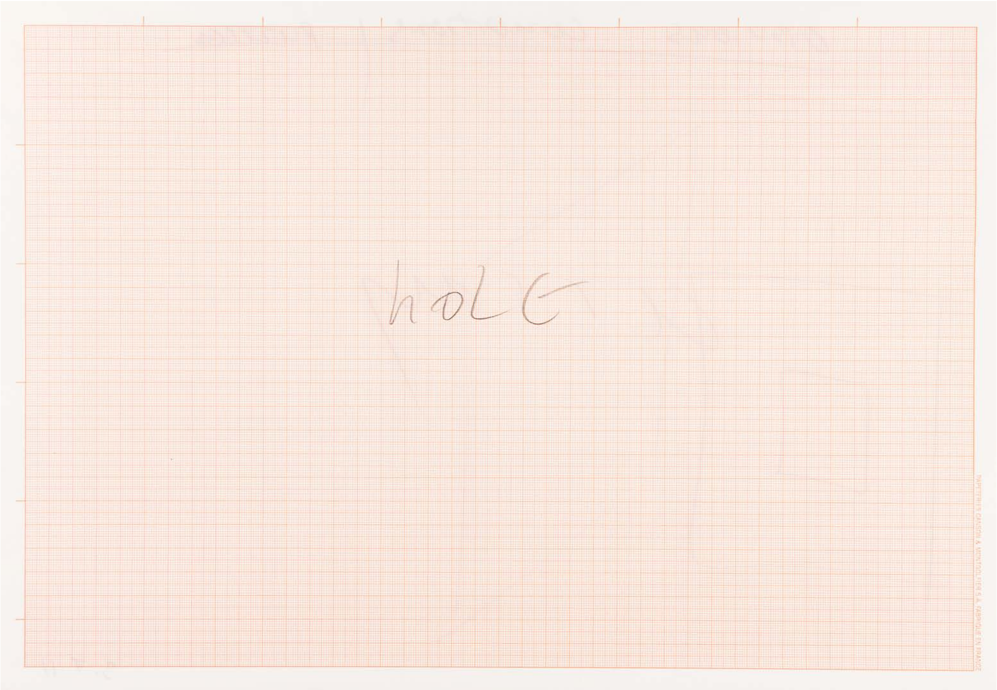
Exhibitions and publications are always a collaborative effort, and I offer my heartfelt gratitude to everyone who has contributed to the realization of this project. Above all, I would like to thank Sarah Oppenheimer, who has been extraordinarily generous with her time and work, and who has dedicated hundreds of hours to conceptualizing and realizing both an exhibition and publication that illuminate the core concepts of her practice. I am grateful to the artists, architects, and studio assistants who helped design, fabricate, and organize various materials for this project. In particular, I'd like to thank Levi Murphy, Richard Joon Yoo, and Courtney Childress for their time and hard work. Thanks also goes to Joe Melamed, Daisy Wong, and Sean Howe for beautifully fabricating the tables for the exhibition, as well as to Mackenzie Fargo, Kate Rose, Jessica Smith, and Minna Smith for digitizing materials for this publication.

The museum's staff deserve special acknowledgment for their invaluable assistance: Stacie Daniels for overseeing the shipping, fabrication, and installation of the exhibition; and Maysoun Wazwaz for managing public programs, publicity, and skillfully coordinating all of the logistics of producing this publication.

For this publication I owe special thanks to guest authors Julian Rose and Stephanie Weber, whose insightful essays contribute new scholarship and a deeper understanding of Oppenheimer's work and process. John Borruso's elegant book design together with Morgan Peirce's careful editing offer a clear and compelling presentation of challenging material to a wide audience.

The Mills College Art Museum is particularly grateful to the project's funders, the Graham Foundation for Advanced Studies in the Visual Arts and the Agnes Cowles Bourne Fund for Special Exhibitions. The generous funding of these sources helped make this project possible.

ARRAY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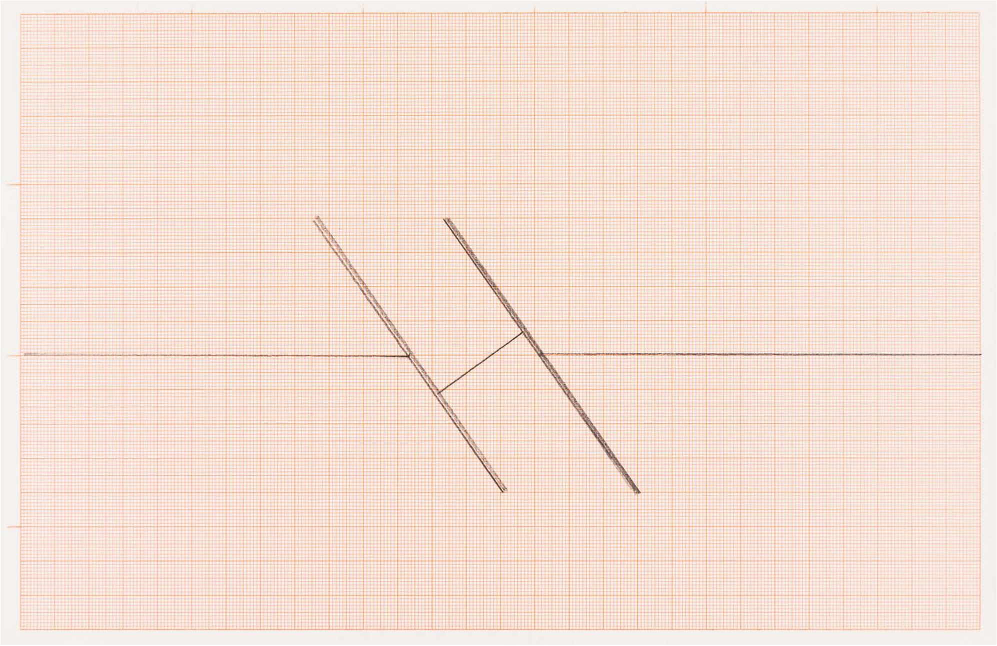

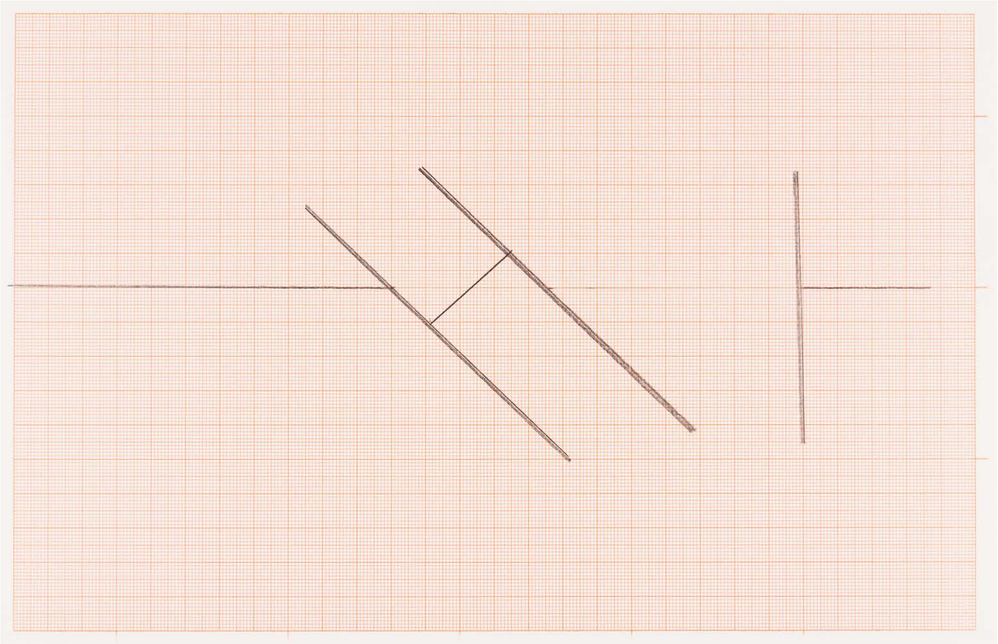

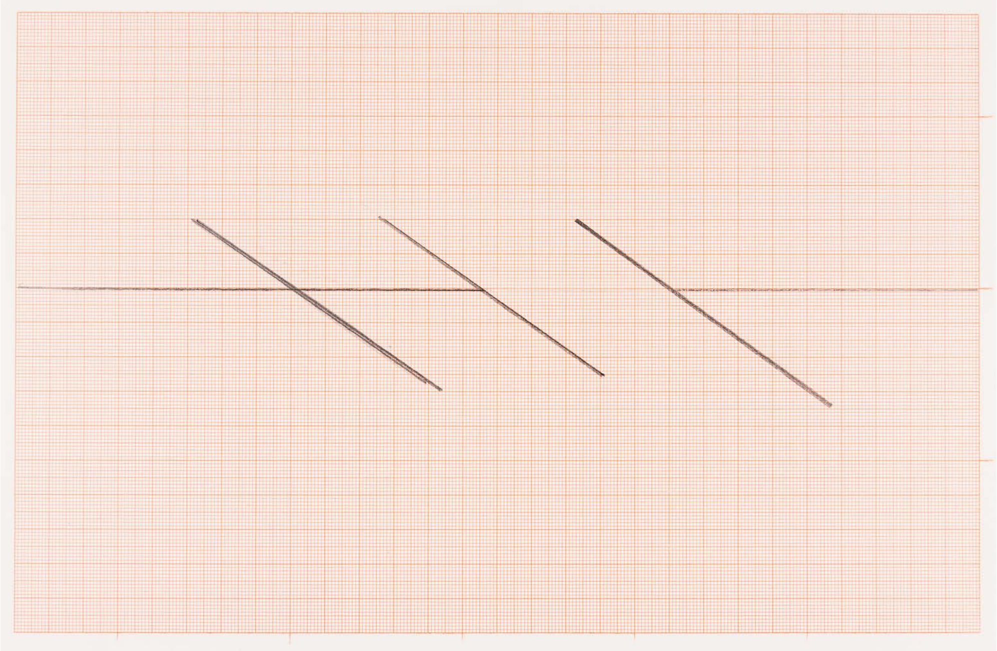

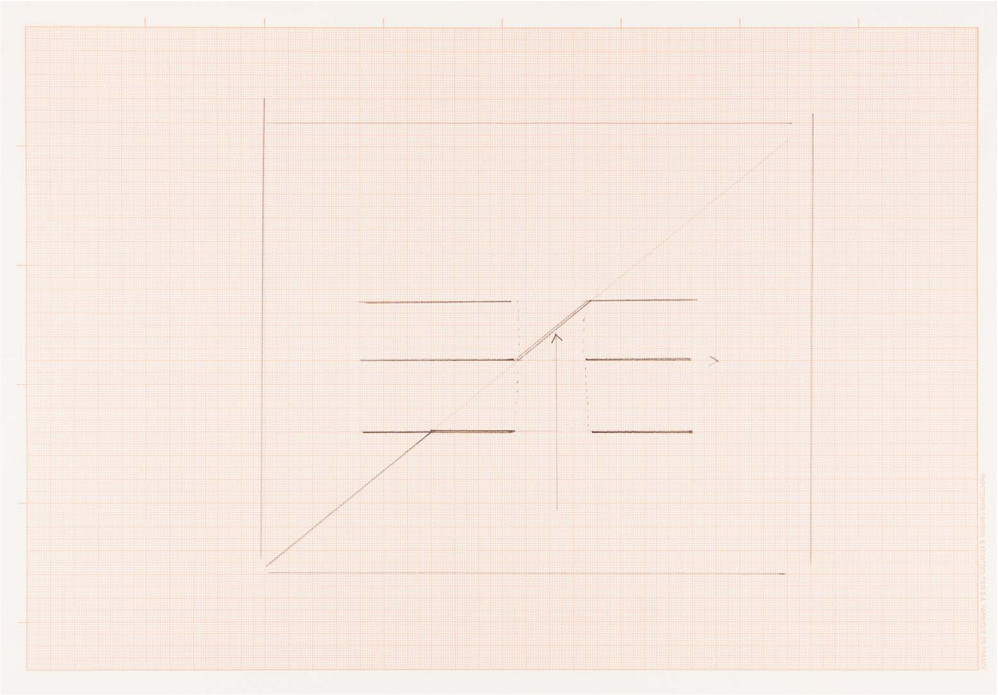

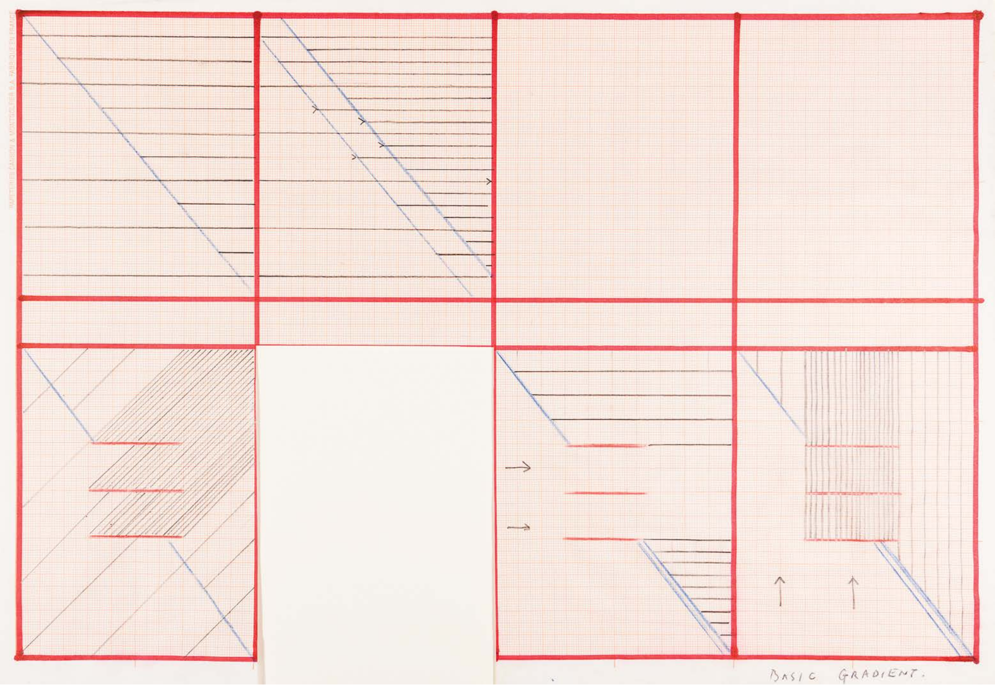
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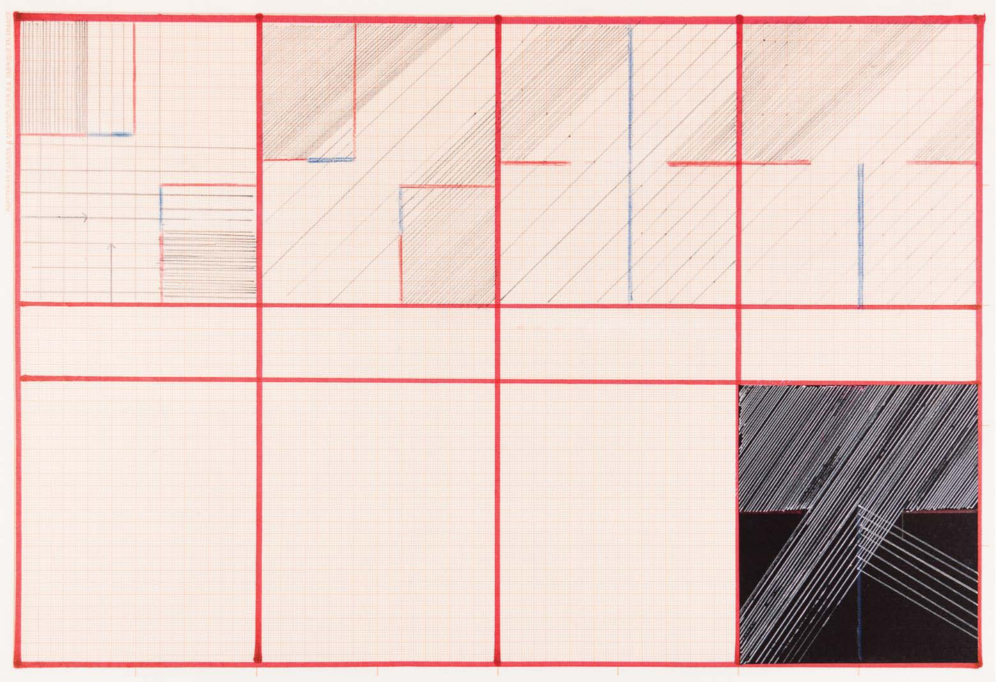

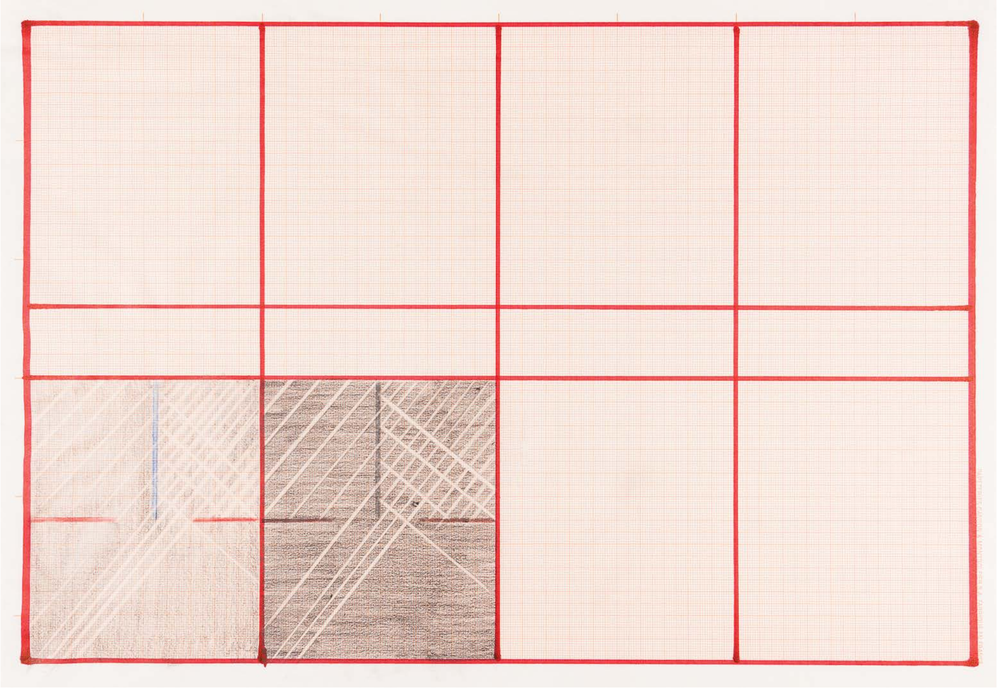

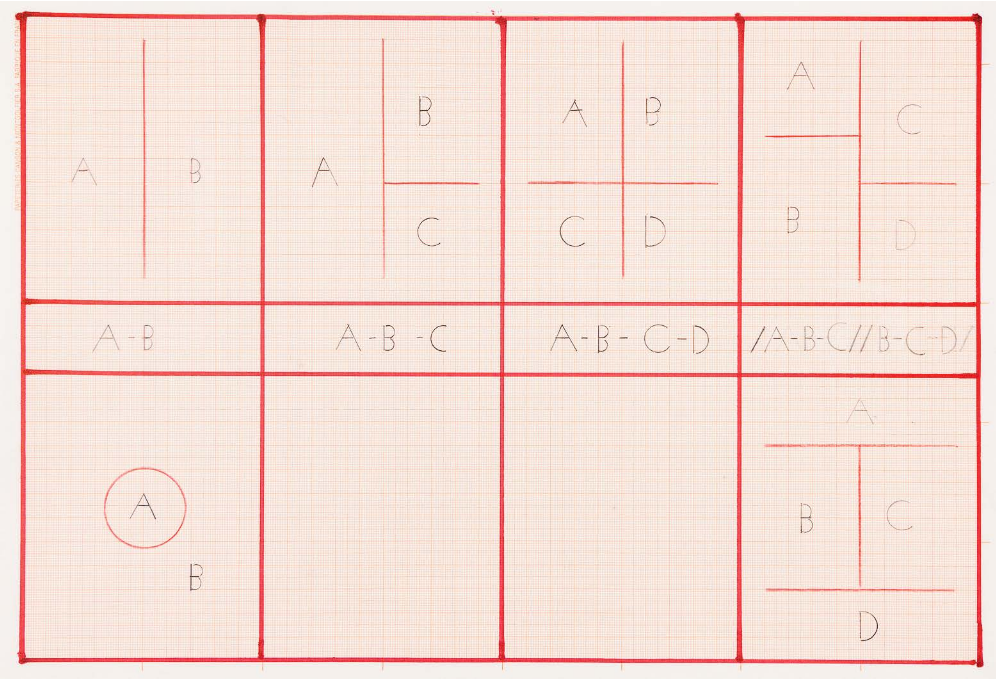
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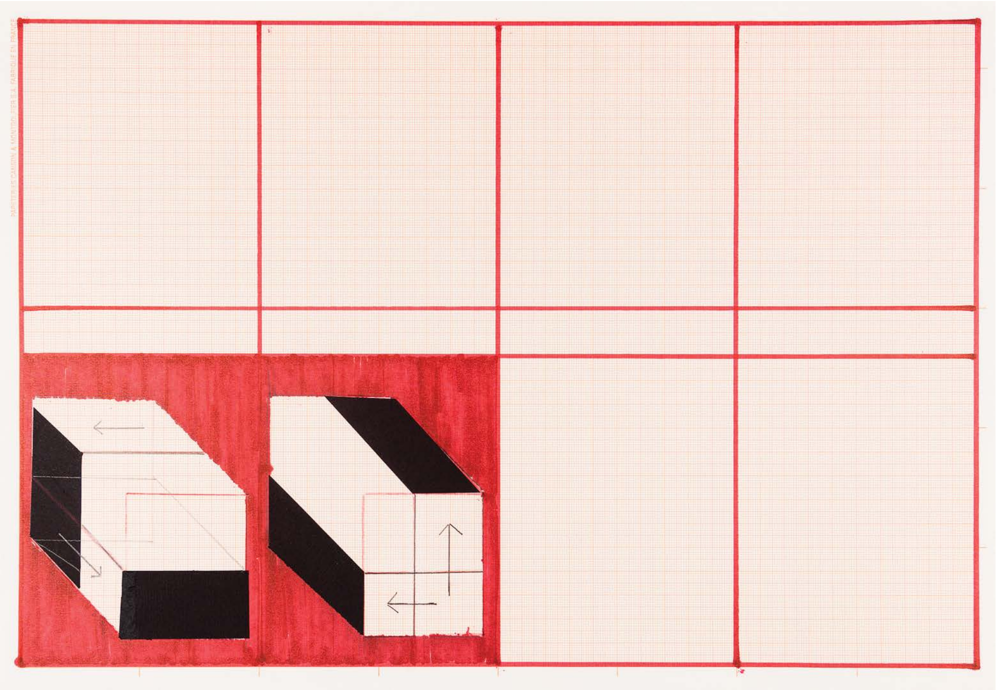
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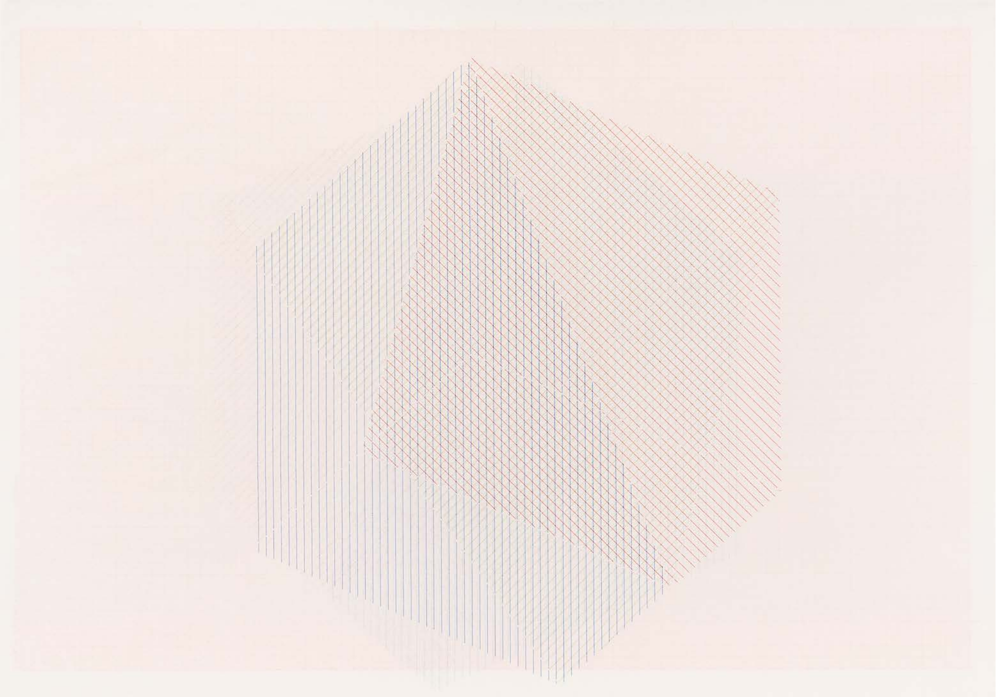

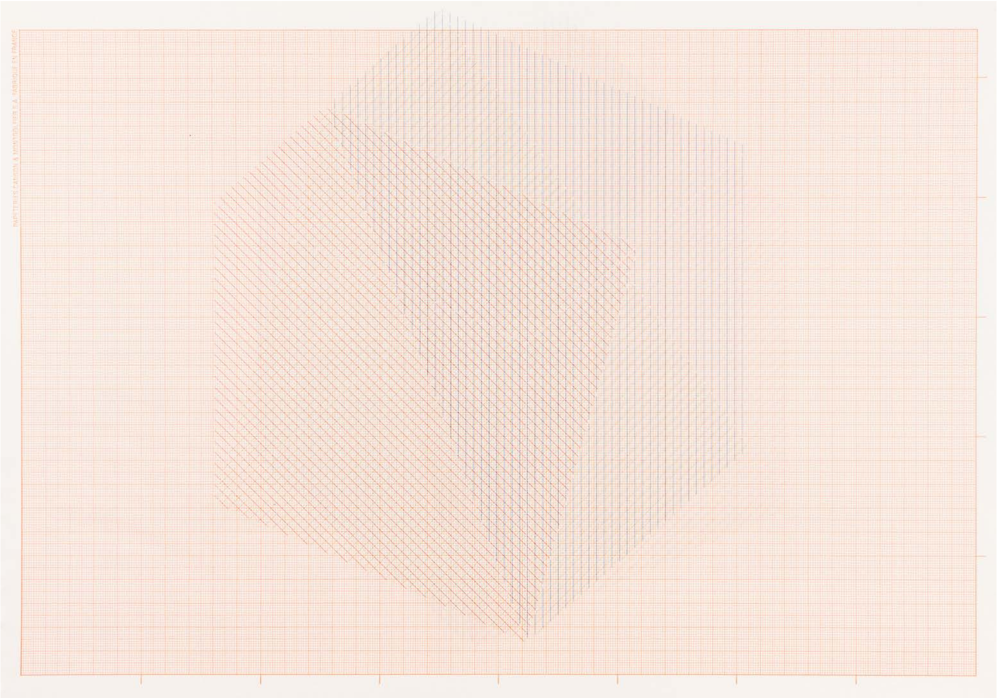
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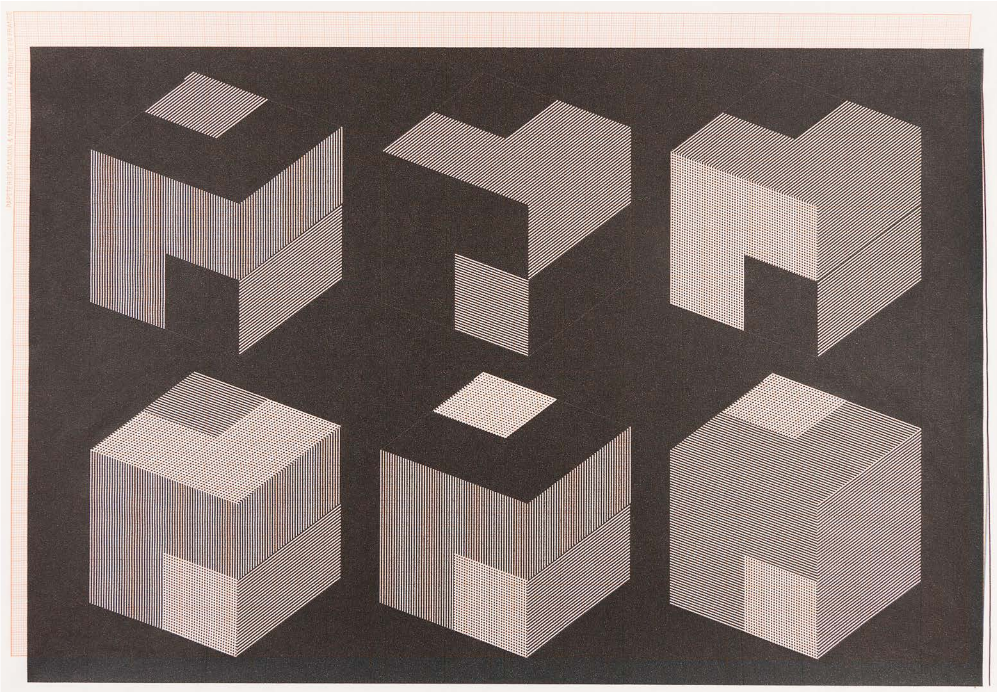

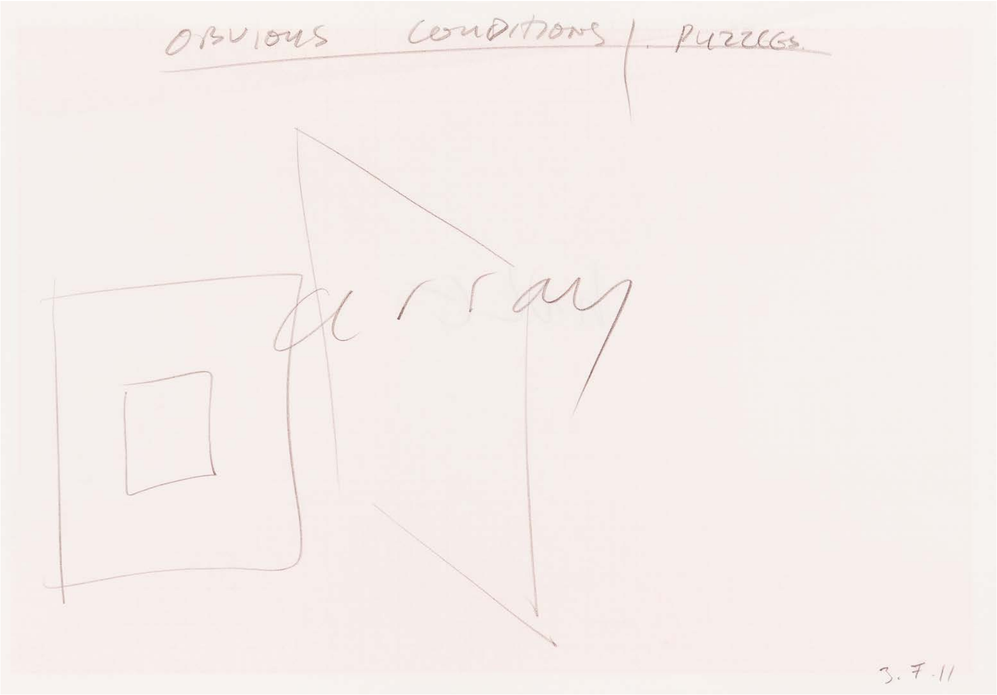
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SARAH OPPENHEIMER IN PERSPECTIVE

Julian Rose

It is one of the great ironies of architectural history that Leon Battista Alberti, who famously published the first description of linear perspective in 1435, explicitly warned architects not to use the technique. Alberti himself was well known as an architect, and he credited another great Renaissance designer, Filippo Brunelleschi, with inventing the system he elucidated. (Fig. 1) Yet despite the fact that perspective was the most powerful tool then available for the representation of space, Alberti dismissed it as useless in his field.[1]

This apparent paradox revolves around the diagonal lines that characterize perspectival drawing. Although they are crucial for making the recession of space not just legible but naturalistic, seemingly almost real, they are unreliable as measures of distance: in creating the illusion of depth, they distort space itself. This renders them impractical, if not downright confusing, for both the architect attempting to accurately lay out the dimensions of a structure and the builder endeavoring to erect it. Architects, Alberti suggested, should stick to the technique now known as orthographic projection, wherein lines parallel in actual space remain parallel in the drawing, rather than converging toward a vanishing point. Here, depth is always approached indirectly—represented through the coordination of essentially two-dimensional representations that show space undistorted, but in only one plane at a time. (Fig. 2) A plan and an elevation, for example, together give an accurate accounting of the space of a building, but offer no impression of what it is like to inhabit: in quantifying and describing space, they transform it into an abstraction.

For Alberti, the distinction between these two representational techniques reflected an essential disciplinary division. While artists should strive to present things as they seem, architects must concern themselves with the world as it actually is. As he put it in his canonical treatise *On the Art of Building in Ten Books*, "The difference between the drawings of the painter and those of the architect is this: the former takes pains to emphasize the relief of objects in paintings with . . . diminishing lines and angles; the architect . . . without altering the lines and by maintaining the true angles, reveals the extent and shape of each elevation and side—*he is one who desires his work to be judged not by deceptive* *appearances but according to certain calculated standards.*"[2] In this rhetoric of truth and deception, Alberti was not only outlining different tasks for architects and painters but positing a profound conflict between *experiencing* space and *understanding* it, between subjective appearance and objective reality.

This fundamental split has persisted into the present, widening as space has become, paradoxically, both more rational and more subjective in the modern era. Industrial capitalism brought with it the need to homogenize and control space with a new level of precision; the open, unencumbered expanses of modern architecture, enabled by the invention of the free plan and the curtain wall, seemed perfectly suited to these ends. This was the terrifyingly objective architecture of the planning grid—of the factory floor, the office cubicle, and the housing block—the space that Henri Lefebvre condemned as having "nothing innocent about it: it answers to particular tactics and strategies; it is, quite simply, the space of the dominant mode of production."[3]

By the time Lefebvre issued this scathing critique in the mid-1970s, an emerging generation of artists was already seeking other options. If modern art had been defined in part by a rejection of the perspectival representation of space, postwar art was often characterized by desire to intervene in space directly, evinced in the proliferation of new spatial strategies ranging from the installation to the earthwork. But as artists tried to open up alternative understandings of space, they inevitably had to turn against

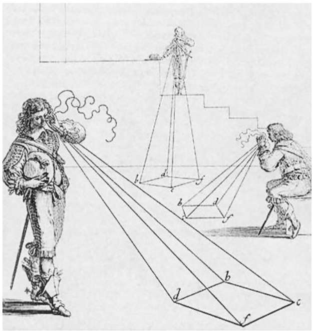

Fig. 1
Detail from Abraham Bosse,
Les Perspecteurs, 1648

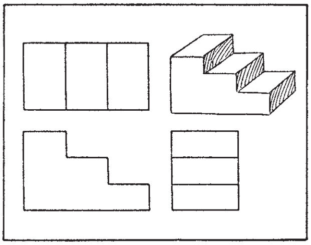

Fig. 2
Orthographic projection drawing of stairs, from Thomas E. French and Carl L. Svensen, *Mechanical Drawing*, 1919

architecture, too, given that it was deemed responsible for manifesting corporate and institutional power in concrete spatial configurations. In response to what they viewed as the hyper-rationalization and abstraction of architectural space, many artists emphasized the fundamentally contingent and subjective nature of experience, turning to understandings of space that were more phenomenological than visual, encompassing time, movement, and an embodied viewer. In this way, the oppositions originally outlined by Alberti–between art and architecture, the subjective and the objective, appearance and reality–were fiercely redoubled.

Today, disciplinary conflicts over the nature of space seem to have reached a strange stalemate. Architects are more and more frequently the purveyors of icons and images, leaving space itself to the specialists who can best organize and monetize it, as exemplified by the common practice of so-called starchitects designing only the form and exterior surface of a building, leaving the interior layout to consultants and efficiency experts. No doubt this trend is exacerbated by an ongoing paradigm shift in architectural representation. As digital modeling and rendering become ubiquitous, architects no longer need to grapple with spatial abstraction and translation on a daily basis and instead enjoy the illusion that they can design directly in real (digital) space. Artists, too, have largely abandoned spatial interventions for the pursuit of spectacular visual effects at an ever-larger scale, as both the production and consumption of art have been increasingly drawn into the branding exercises and global tourism central to the economy of contemporary culture. And so space itself seems to be fading from view in both disciplines, perhaps because its divergent trajectories have proved irreconcilable.

The seeming intractability of the problem of space is what makes Sarah Oppenheimer's work so urgently important. She has placed the centuries-old conflict between experience and understanding at the crux of an oeuvre that continually confounds expectations. At a time when both art and architecture seem to be abandoning space, she brings it back into focus; after decades of artistic hostility toward architecture, she embraces and expands the discipline. And at every stage in her work–from its design to its fabrication to the experiences it engenders–she radically multiplies our knowledge of space, both carnal and conceptual.

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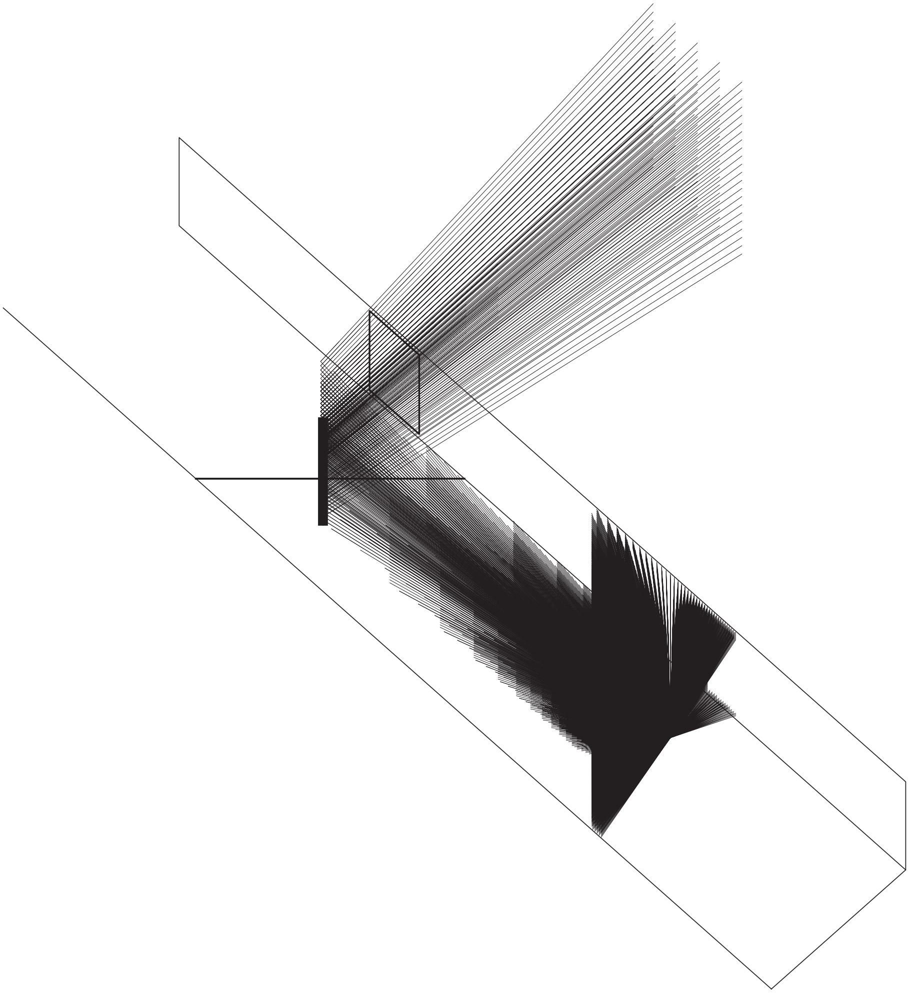
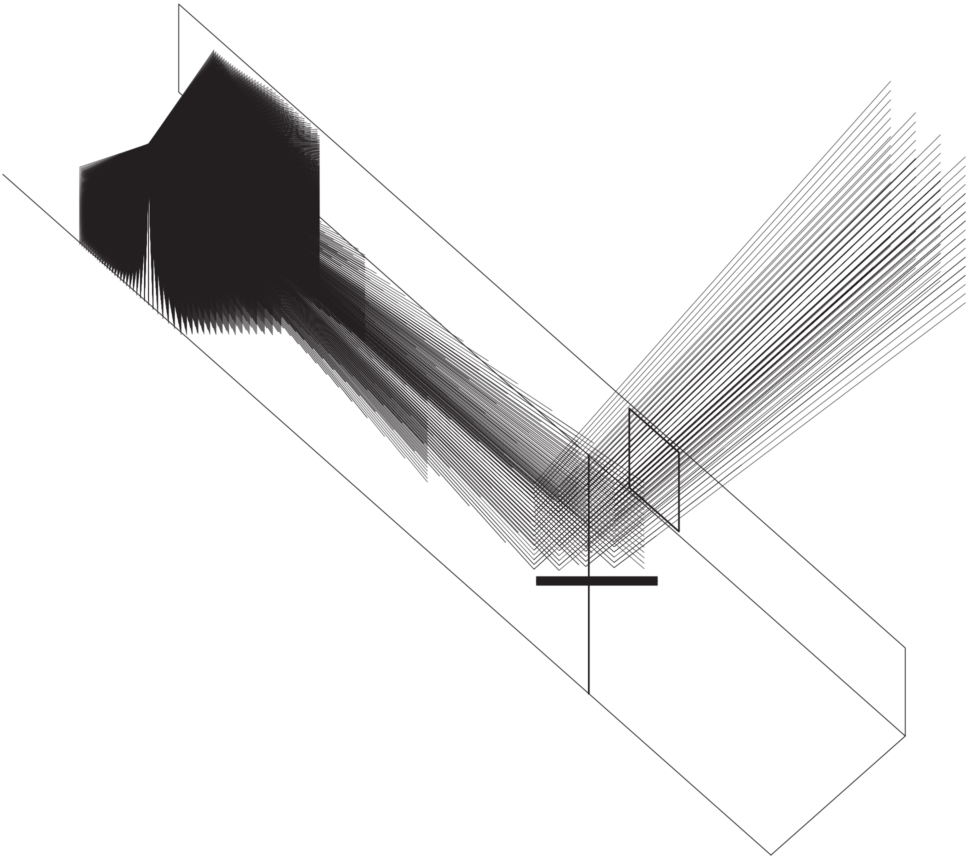
Yet it would not quite be accurate to describe space, per se, as the subject of Oppenheimer's practice. More precisely, her focus could be explained as the rigorous interrogation (and masterful manipulation) of the ways in which architecture frames perception. For Oppenheimer, in other words, space is neither an ideal, ordered expanse nor an impalpable medium of experience, but a concretely bounded set of horizons that generate a range of possibilities for movement and vision. Her first step in beginning any project, then, is to explore the fluid interchanges among eye, body, and architecture that exist within a given structure.

The relationship between these three elements poses a notorious representational dilemma. Within architecture, the perspective drawing was long the method of choice for simulating visual experience, but because it is anchored in a single viewpoint, it cannot address movement, which entails a sequence of shifting viewpoints over time (although the perspective has now largely been supplanted by the photo-realistic rendering, the latter is subject to essentially the same restrictions). A plan drawing, on the other hand, enables the visualization of a range of possible progressions through a space but eliminates the possibility of seeing that space from any particular spot. The increasing popularity of digital animations would seem to alleviate this problem by introducing a mobile viewpoint. But such representations still suffer from the fundamental limitation of perspective, which is that it is by definition impossible to escape the perspective of a perspective view; the viewpoint itself cannot be tracked through space, and so the relationship between eye and architecture can be examined only indirectly.

Oppenheimer has deployed a new tool to address precisely this problem. In the 1960s and '70s, urban planners and landscape designers began to use a kind of diagram they termed an *isovist*, which describes the field of surrounding space visible from any given point. Unlike in a perspective drawing, however, that viewpoint remains visible in the image, sitting at the center of the isovist itself. (The concept is extremely useful in understanding, for example, how new development in a

Pages 34–35
Fig. 3
Isovist reflection
diagram: *33-D*, 2014
Dimensions variable





downtown might affect the visibility of an existing landmark building, or how much of a park can be taken in from a particular spot within its terrain.) Collaborating with a computer programmer, Oppenheimer developed a custom plug-in for her digital modeling software that allows her to place a viewpoint in a three-dimensional model of a space and then visualize the isovist of that point three-dimensionally. Crucially, the software updates the isovist in real time as she moves the viewpoint around the space. (Fig. 3)

Seen in action, this software is remarkable. The isovist of a simple interior can be visualized fairly easily–in an empty room in which all points are visible from all other points, the isovist is isomorphic with the architectural envelope, and remains static as the viewpoint is shifted. But obstructions such as columns, corners, doorways, or windows complicate matters considerably, turning the isovist into a jagged star of wedge-shaped rays streaming outward from the selected point. (Fig. 4) And as the viewpoint shifts, the isovist transforms dramatically, suddenly spraying out through a doorway into an adjacent space, spilling past a corner, or abruptly retreating in the face of a column or wall. The most recent versions of this software produce more complex isovists by taking into consideration such variables as directional movement and reflective surfaces, precisely visualizing the ways in which a turn of the viewer's head, a step forward or backward, or the introduction of a mirror into his or her field of view might limit or expand the range of his or her perception.

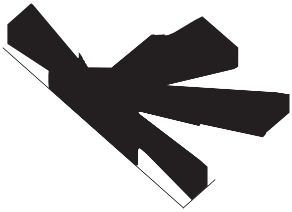


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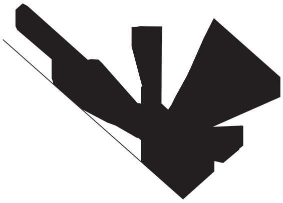
Fig. 4
Isovist study, 2014
Dimensions variable



What is most impressive about Oppenheimer's isovist tool, however, is its powerful combination of analytical abstraction and experiential fluidity. At a time when many architects are using new digital technologies primarily to immerse the viewer within ever-more-convincing simulations of spatial experience, Oppenheimer models spatial experience itself–demonstrating that it is the dynamic product of the ongoing interplay between a mobile, embodied viewpoint and an architectural envelope. And the computer's capability to continuously update the isovist in real time allows her to easily test the effects of an almost infinite variety of interventions–different spatial configurations, different trajectories of movement, different material conditions–in endless combinations. In other words, she has found a strikingly effective method of directly studying the seemingly intangible interactions that are the main subject of her work, laying the foundation for the manifold perceptual effects produced by her pieces themselves.

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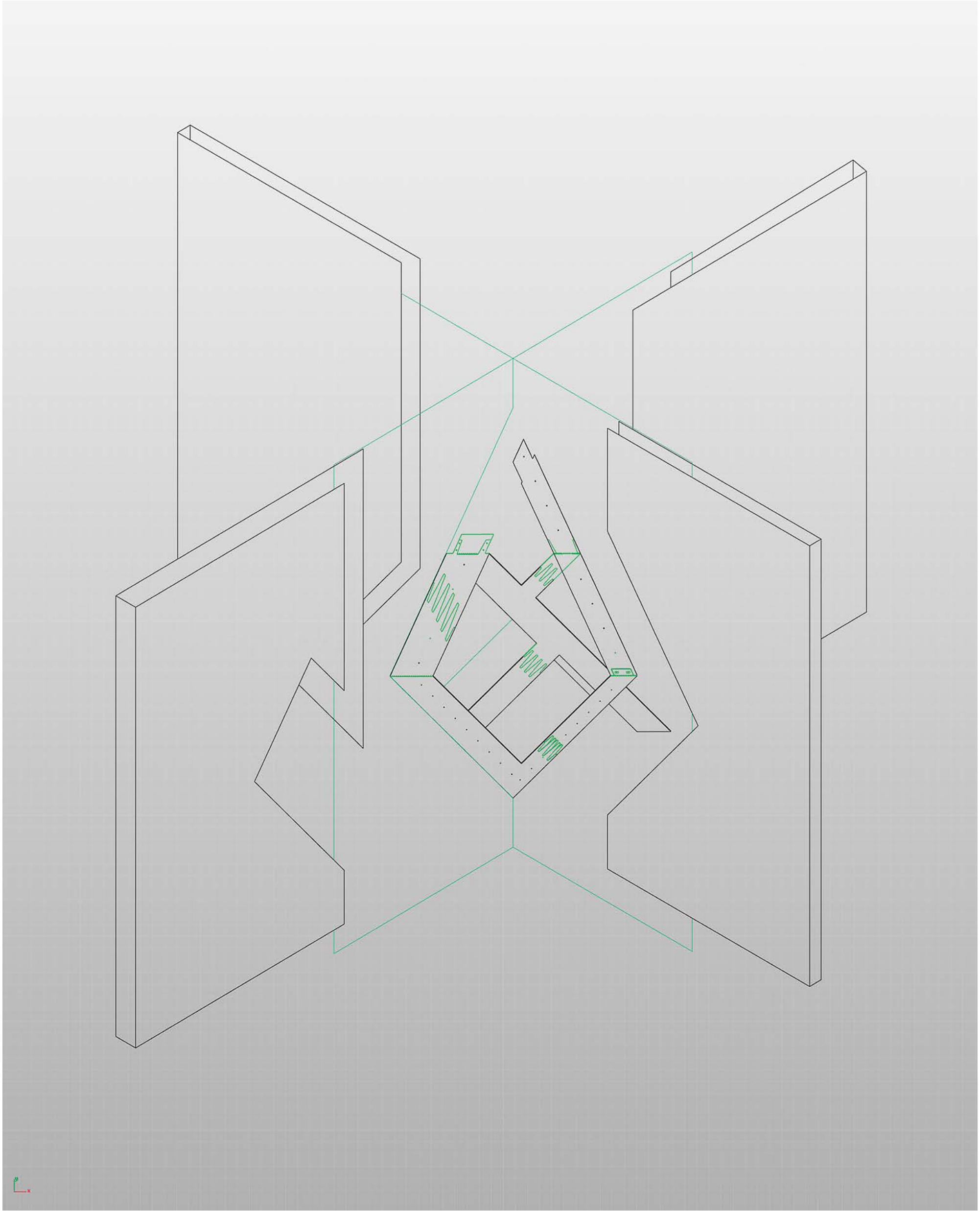
Custom computational tools also help Oppenheimer mediate directly between her explorations of space and the material realities of the physical world. The work for which she has become known over the last decade involves subtle interventions into interiors, with each piece structured around a series of apertures (sometimes inserted into existing walls, and sometimes into partitions she has introduced), each sharply delineated by a matte black aluminum sleeve. Although the works are often quite spatially



complex, as she develops her design, Oppenheimer models them (digitally) in the simplest way possible: as a series of intersecting planes rather than as slabs of material with actual thickness. (Fig. 5 & 6) By keeping her digital model so minimal, Oppenheimer achieves an absolute conceptual purity. In this state, the entire piece has the strict precision of geometric proof: two planes intersect in a single line, two lines in a point.

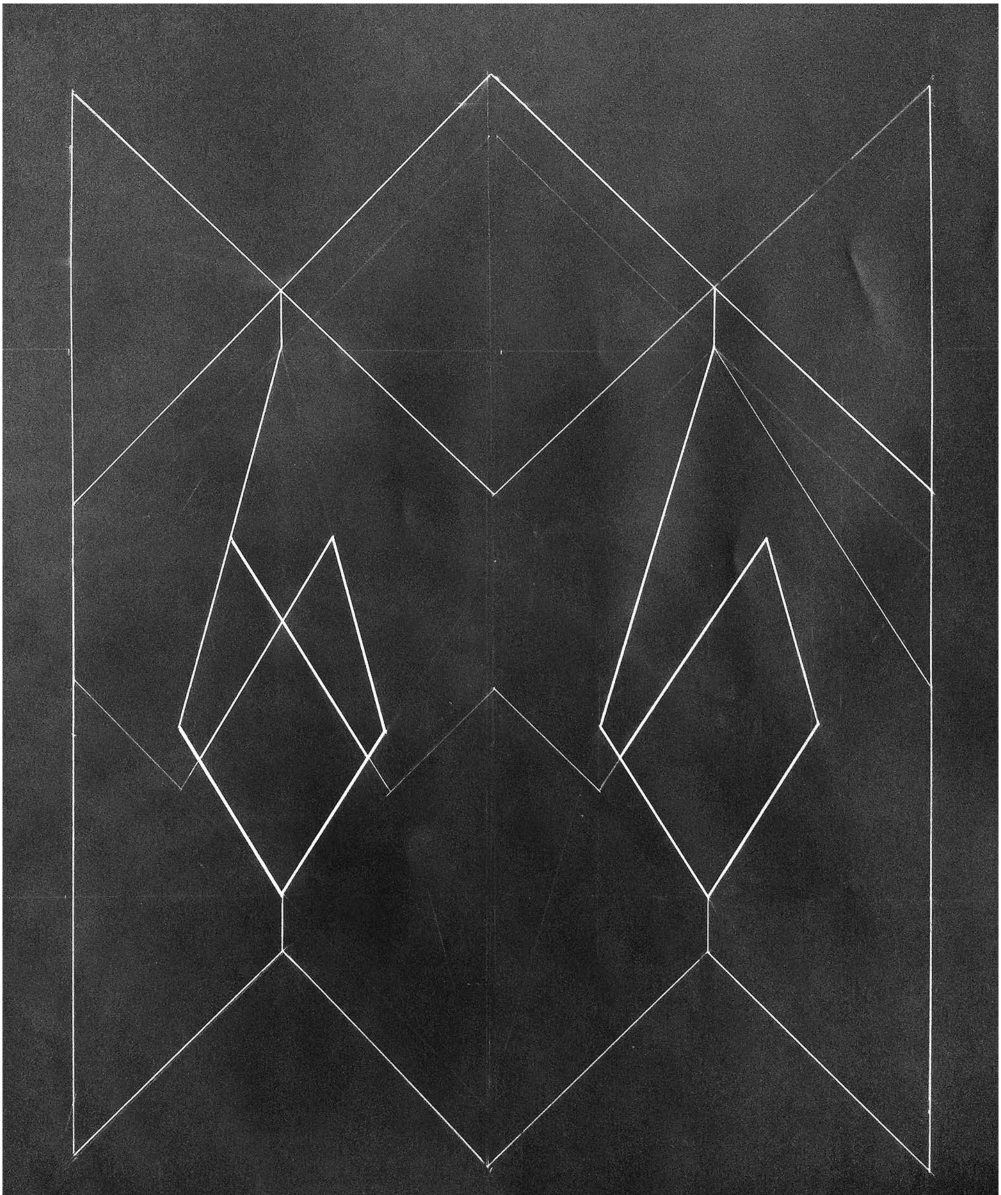
But such exactness would seem impossible to render in physical form. The problem is most acute in the joints between the aluminum pieces at the corners of each cut, where intricate geometry necessitates sharp corners and tricky folds in their lining. Here, rather than two weightless planes meeting in a line, Oppenheimer is faced with the messy reality of two quarter-inch slabs of metal butting into each other, requiring a physical connection to keep them from falling apart. The artist had several options for these joints. She could have used hardware to create a mechanical connection, but any brackets or screws would have disrupted the visual clarity of the metal surface, introducing a tectonic dimension that seems at odds with their conception. The aluminum could be cut out in pieces and welded together at angles, but this would be labor-intensive, requiring extensive grinding and hand finishing, and it would be nearly impossible to achieve a crisp corner given the additional material deposited in the joint by the welding process. Alternately, the aluminum could be formed on a break-bender, a tool used to make precise folds in sheet metal. Oppenheimer has experimented with

Fig. 5
Assembly diagram, 2012
Dimensions variable

this last option, but although the tool creates bends with a tight enough radius to be suitable for a wide variety of architectural and industrial design applications, she found it to be too imprecise for her purposes. Bending a sheet alters its dimensions minutely, creating a nearly imperceptible distortion by compressing the material on the inside of the fold and expanding the material on the outside.

The technique Oppenheimer has developed, in close collaboration with her fabricators, is analogous to folding paper along a perforated line. Using a CNC milling machine, Oppenheimer removes a thin channel of material from the line along which the sheet is to be bent, and drills evenly spaced holes to facilitate folding. Distortion still takes place, but only across the thin sliver of material left at the joint, and with so much less metal being crunched on the inside of the fold and stretched on its outside, the corner can be formed with near perfection. Moreover, Oppenheimer has developed another software plug-in that largely automates the translation from the flat plane of her model into a cut file for the mill. Despite the origami-like structures the technique produces, then, it has nothing in common with so-called paper architecture, a phrase often used by designers to lend a sheen of avant-gardism to their willful neglect of material problems. Nor is it the “file-to-factory” fantasy of totally automated digital fabrication, where materiality loses its specificity by being entirely subsumed within technological processes, reduced to the generic abstraction of 3-D printer powder. Instead, Oppenheimer uses her software

Fig. 6
A/B/C/D/E/F condition:
orientation diagram, 2012
Ink on paper
22-½″ x 26-¼″ (57 x 66.6 cm)



to translate the precision of her digital models into real material structures.[4]

Her construction method is also diametrically opposed to the typical architectural approach. Traditionally, architects start with an assumption about the degree of imprecision inherent in their building materials and work backward, building a contingency factor known as construction tolerance into their designs. While the degree of acceptable tolerance varies greatly depending on the kind of building, the ambition of the architect, and the skill of the builder, in the case of a typical workaday structure–for example the kind of interior stud wall in which Oppenheimer often intervenes (or emulates in her additions to the rooms in which she works)–a normal tolerance would be in the range of a half inch; this means that a given component of the wall could be located anywhere within a one inch zone surrounding the point at which it was drawn on the plan. Working with such a wide tolerance is almost like looking at space through a blurry lens–it is impossible to tell exactly where anything is. Oppenheimer's approach, on the other hand, allows her works to be constructed to a tolerance of less than one thirty-second of an inch: she sets space into razor-sharp focus. While at first glance her work looks like architecture, then, it actually belongs to another spatial order entirely (this is even true of the seemingly unassuming partitions she often introduces–while they appear to be typical Sheetrock walls, they are actually constructed from MDF, which can be cut or milled to much finer tolerances). This extreme precision establishes a fresh perceptual clarity; viewers become hyper-aware of even the most subtle visual or spatial shifts, and new kinds of effects become possible.

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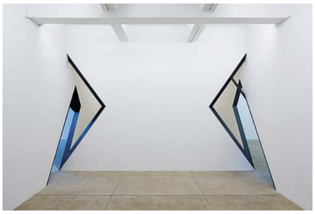
If architecture is the starting point for each of Oppenheimer's works, it is architecture of a specific type: almost all of her pieces are housed within the blank, rectilinear volume of a gallery or museum. These structures have evolved to offer a vision of space at its most coherent. The white box, that ubiquitous viewing environment for contemporary art, emerged from the belief that gallery space should in no way distract from the art it contains–it must be so obviously legible as to go almost unnoticed. And as linear perspective demonstrates so clearly, understanding space is inseparable from the problem of perceiving depth. While depth perception works according to several principles, the distances within a gallery are far too small for atmospheric perspective to come into play, the occlusion of overlapping planes is generally avoided, and the light is so even that strong directional shadows are eliminated. The only remaining visual cue is the recession of lines in space. These "lines" are formed where the boundaries of the room meet–wall to wall, wall to floor, or wall to ceiling. Because we know from repeated experience that galleries are almost always boxes, we know that all of these lines are *actually* parallel. Therefore, any lines that *appear* to converge are read as a sign of depth–just as in a perspective drawing.

Oppenheimer often begins her intervention precisely at the point where these lines are most visible–in the corners of the gallery. The best example of this strategy to date is probably her 2012 work *D-33*, installed in P.P.O.W Gallery in New York. Here Oppenheimer subdivided the gallery into six roughly equivalent squares (using an arrangement of two parallel walls both bisected by the same perpendicular wall) and then carried out a series of incisions through the walls' intersection. (Fig. 7) The most basic effect of this operation was to reshuffle the visitor's sense of adjacency and path of circulation. Because the openings were large enough to pass through, one could move through the spaces diagonally, transgressing the geometry of the grid that otherwise defines the space and enjoying a series of oblique views through the suddenly interconnected rooms. More importantly, Oppenheimer's intervention effectively removed or obscured the corners themselves. And when walls slip past each other, space becomes ambiguous–in a sense, the effect is similar to that generated by a curved photo backdrop or a panorama, where the absence of a definite corner suggests infinite depth.



In this work, and most others, the cuts themselves run obliquely in relation to the walls and floor. This is a deeply subversive move, because it creates diagonal lines that are not necessarily signs of depth. These lines appear to recede in space but they may not, or they may do so at a different rate than the apparently diagonal (but actually perpendicular) lines running along the junctions of

Fig. 7
D-33, 2012
Aluminum, glass, architecture
Dimensions variable

the walls with the floor and ceiling. The result is wildly exaggerated or confused readings of the extents of the room. For the viewer, walls no longer remain upright, but seem to lean crazily or threaten to collapse inward, as if the gallery had been rebuilt according to some mad, expressionist geometry.

All of this is the product of false signs of depth. To the degree that perspective is indeed a visual language–a symbolic form, as Erwin Panofsky famously argued–Oppenheimer is deconstructing it, piece by piece.[5] Indeed, when several successive generations of twentieth-century artists rejected perspective and the depiction of space in favor of actual spatial intervention, they did not really leave the problem of representing space behind. For when it comes to space, and particularly depth (the primary subject of perspective), experience itself essentially amounts to an act of systematic interpretation; even in physical space, we perceive depth primarily by "reading" the signs of perspective. Yet, as countless commentators have pointed out, perspective approximates, but cannot fully capture, depth as we live in it. In his *Phenomenology of Perception*, Maurice Merleau-Ponty referred to depth as "the most 'existential' of all dimensions" because "more directly than the other dimensions of space, depth forces us to reject the preconceived notion of the world and rediscover the primordial experience from which it springs."[6] This explains why Oppenheimer's incisive plays of diagonal lines seem to have more urgency and impact than we would expect from a purely linguistic operation, no matter how radical; in disrupting perspective, they encourage us to look past it, and thereby rediscover some of space's raw, enigmatic character.

Yet these same works also undertake fascinating plays with flatness. Because the aluminum lining is a deep, matte black that absorbs light rather than reflects it, the metal bands tend to flatten out, almost as if they are hovering vertically in front of one's plane of vision. This graphic, almost pictorial quality creates eccentric patterns so complicated that it seems impossible that they could have been generated by simply carving through the intersection of two perpendicular planes. But while the practice of "cutting a section" has long had an explanatory and clarifying function in architecture, used to create drawings that reveal a building's underlying order, it is also an excellent way to release underlying complexity by abruptly reducing the three dimensions of a given spatial configuration to the two-dimensional plane of the slice. A section drawing relies heavily on the convention of making an incision along an axis parallel to the walls of a building. Crucially, the plane of this cut is also perpendicular to the direction of the viewer's gaze. In other words, a section drawing is organized so that you are looking straight through the imaginary window that constitutes both the drawing's surface and the section cut. This logic is, in a sense, replicated by the typical mode of viewing two-dimensional work in a gallery, where a visitor looks directly at a wall, directing his or her gaze to meet it squarely at ninety degrees. Routine punctures in gallery walls such as windows and doors don't look alarming, because they create holes that are parallel to both our viewing plane and the walls themselves. But when the plane of cutting is not parallel to the plane of viewing, the compression of three-dimensional space into the two-dimensional surface of the cut quickly gets out of hand. In this way, an oblique slice through two perpendicular, intersecting walls can suddenly produce an eccentric figure that looks something like the result of a jarring collision between two mirrored Ys, a shape so complex it seems impossible for it to have been contained within the sober geometry of a ninety-degree corner. Oppenheimer thus reminds us that even if the typical room has been constructed to ensure that space is as legible as possible from our particular point of view—lines neatly receding into the distance, walls reassuringly straight, and corners at exactly ninety degrees—the space contains latent complexities that are revealed as soon as it is analyzed according to another logic.

As if all of this were not enough, Oppenheimer has also used glass to introduce another layer of visual effects into many of her pieces, most impressively with *33-D*, 2014, installed at the Kunsthaus Baselland. Glass can produce extraordinarily complex perceptual effects, but architects tend to domesticate it. Safely contained within a frame, and set parallel to our plane of vision (as in most windows and doors), it is something we look through and rarely notice. But take it out of its frame, and its edges will disappear. When viewed from an oblique

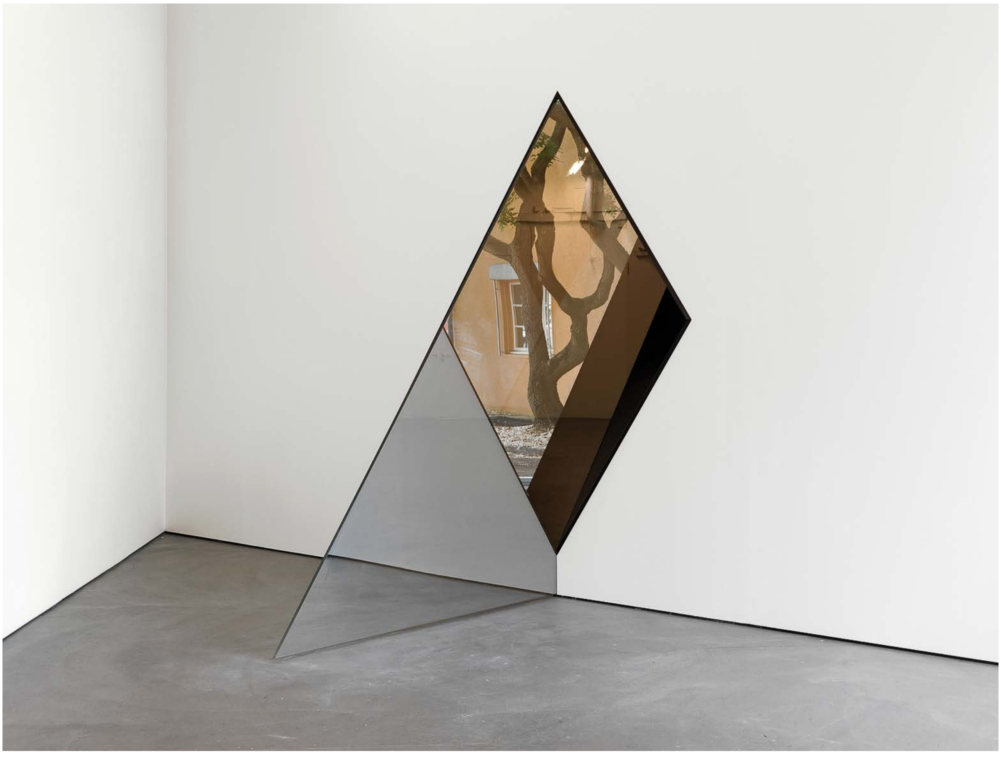
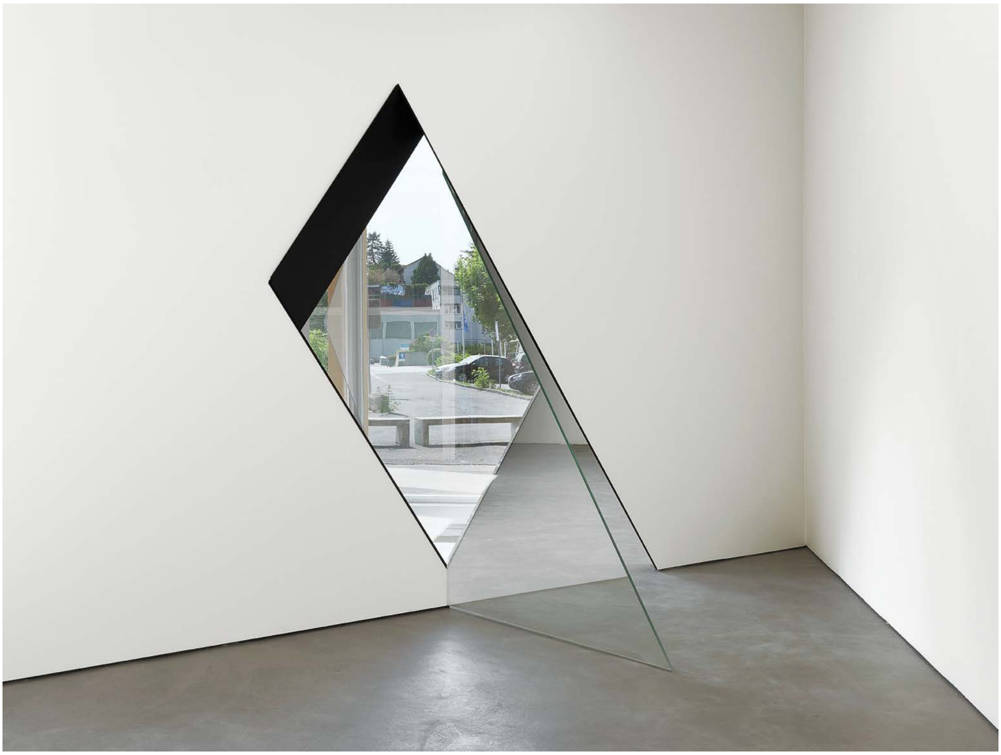


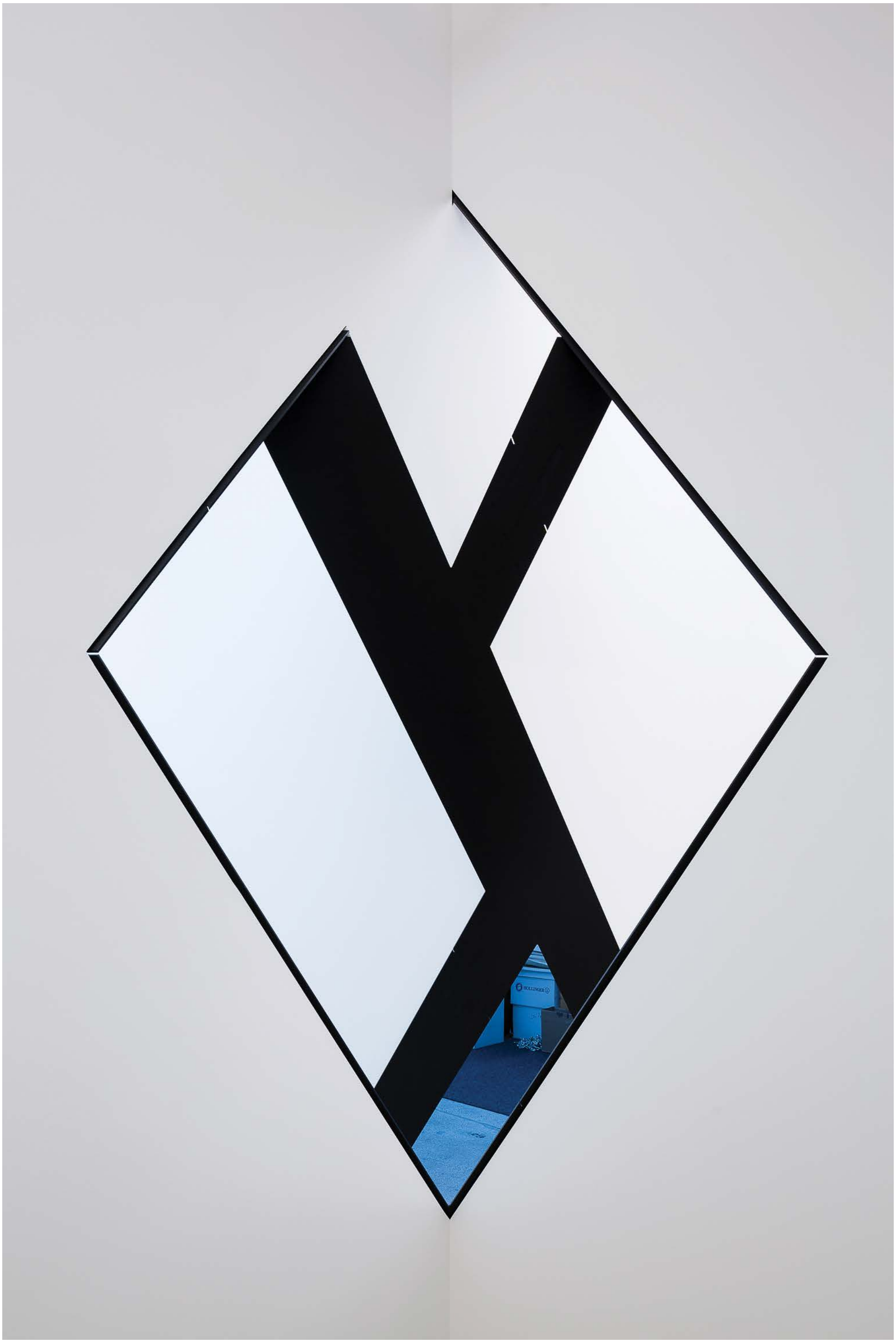
Fig. 8
Two views. *33-D*, 2014
Aluminum, glass, architecture
Dimensions variable

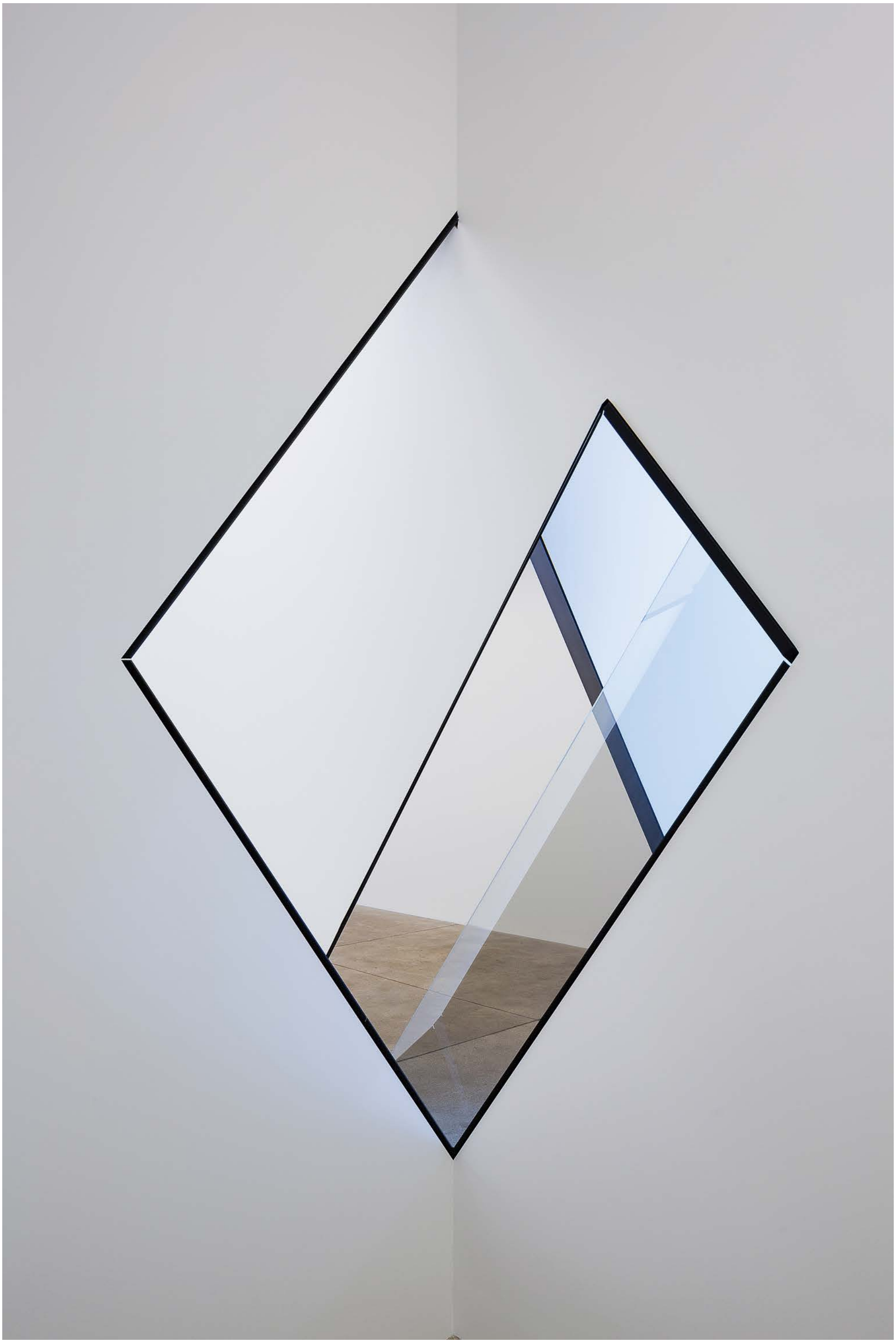


angle, or tilted in relation to the plane of a wall, it will bounce one's gaze in unexpected ways, producing destabilizing reflections. In *33-D*, Oppenheimer has inserted a sheet of glass into each of the two main openings (cuts through white walls lined in black aluminum, similar to those in *D-33* and most of her other works from recent years) that constitute the piece. (Fig. 8 & 9) The glass is rotated ninety degrees from the wall and passes through the aperture, so that it protrudes into the room on either side. Oppenheimer has purposefully left the edge of the glass sheet unpolished, its dull, milky surface melting into the air rather than creating a strong visual highlight, so that locating the edge of the sheet or understanding its orientation or dimension becomes extremely difficult; this indeterminacy blends the space of the work into that of the surrounding room.

Adding to the confusion about where the glass stops and starts–indeed, where it *is* at all–each sheet is exactly perpendicular to the floor, in the same vertical orientation as the wall it intersects, which means that it reflects that wall in such a way as to precisely double it. In other words, looking at the glass, one sees a perfect continuation of the line where the wall meets the floor, as if the wall itself continues and the glass is not there. This seemingly simple visual sleight of hand is entirely dependent on the remarkable precision with which Oppenheimer's works are constructed–if the glass and the wall were even a fraction of an inch out of alignment, the reflected line would swing up or down and the effect of continuity would be broken. It is also perhaps the most thought provoking of her interventions. Most perceptual illusions are constructed around a single point of view, and so are quickly exposed to the roving viewer. This is certainly true of a perspective view constructed on a flat plane, as Brunelleschi himself emphasized in his most famous demonstration of his newly invented technique, wherein he forced viewers to look through a peephole at the reflection of one of his paintings in a mirror—rather than at the work itself—in order to ensure that it could be seen only from the point from which the illusion was most convincing.[7] But in *33-D*, the doubling of the reflection is *not* dependent on a fixed viewpoint, because it is solely the result of the relationship between the glass and the wall—of shared vertical orientation and perpendicular intersection—and accordingly, the effect will remain the same no matter where the viewer travels within the room. The persistence of this illusion even in the face of the viewer's movement calls into question the commonly assumed opposition between the way things seem and the way things are that is both endemic to art and architectural theory and as old as philosophy itself. Alberti, for example, dismissed visual effects as "deceptive" because he saw them as divorced from the objective standards by which architecture should be measured. But the ghosted wall created by Oppenheimer's reflective glass reminds us that sometimes the underlying order of the world is in fact made manifest through the impressions it produces, and that experience is neither entirely

Pages 52–53
Fig. 9
Two views. *D-33*, 2012
Aluminum, glass, architecture
Dimensions variable


HOLLINGER



subjective nor totally objective: it is a bridge between appearance and reality.

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A common trope in the discourse emerging around Oppenheimer's practice is the description of her pieces as disorienting. But this reading is a disservice to her work, which is about nothing so easily comprehensible as perceptual incomprehension. That narrative also fails to distinguish her contributions from the flood of work in recent decades that, in the guise of an exploration of experience, posits space as both immersive and essentially unknowable, an atmospheric condition or affective medium, favoring special effects that extravagantly transgress the limits of perception. In a sense, such work has fled from the inherent incongruities of space, as if surrendering to their insolubility. But these contradictions will continue to animate Oppenheimer's work precisely because she too recognizes them as ultimately unresolvable. Layering multiple articulations of space–some complementary, some contradictory–into a single architectural container, Oppenheimer abandons the binaries and dialectics that have so long structured our understanding of space in favor of a carefully calibrated embrace of simultaneity.

1 Appropriately, given his views on its application, Alberti published his description of perspective not in his writings on architecture but in his treatise on painting: Leon Battista Alberti, *On Painting*, trans. John R. Spencer (New Haven: Yale University Press, 1966). Originally published as *De Pictura* in 1435. His warning against its application in architecture was published in his treatise on architecture, *On the Art of Building*, discussed below.

2 Leon Battista Alberti, *On the Art of Building in Ten Books*, trans. Joseph Rykwert, Neil Leach, Robert Tavernor (Cambridge: MIT Press, 1988), 34. Emphasis mine. First published as *De Re Aedificatoria* in 1485.

3 Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (Oxford: Blackwell, 1991), 360. Originally published as *La production de l'espace* in 1974.

4 I am grateful to the architect Leo Henke for sharing his insights regarding the application of computational tools to material problems in architectural construction, which have been invaluable in shaping my understanding of this aspect of Oppenheimer's work.

5 Erwin Panofsky, *Perspective as Symbolic Form*, trans. Christopher Wood (Cambridge: Zone Books, 1997). Originally published as *Die Perspektive als 'symbolische Form'* in 1927.

6 Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (London: Routledge, 2002), 298. First published as *Phénoménologie de la perception* in 1945.

7 For an extensive discussion of Brunelleschi's experiment with this panel, now lost, which apparently depicted the Florentine Baptistery, see: Hubert Damisch, *The Origin of Perspective*, trans. John Goodman (Cambridge: MIT Press, 1994), especially pp 88–98. First published as *L'origine de la perspective* in 1987.

EKPHRASIS

Stephanie Weber

Man, well protected within the four walls of his familial existence, lets the world come to him without peril, certain of being in no way changed by what he sees and hears.
–Maurice Blanchot[1]

What does it mean for an artwork to be essentially irreproducible in photographic form? The question is especially germane today, when the quantity of art shown at any given moment has long and far surpassed what even the most dedicated and geographically agile of us can absorb, and when the way in which we encounter the image (mainly through touchscreen technology) has changed so drastically. Photographs of individual works stand for an artistic oeuvre and are selected by art institutions for the way in which they appear when printed or embedded digitally. It is oftentimes not one of the most important works from an exhibition that will be chosen to represent an artist's work or presentation's premise, but the picture that 'works best' in reproduction. Despite its inherent porosity to context and chance, the photographic reproduction remains the primary medium through which we encounter artwork.

Sarah Oppenheimer's work largely escapes representation through the photographic image. Attempts at depicting her installations, for which the artist subtly alters (our perception of) a given space's architectural and material conditions through concrete intervention into the built structure and manipulation of the light conditions, result in fascinating images as long as one relinquishes the documentary relationship to the referent. An image of Oppenheimer's project *W-120301* (2012) in Baltimore's Museum of Art, for instance, resembles a shaped canvas or an abstract c-print more than what it is: an ensemble of three large openings piercing through the walls on different floors and sections of the museum's contemporary wing, extending an otherwise concealed space within the museum's walls. (Fig. 1) While we could pursue an analysis of the economic repercussions of the inability to photographically depict the work, I instead would prefer to interrogate the conceptual implications of a practice that unfolds primarily in space, time, and touch. Further, I would like to argue that Oppenheimer's work has an intricate relationship to language, one that it is both generative and disruptive.

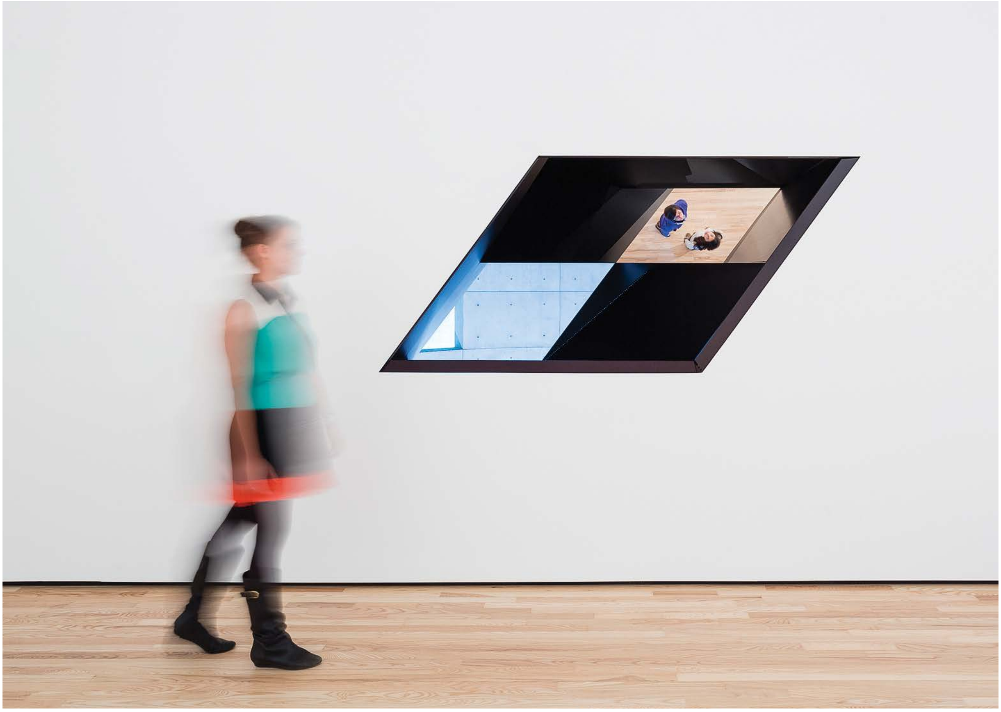
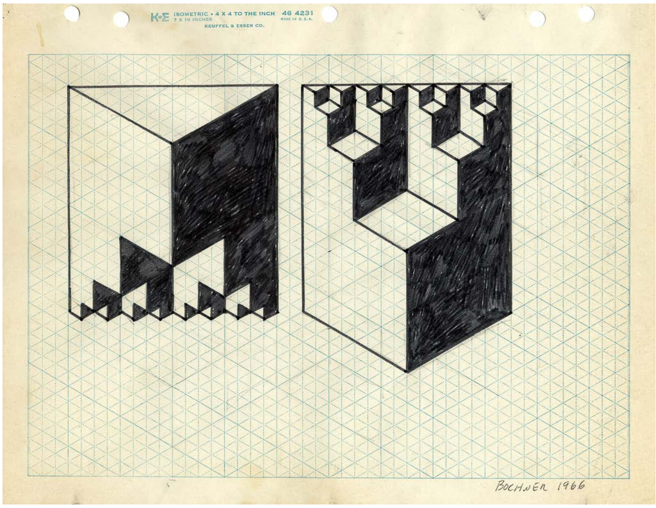


Fig. 1
Two views. *W-120301*, 2012
Aluminum, glass, architecture
Dimensions variable
Collection of the Baltimore Museum of Art

When first physically encountering Oppenheimer's *D-33,* I was immediately struck by the encompassing nature of her intervention, the unexpected perceptual shifts it provoked, and the lack of resemblance to the images I had previously seen. In *D-33*, the artist had reconfigured the architecture of the gallery space[2] by incising the corners of six of its rooms, thus disrupting the integrity of each of the discrete spaces. In addition to removing quite a bit of wall material, Oppenheimer had lined the borders of these incisions with bands of matte black aluminum, which protruded into the space in some areas. The artist's manipulation of the light conditions through the use of different fluorescent tubes in each of the spaces further complicated the resulting visual effect, and evaded a potential classification of her intervention in solely subtractive terms (a tempting assessment, especially with a view to related subtractive practices such as, for instance, Mel Bochner's progressive drawings based on Cantor's Paradox). (Fig. 2)

I wondered how one could achieve a more truthful representation of the installation's immanence and phenomenological Thingness–the fascinating question of the works' borders or lack thereof and the element of sensorial displacement–in the absence of physical experience. Broaching the question with Oppenheimer while standing in *D-33*, I suggested that a future publication about her practice might forgo the use of images all-together and engage instead in ekphrastic[3] descriptions, and I hypothesized that the ekphrasis might result in a more complete

Fig. 2
Mel Bochner
Study for Double Solid Based on Cantor's Paradox, 1966
Ink and pencil on graph paper
8-½″ x 11″ (21.59 x 29.21 cm)



encapsulation of the destabilizing effect and ontological questions provoked by her work. This proposal might seem contradictory, as the oft-cited flaw of the ekphrastic method, understood here as "the verbal representation of visual representation,"[4] is the alleged impossibility of translating visual experience into language. As the same flaw is characteristic of the photographic medium, I maintain that the ekphrastic focus on the subjectiveness of experience of seeing may be more useful in representing Oppenheimer's work than a photograph's purported truthfulness. Although this text will not engage in such ekphrastic descriptions of Oppenheimer's installations, the contemplation of ekphrasis as a concept proves interesting in other ways.

First theorized in Greek drama to refer to the poetic or literary evocation of art, ekphrasis originated in rhetoric and was later appropriated by literary critics and art historians. Up until the late 19th century, when photographic reproductions became more widely available to the mass market due to newly invented photomechanical processes, ekphrasis, along with etched and lithographed drawings, was the key device used to illustrate and contemplate art objects and architecture in absentia. James A.W. Heffernan[5] suggests that the museum, "the shrine where all poets worship in a secular age,"[6] gave birth to the 20th century understanding of ekphrasis. By making works of art available for study, the museum "begot a new kind of ekphrasis, a poetry generated by contemplation not only of actual works but also of the place where they were displayed."[7] Since the birth of the museum, the reception of art and its presentation have been inseparably intertwined,[8] a fact that is particularly relevant in thinking about Oppenheimer's interventions.

Oppenheimer is acutely aware of architecture's and contemporary art's ideological functions. Every example of architecture, be it the particular gallery space hosting *D-33*, a museum, a condo, a housing project, a brownstone, or an office, is always the result of a chain of interests and compromises, code requirements and laws, industrial and material standards, building conventions, financial constraints, and so forth. Oppenheimer calls the uniformity of spatial division of the built environment resulting from this set of conventions "the array," a phenomenon that goes largely unnoticed as most of us take our surroundings largely for granted. Walter Benjamin classified architecture as the “prototype of a work of art the reception of which is consummated by a collectivity in a state of distraction.”[9] The art institution, modernity’s secular hybrid of architecture and art, is no exception to this rule. The museum, as the mother of all art institutions, houses, conserves and presents works of art. It also determines our very experience and understanding of art, all the while attempting to conceal its ideological function. The history of art here is usually told as a temporal progression, a sequence of spaces narrating the course of artistic developments, each link in the chain defined by the size of a gallery and the decisions of a curator.

Language plays a decisive role in art’s representation in the museum: object labels, explanatory curatorial wall texts, and exhibition leaflets serve as ‘interpretive materials’ accompanying the works. As Heffernan argues, “Synechdotically, the museum signifies all the institutions that select, circulate, reproduce, display and explain works of visual art, all the institutions that inform and regulate our experience of it–largely by putting it into words.”[10] The particular type of writing employed here–usually authored by a curator (or their uncredited assistant) in dialog with the education department and an editor–is the result of a chain of conventions (the authorless museum voice), constraints (word count) and compromises (editing process) similar to those that lead to the standardized spatial array.

During the phase of its conception, a future project of Oppenheimer's solely exists in the realm of abstract images (digital drawings drafted in architecture software, light models and material tests) and pragmatic administrative language. While one could argue that abstraction and representation in language are common for all things that are not (yet), in Oppenheimer's case, this relation to the administrative is not a mere side effect, but a constitutive element and ontological extension of her work's immanent qualities. Altering an institution's building, removing sections of its walls, floors or staircases requires long-winding email threads of correspondence between artist, curator, institutional management, legal departments, architects, exhibition designers, engineers, and trustees, all of which employ slightly different registers of language and terminology.

As part of the planning of *33-D*, an installation at the Kunsthaus Baselland, the artist and a small group of people engaged in an email exchange that forms the ekphratic residue of the work's development. The correspondents included the director and curator of the institution, a carpenter, an architect based in Basel, an architect in Zurich, and a third architect working with Oppenheimer in New York. Their emails grappled with the process of construing spatial conditions that none of them were physically experiencing. Particularly pertinent to the predicament of the conversion from visual data to lexical evocation is an email by Oppenheimer, in which she provides a textual synopsis of the content of an attached pdf document. The document contains a multiplicity of intricate computer drawings pertaining to the production of MDF panels, lumber frames and the like. While the drawings are highly specific, Oppenheimer must still turn to language to clarify which aspect of the project these drawings represent. Her need to do so is a telling detail that perfectly expresses the combination of precision and unintelligibility that is so characteristic of her work.

Another layer of communicative complexity enters through the varying hierarchical positions inhabited by the project members, as well as through the fact that the crew in Switzerland had to communicate in English. Misunderstandings regarding information as well as tone and intent were impossible to avoid, pointing to the institution's innermost peculiarities. "An invisible set of political forces," as Oppenheimer phrased it, comes into play when challenging the institution's routine, generating new representations in language of a different kind and purpose. Their dependence on administrative apparatuses makes each of Oppenheimer's interventions into a tool for probing the core idiosyncrasies of its site. Seemingly innocuous topics such as the structure of a building's ceilings and floors can turn touchy when doubts about the intent of Oppenheimer's plans arise, and those involved fear to provide information in written form. Email often functions as an "anxiety-multiplier," especially when the abstraction of information intersects with a need for absolute precision (in one email Oppenheimer almost apologetically explains why it is important how many millimeters thick the carpet is).

33-D establishes a relay of sightlines between the interior and exterior of the museum through the use of large glass panes reflecting the building's surroundings inside the space. Distinguishing itself from the view from the gallery windows, which occupies the same plane as a two-dimensional wall work, the exterior image here, a rather quaint street view, gains a physical presence, thus drawing attention to the contrast between a geographical site and a common and rather generic style characteristic of many contemporary art spaces.

In order to gain access to the complex entity of the contemporary art institution, Oppenheimer has studied its habitus: her formal language is minimal and elegant and does not appear at first to interrupt its environment. Using sleek, industrially produced materials, state-of-the-art architecture software, and outsourced production processes has allowed her to interfere quite radically into these institutions' membranes. In Baltimore, the artist was actively and significantly involved in the discussions around restructuring the museum's contemporary building; her installation is permanently embedded into the architecture, a major commitment for the institution. Here, Oppenheimer's cuts through various walls revealed a hidden volume between ceiling and floor that was previously used for the building's mechanical and structural systems, the kind of pragmatic necessity that institutions like to keep invisible.

At the Saint Louis Art Museum, Oppenheimer's *Horizontal Roll* (2008) consists of several holes constructed into both new and existing walls, which create unexpected sight lines between the modern and contemporary collections. Piet Mondrian's *Composition of Red and White: Nom 1/Composition No. 4 with red and blue* (1938–42) appeared beside Ellsworth Kelly's *Spectrum II* (1966–67), although the latter is located in an adjacent gallery, and thirty years ahead in art historical terms. (Fig. 3) Oppenheimer's title, *Horizontal Roll,* is a tribute to Joan Jonas' important video work, *Vertical Roll* (1972), which through a complex juxtaposition of medium and content, deconstructs representations of the female body by corrupting video technology itself. Fracturing images of her alter ego Organic Honey on the monitor by means of an interrupted technical signal (the "vertical roll"), Jonas calls attention to the constructed nature of all representation, a central topic in Oppenheimer's work. Her intervention invites formal, historical and political connections, which counter the official narrative of the museum.

By means of her intervention into the museum walls, Oppenheimer has inserted the work of two female artists into the predominantly male collection galleries. Both women are interestingly made present via their absence: Jonas' presence occurs through reference only, Oppenheimer's work, at least apparently, consists of a negative volume. The 'hole,' which is how Oppenheimer herself refers to the typology of her interventions,[11] is in its ambiguous existence, that which is both materially absent and present, an abundantly rich conceptual topos. The artist once called the hole a "catalyst–an agent of

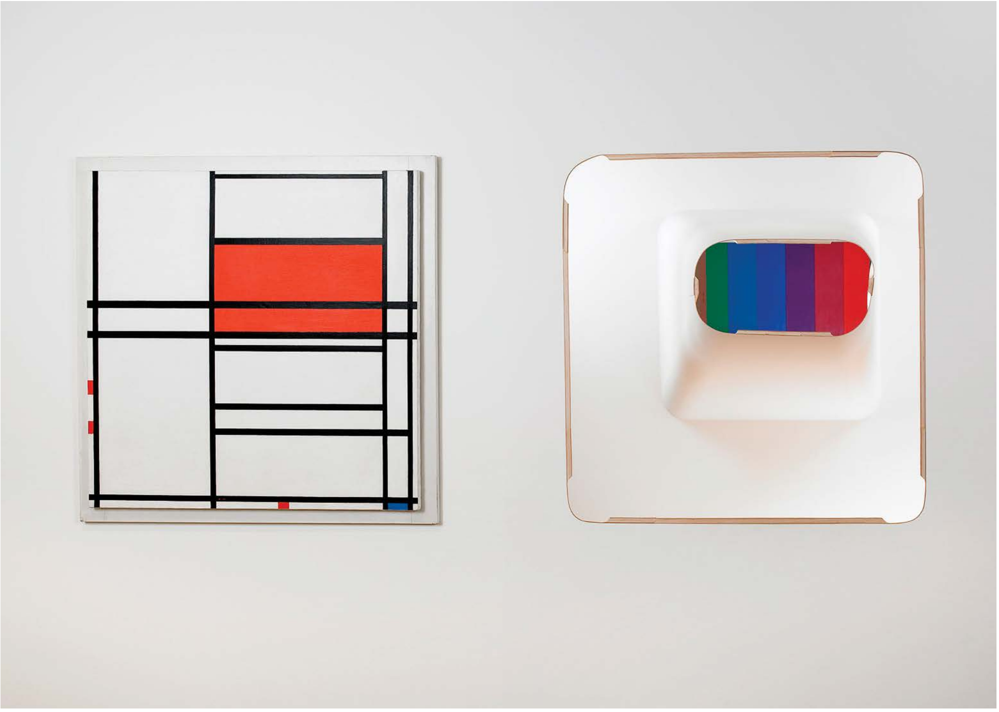


Fig. 3
Two views. *Horizontal Roll*, 2008
Plywood, architecture
Dimensions variable

change."[12] In the context of the art institution, the hole literally and symbolically ruptures a narrative of alleged historical objectivity. From a more specifically feminist standpoint, I read the hole as negated volume, the she-void that is the exception to the rule of the phallic One, represented here by the art historical status quo.

By challenging the visitor's habitual encounter with architecture, Oppenheimer's spatial interruption also allows for surprising confrontations with the artwork. The unexpected perceptual experience of coming across one of Oppenheimer's holes effectively contests the institution's sovereignty in mediating the viewer-object-relationship. Confused, (re)oriented, and surprised by the change in space and perceptual routine, the viewer is offered the chance to see through the conventional modes in which art is represented in order to view art itself, temporarily roused from its institution-induced slumber. With a view to the role of language and its ability to shape the institution's discourse, Oppenheimer provokes a moment of awareness that fundamentally alters the contemporary art museum's very ekphrastic self-identity.

1 Maurice Blanchot, “Everyday Speech,” in Maurice Blanchot and Susan Hanson, ed. *Yale French Studies*, no. 73 (Boston: Yale University Press, 1987), 15. Translated from Maurice Blanchot, “La parole quotidienne,” in *L’entretien infini* (Paris: Gallimard, 1959)

2 At P.P.O.W, New York City, 2012.

3 From Greek *ekphrasis>ekphrazein*: ‘ek’, meaning ‘out of, from’ and ‘phrazein’ meaning ‘to speak, point out, explain.’

4 James A.W. Heffernan, *The Museum of Words: The Poetics of Ekphrasis from Homer to Ashbery.* (Chicago: The University of Chicago Press, 1993), 3.

5 Heffernan is a Professor of English, Emeritus at Dartmouth College.

6 James A.W. Heffernan, “Entering the Museum of Words: Browning’s ‘My Last Duchess’ and Twentieth-Century Ekphrasis,” in Peter Wagner, ed. *Icons - Texts - Ikonotexts. Essays on Ekphrasis and Intermediality.* Berlin, New York: Walter de Gruyter (1996), 264.

7 Ibidem, 263.

8 While the same is true for the artwork and the sacral building, the use and effect relationship between art and architecture here is quite different.

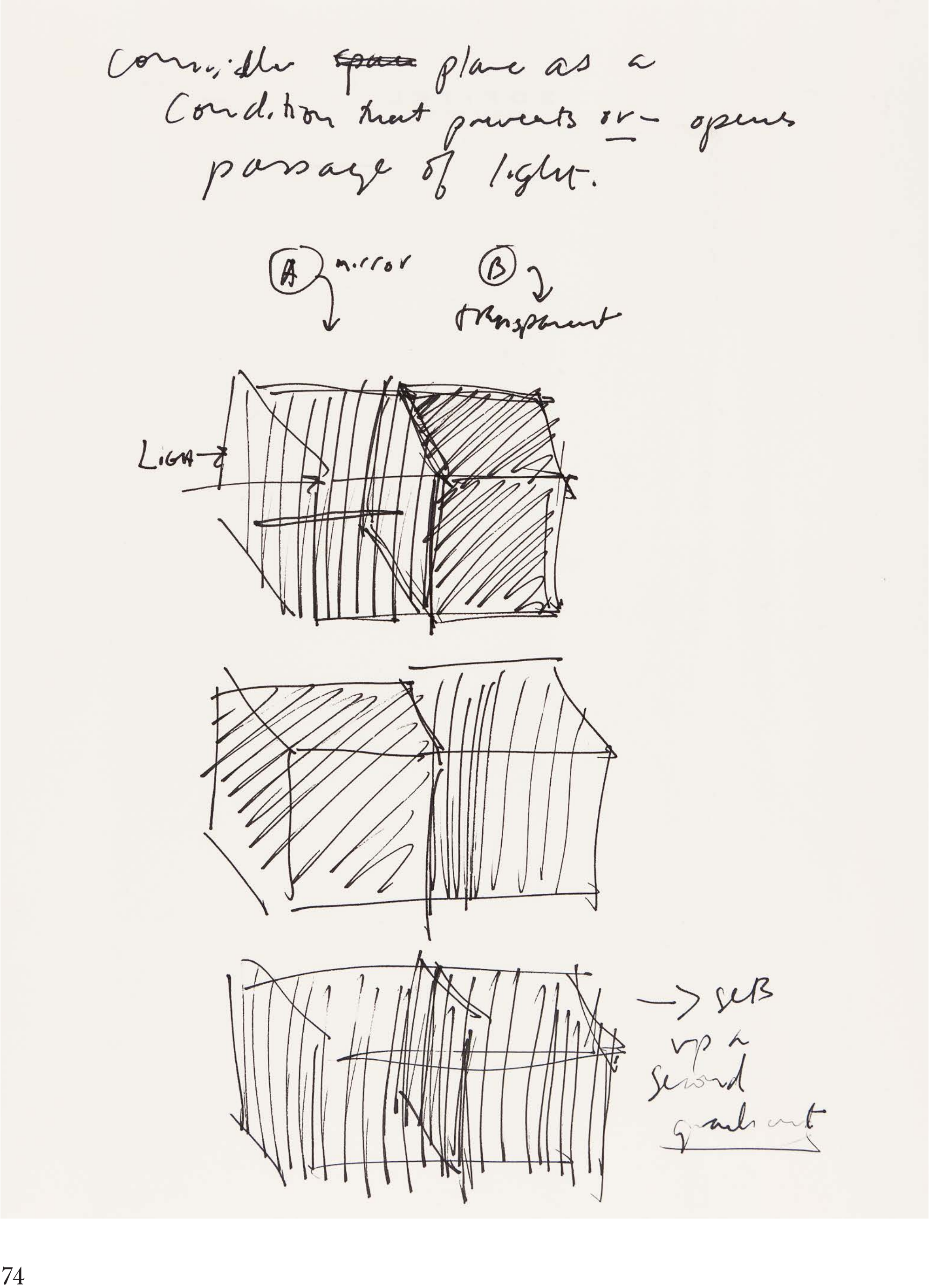
9 Walter Benjamin, “*The Work of Art in the Age of Mechanical Reproduction,*” (written in 1936), in Hannah Arendt, ed. *Illuminations* (New York: Schocken Books, 1968), 23.

10 James A.W. Heffernan, “Entering the Museum of Words: Browning’s ‘My Last Duchess’ and Twentieth-Century Ekphrasis,” in Peter Wagner, ed. *Icons - Texts - Ikonotexts. Essays on Ekphrasis and Intermediality.* Berlin, New York: Walter de Gruyter (1996), 264.

11 Oppenheimer refers to her exploration into the mutability of spaces as a “dictionary of holes.”

12 “Ines Goldbach in conversation with Sarah Oppenheimer,” in *Künstler. Kritisches Lexikon der Gegenwartskunst.* (Munich: ZEIT Kunstverlag GmbH, 2011), 10.

33-D
R&D



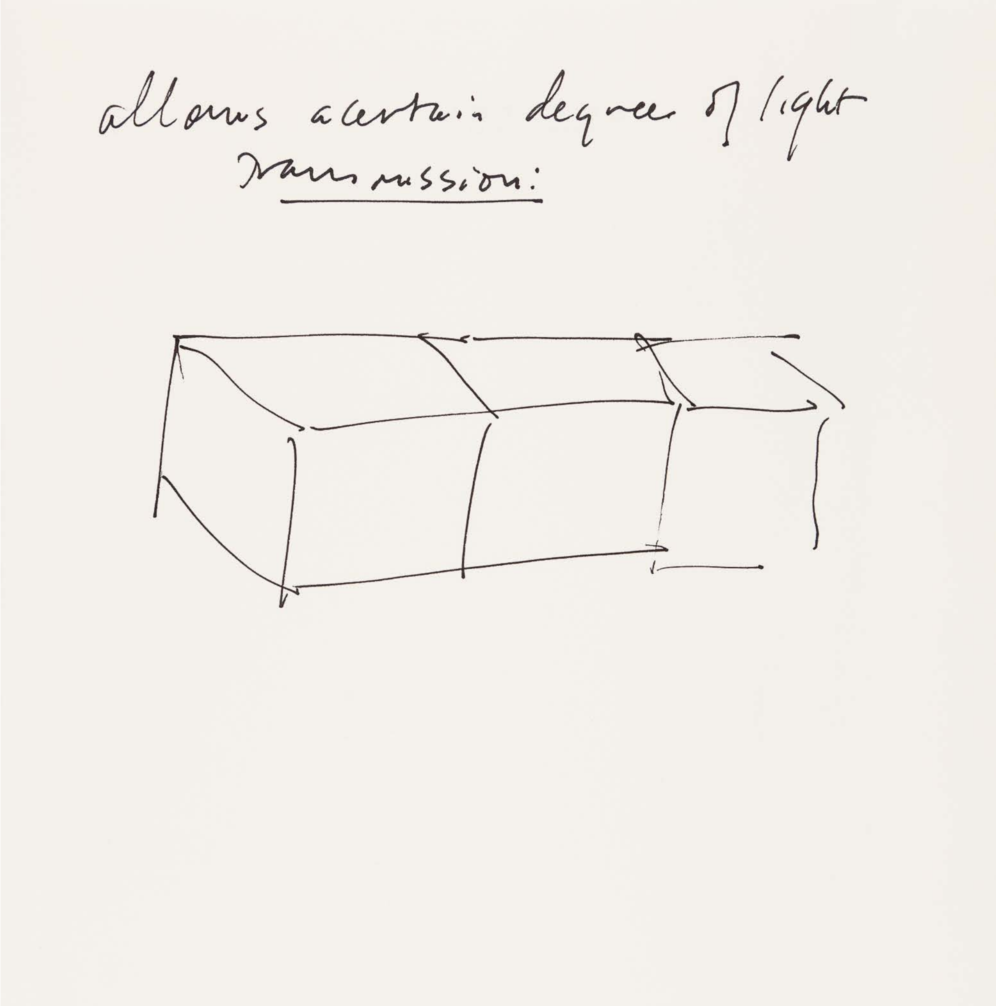
consider ~~space~~ plane as a condition that prevents or opens passage of light.

Ⓐ mirror

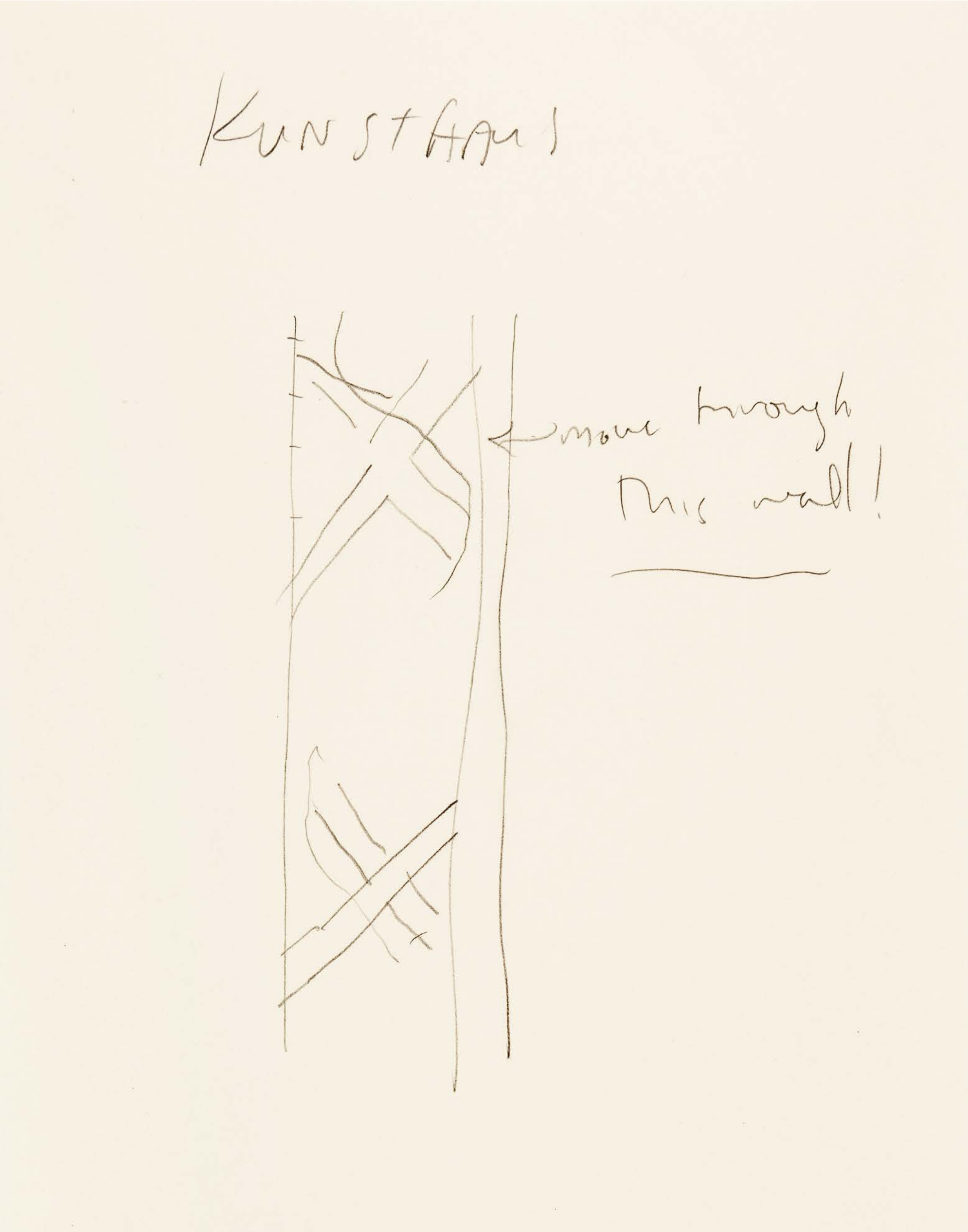
Ⓑ transparent

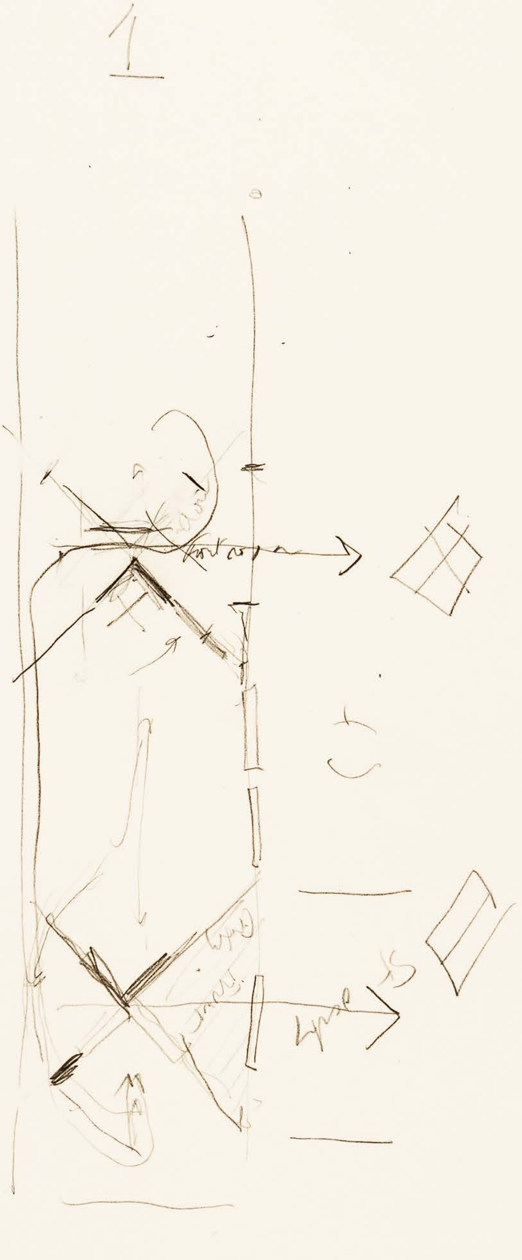
LIGHT

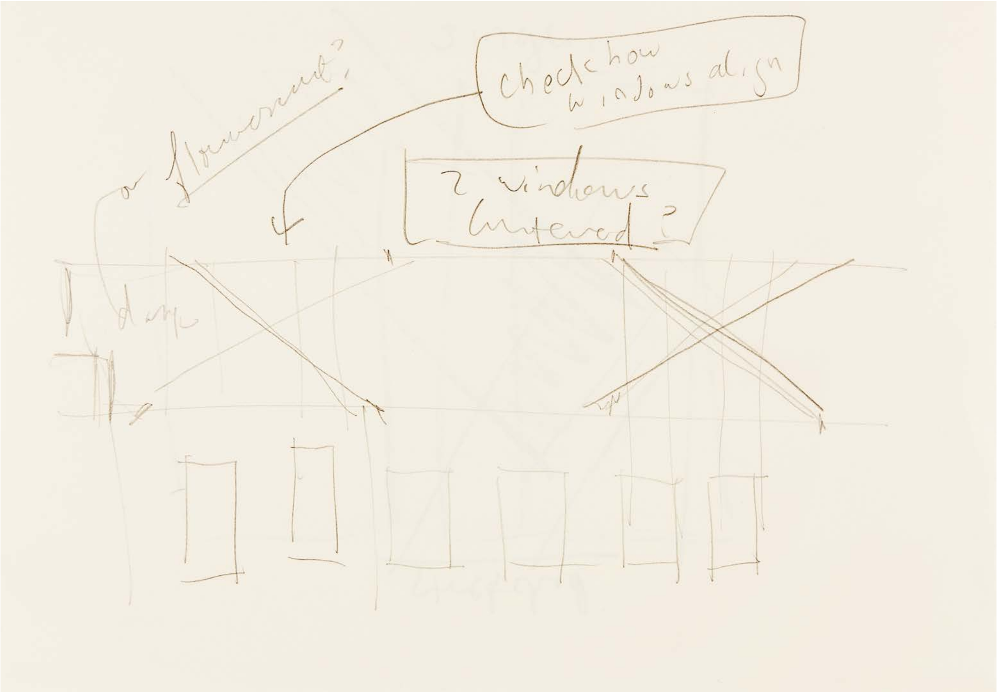
→ set B up a second gradient

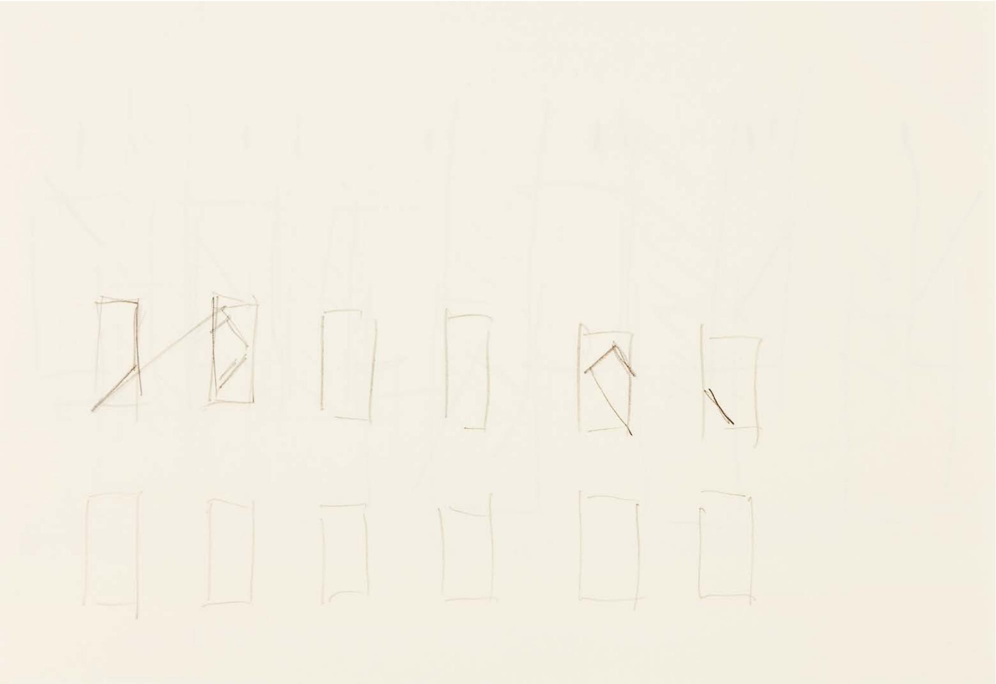


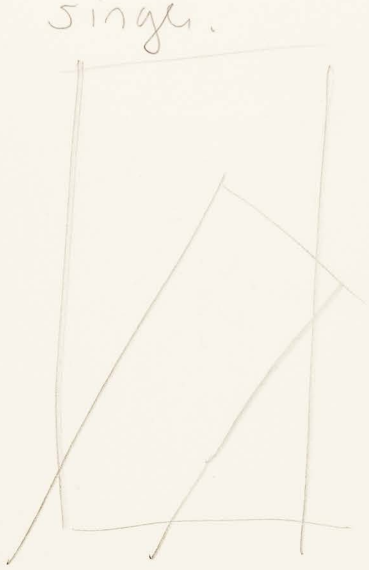
allows acertain degree of light transmission:

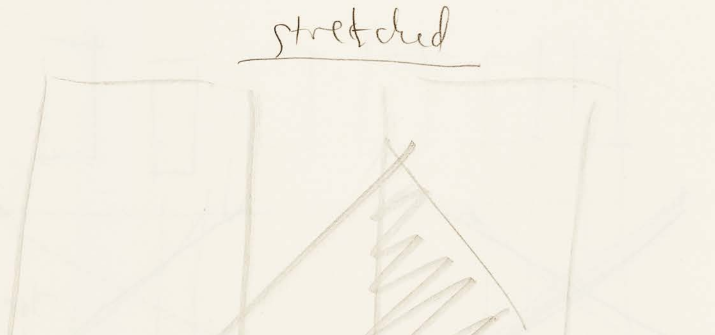

KUNSTHAUS
move through this wall!

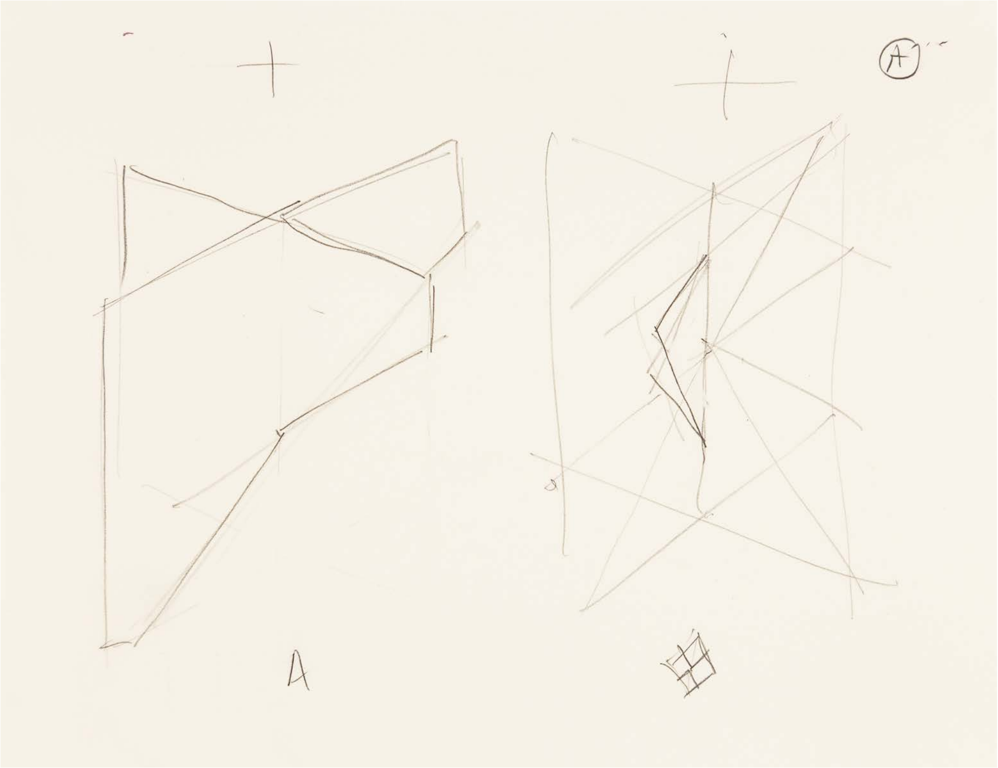

1
Lyse

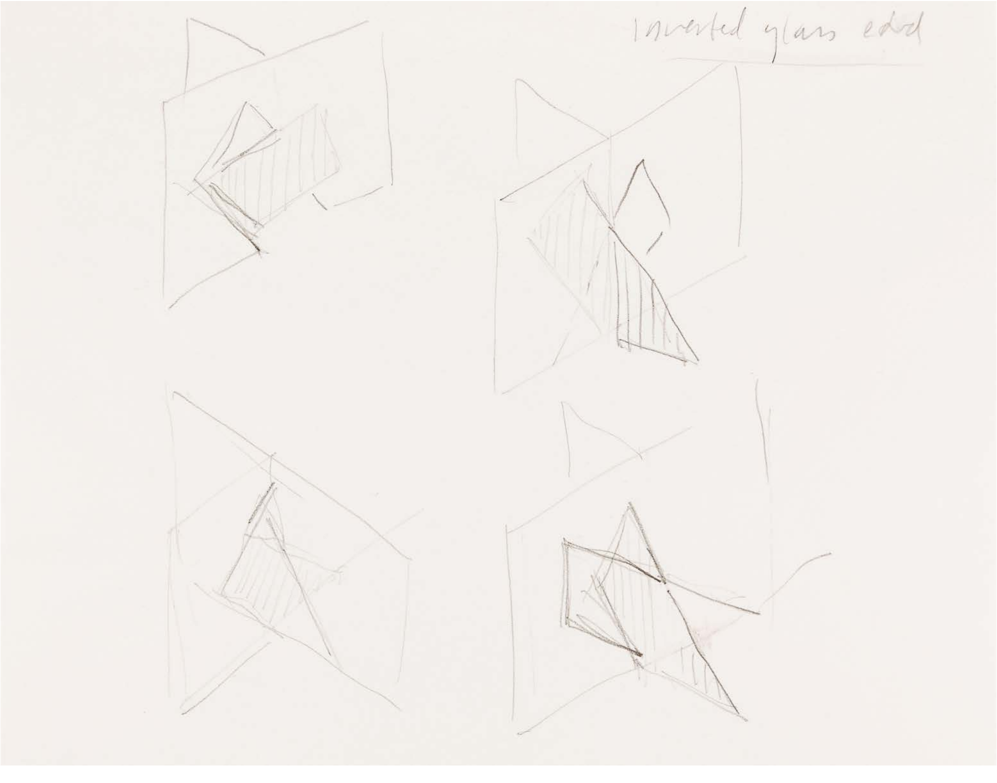

or flowerment?
Check how windows align
2 windows centered?
damp

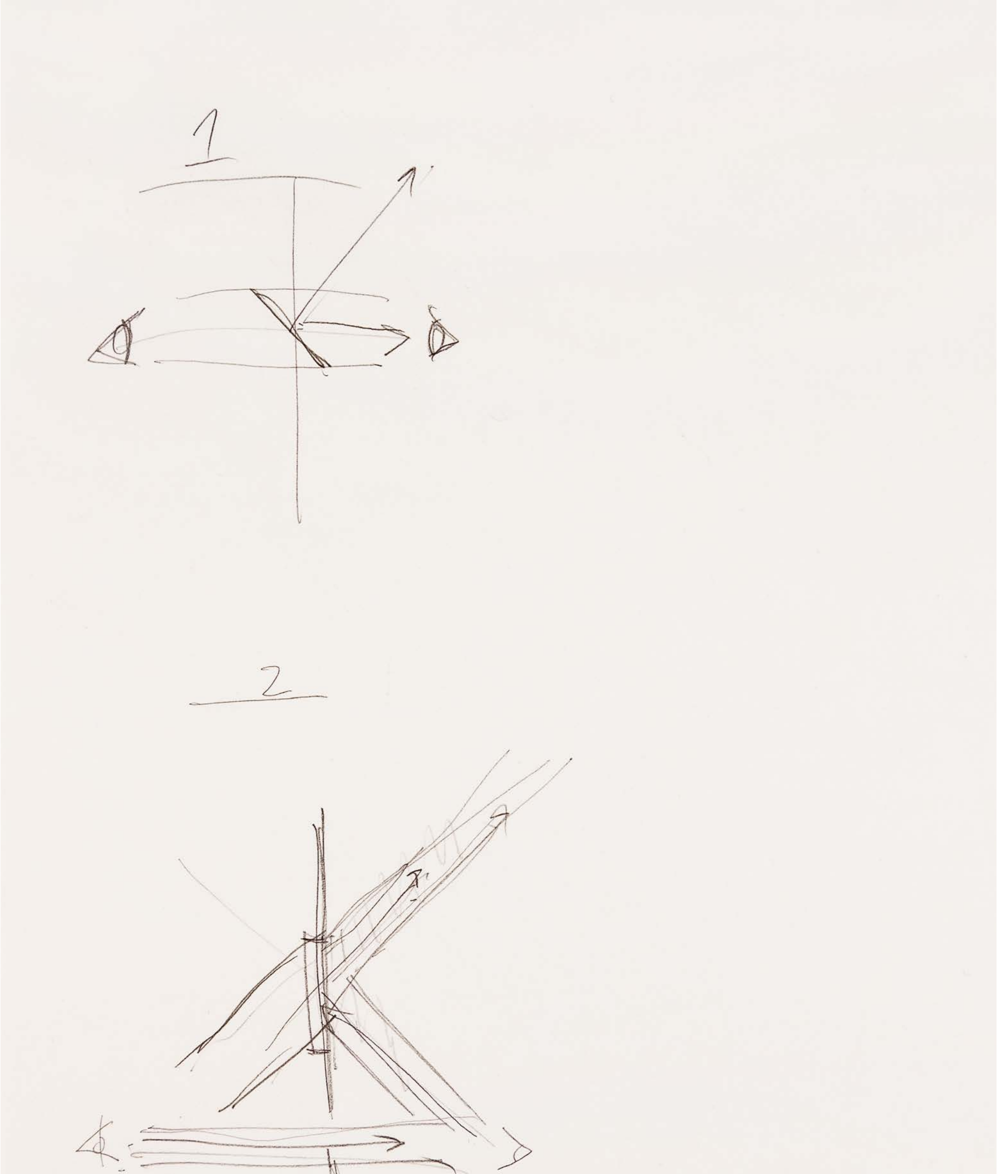


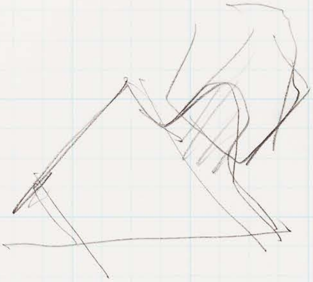

single.


stretched


A
A


Inverted glass edge


1
2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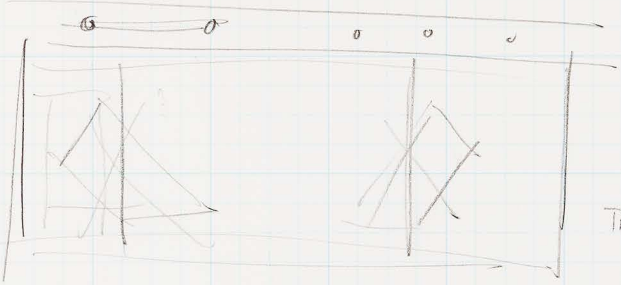
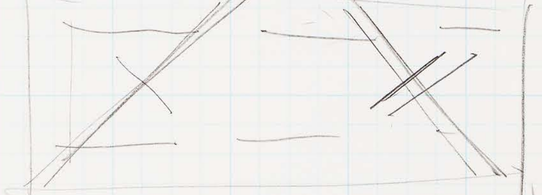

1
THICKNESS


2
THICKNESS

p. 74
A/B condition: transparency notes, 2011
Ink on paper
11″ x 8-½″ (28 x 21.6 cm)

p. 75
A/B condition: transparency notes, 2011
Ink on paper
11″ x 8-½″ (28 x 21.6 cm)

p. 77
Procession diagram, 2013
Pencil on paper
7-⅝″ x 13″ (19.5 x 13 cm)

p. 78
Procession and sightline diagram, 2013
Pencil on paper
7-⅝″ x 13″ (19.5 x 13 cm)

p. 79
Sightline diagram, 2013
Pencil on paper
7-⅝″ x 13″ (19.5 x 13 cm)

p. 80
Sightline diagram, 2013
Pencil on paper
7-⅝″ x 13″ (19.5 x 13 cm)

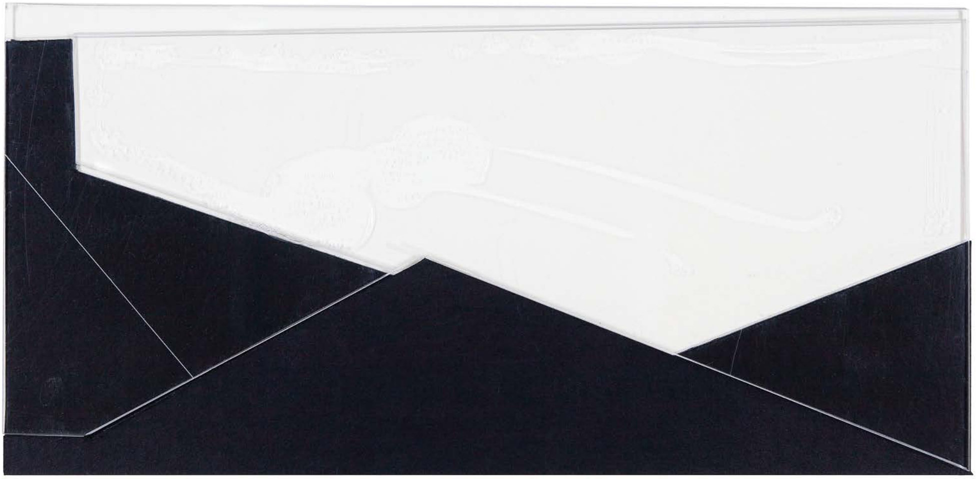
p. 81
Sightline diagram, 2013
Pencil on paper
7-⅝″ x 13″ (19.5 x 13 cm)

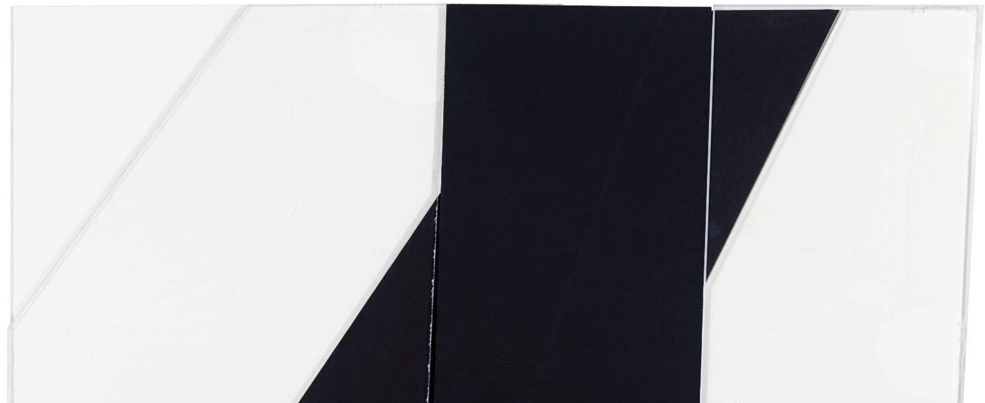
p. 82
A/B/C/D condition: orientation notes, 2013
Pencil on paper
7-⅝″ x 13″ (19.5 x 13 cm)

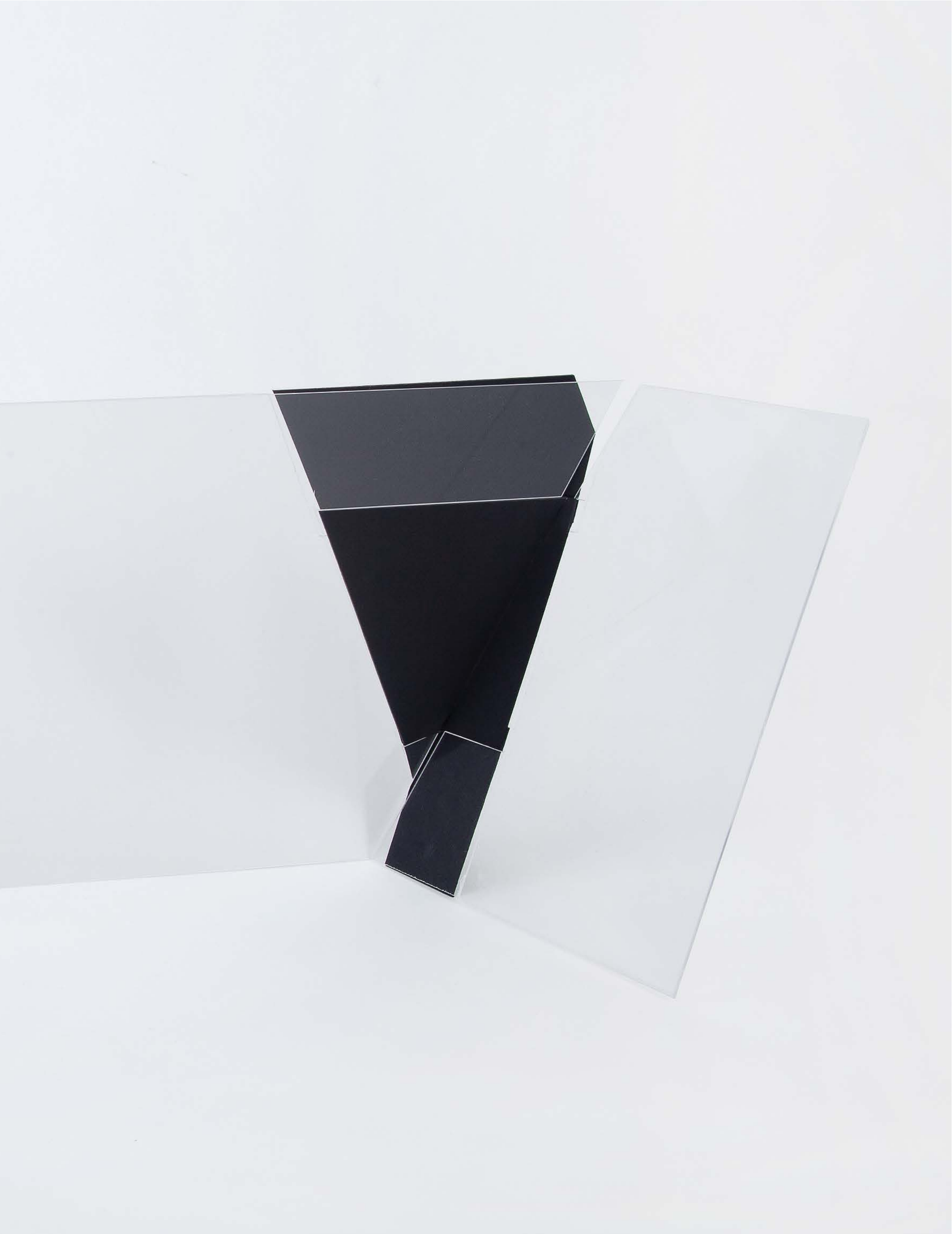
p. 83
A/B/C/D condition: orientation notes, 2013
Pencil on paper
11″ x 8-½″ (28 x 21.6 cm)

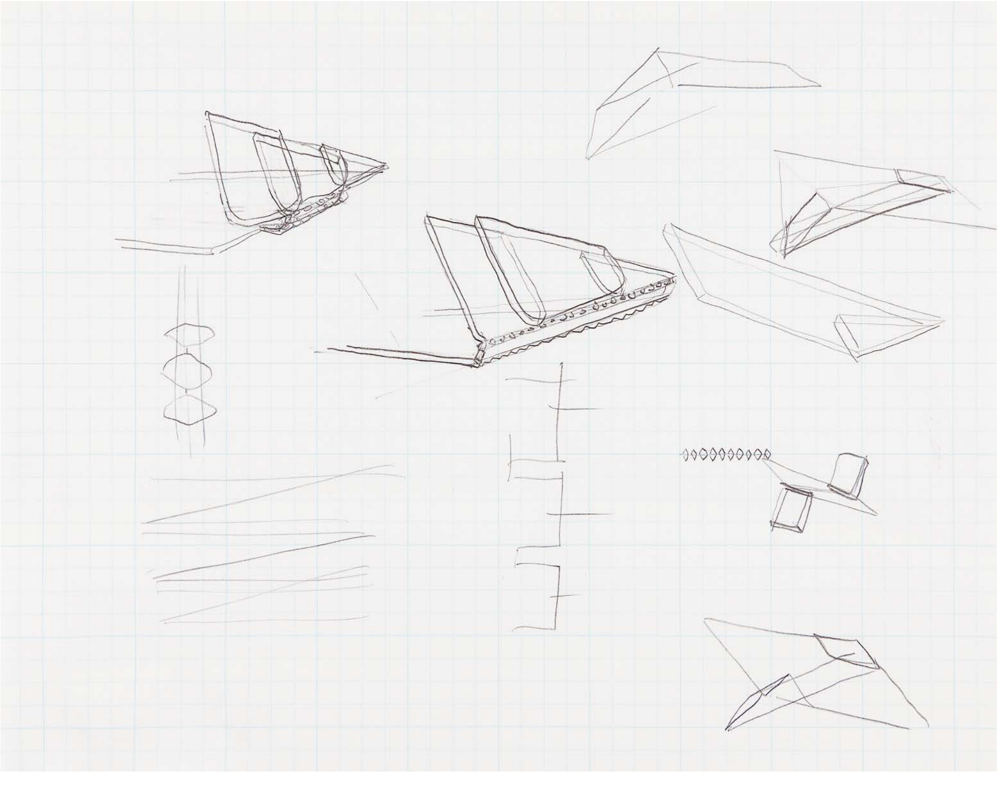
p. 84
Sightline diagram, 2014
Pencil on paper
11″ x 8-½″ (28 x 21.6 cm)

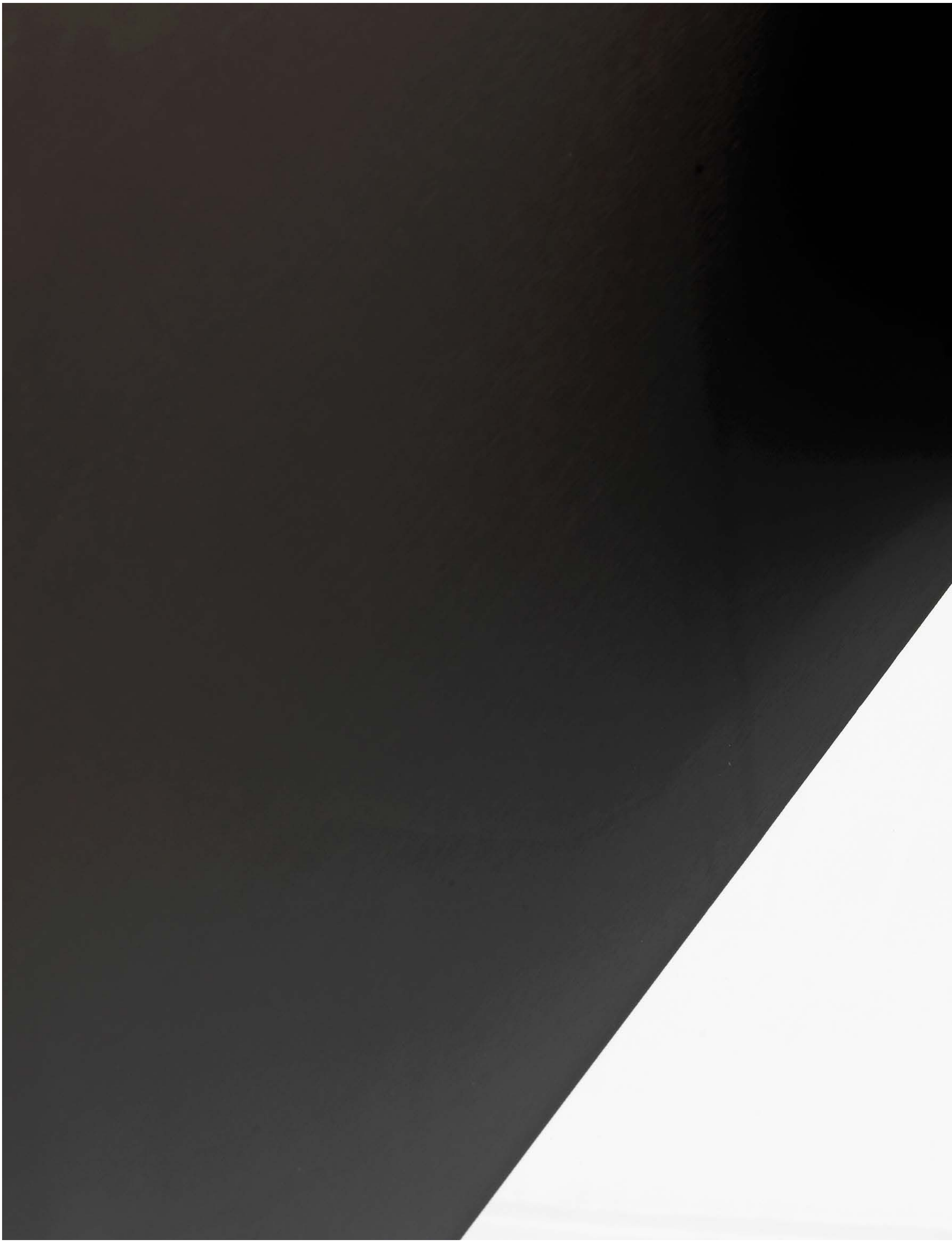
p. 86
A/B/C condition: orientation notes, 2014
Pencil on paper
11″ x 8-½″ (28 x 21.6 cm)











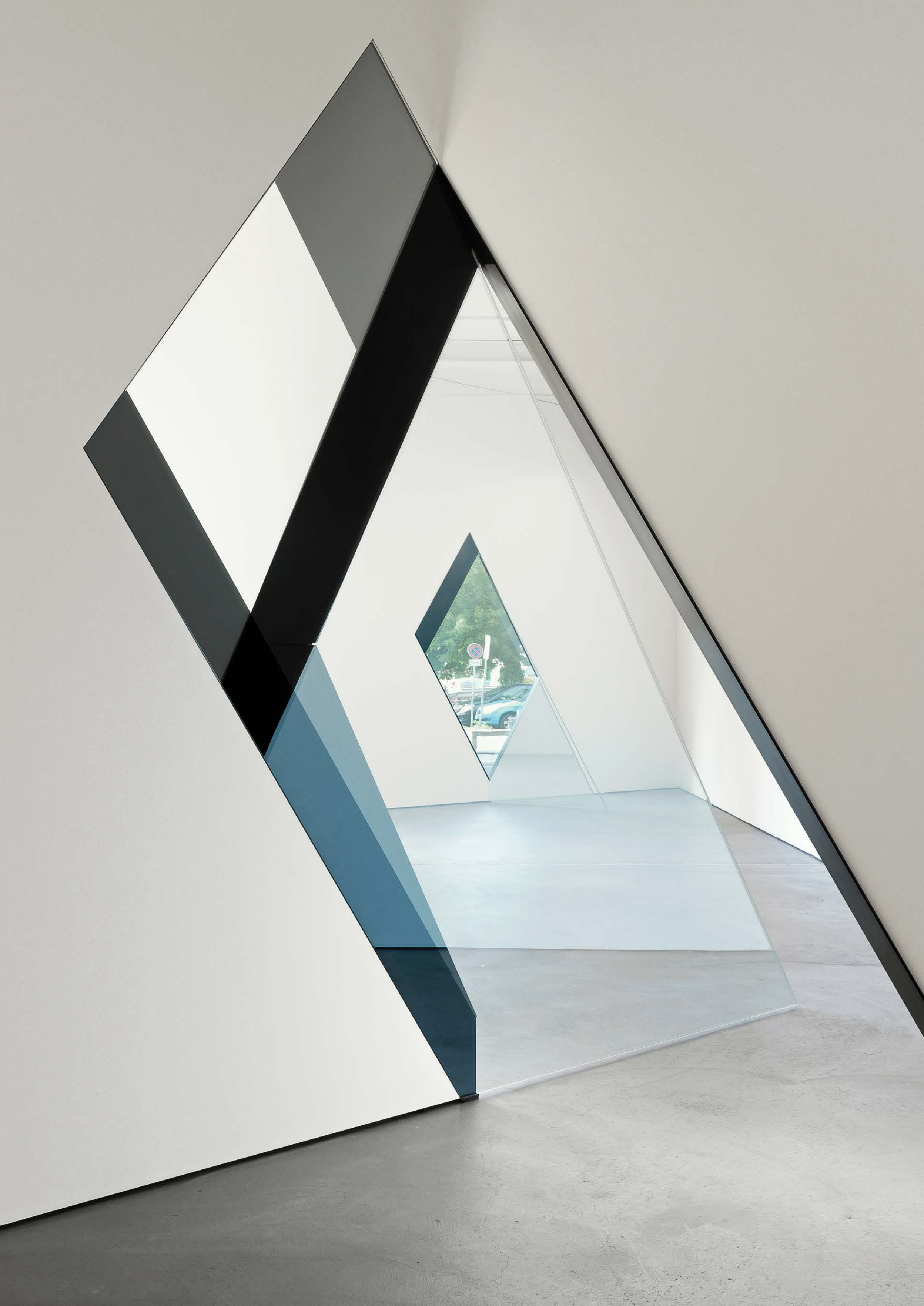
p. 88–89
Glass teeth models, 2013
Paper, acrylic
9-1/4″ x 4-1/2″ (23.5 x 11.4 cm)
11″ x 6-3/8″ (28 x 16 cm)
11-3/4″ x 8-3/8″ (29.8 x 21.3 cm)

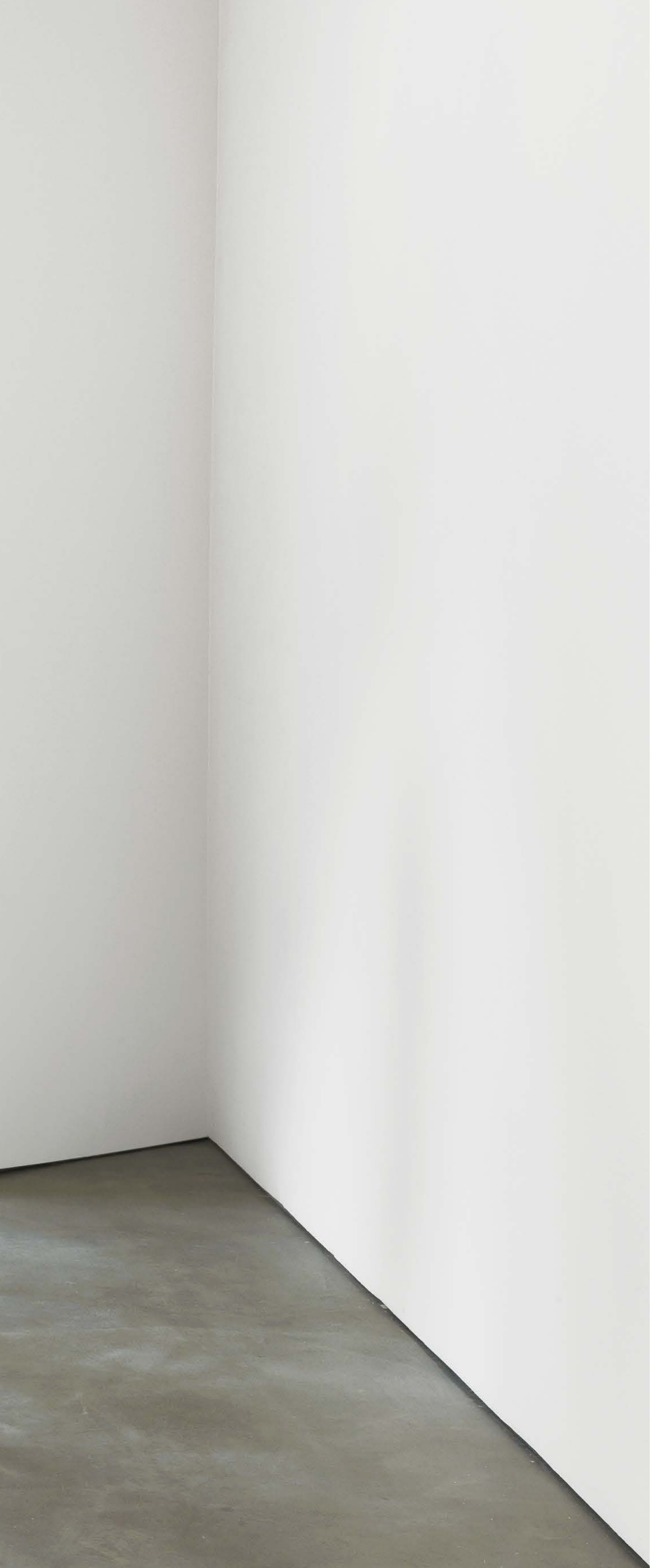
p. 90–91
Glass teeth model, 2013
Paper, acrylic
29″ x 10″ x 16″
(73.6 x 25.4 x 40.6 cm)

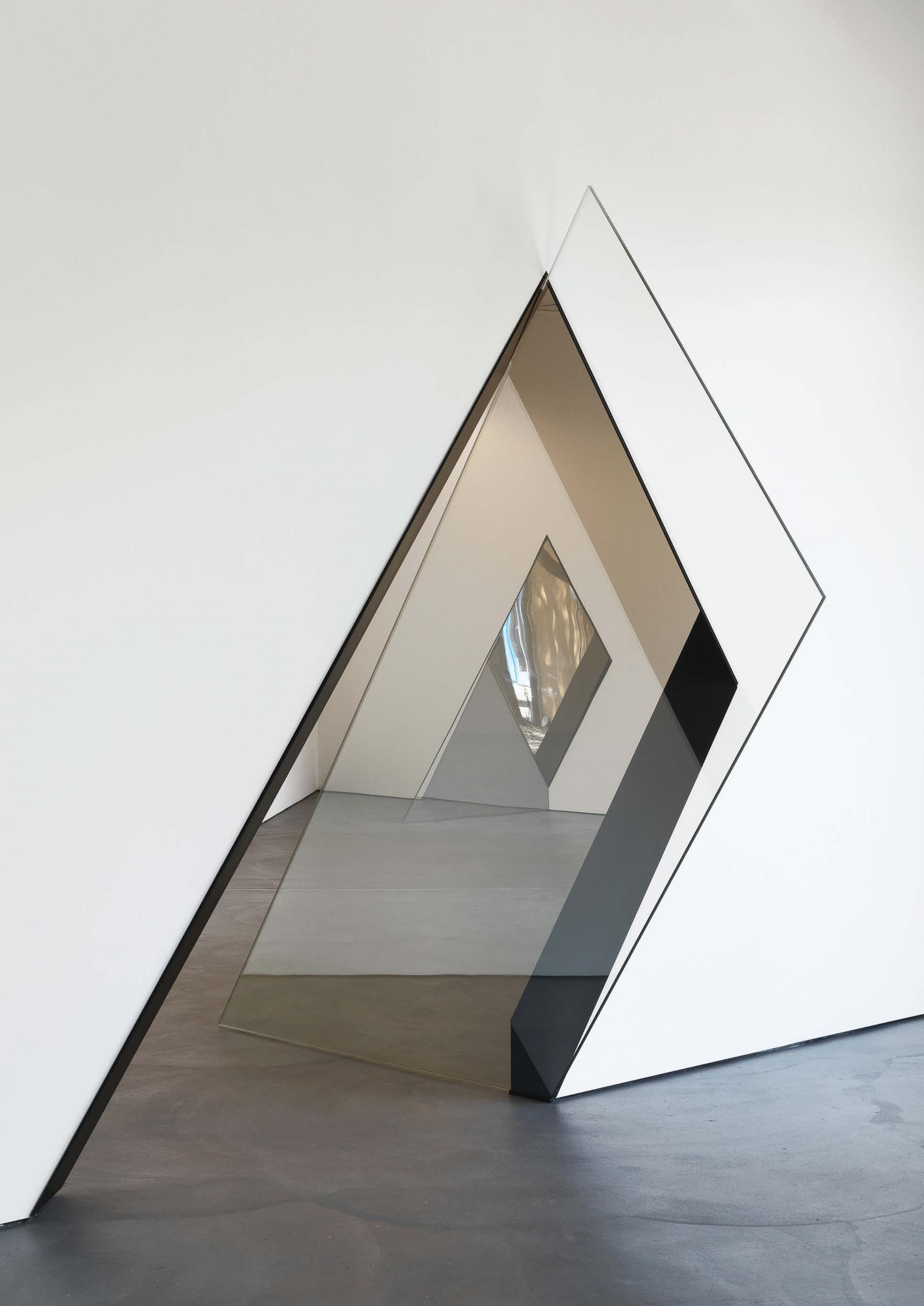
p. 92
Drawing of glass joint (MG), 2014
Pencil on paper
11″ x 8-1/2″ (28 x 21.5 cm)

p. 93
Glass and aluminum teeth, 2014
Aluminum, glass
14″ x 14″ x 14″
(35.5 x 35.5 x 35.5 cm)

p. 94–95
Detail. *33-D*, 2014
Aluminum, glass, architecture
Dimensions variable

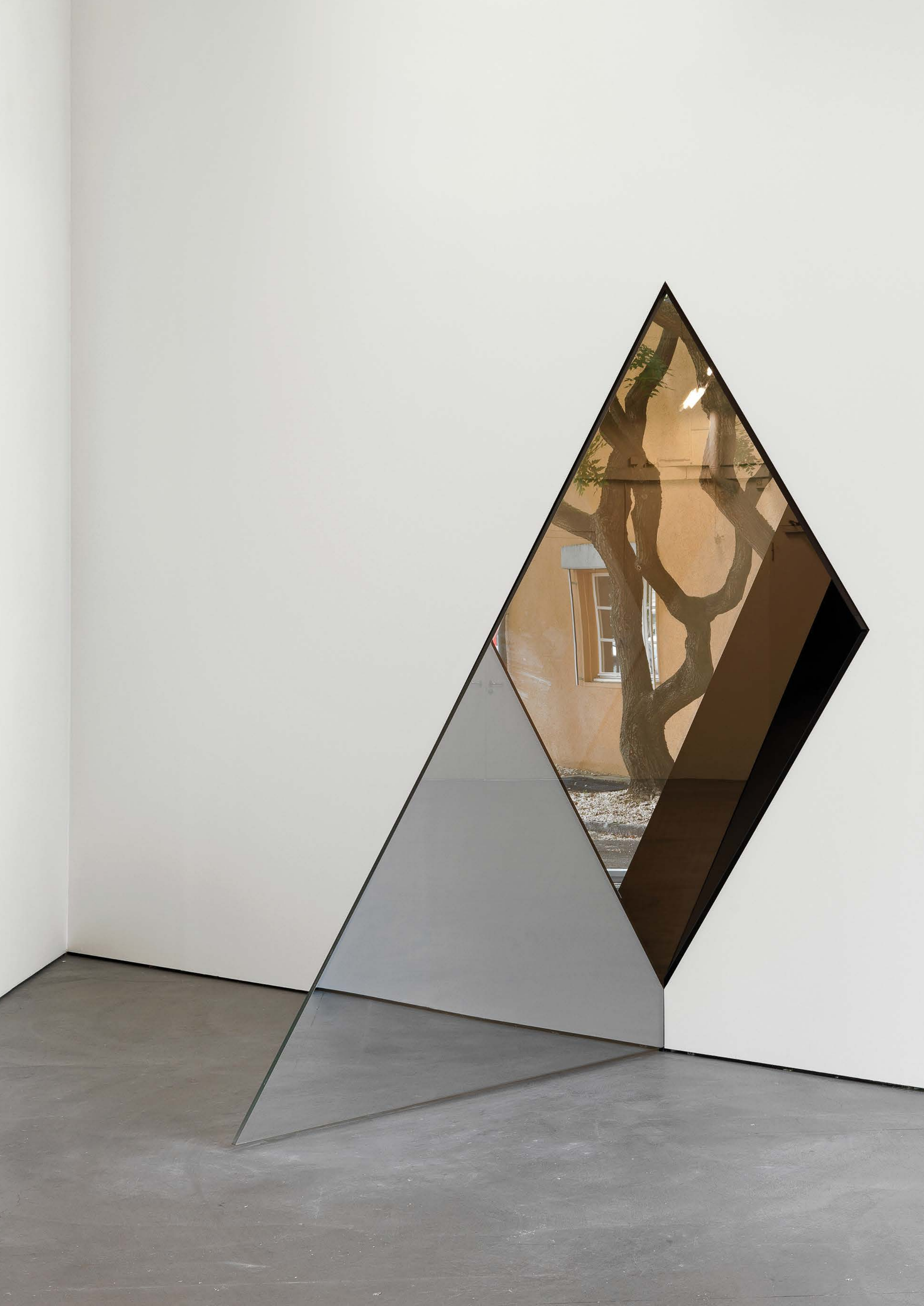






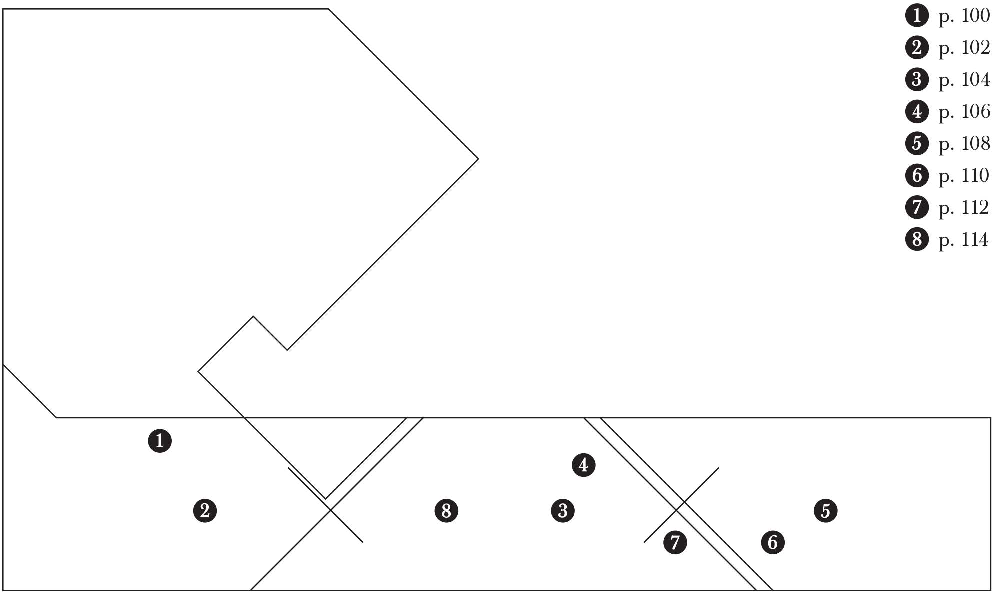
basel

GRAPHAX



p.100–115
33-D, 2014
Aluminum, glass, architecture
Dimensions variable
Kunsthaus Baselland, Switzerland

Floorplan showing camera position of plates.


❶ p. 100
❷ p. 102
❸ p. 104
❹ p. 106
❺ p. 108
❻ p. 110
❼ p. 112
❽ p. 114
❶
❹
❷
❽
❸
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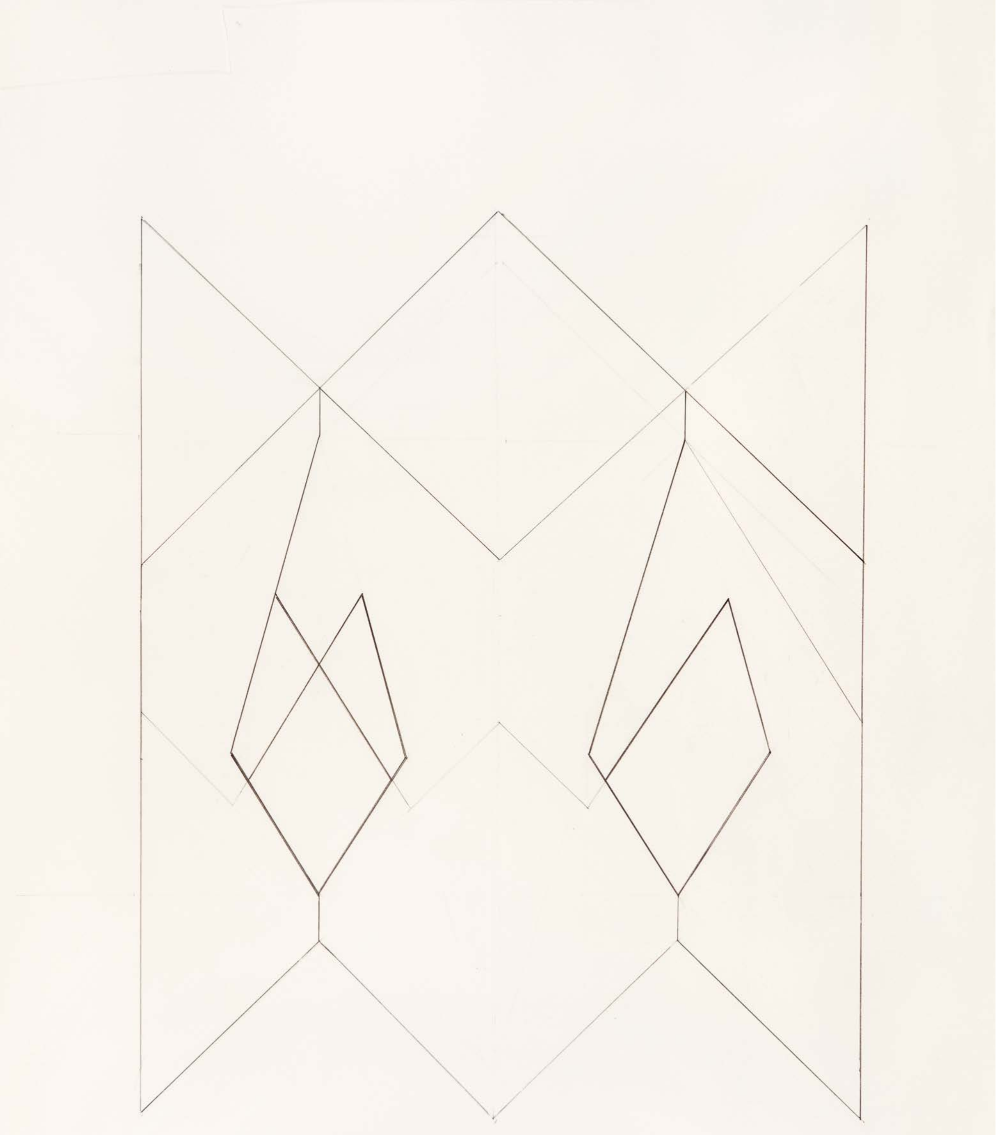
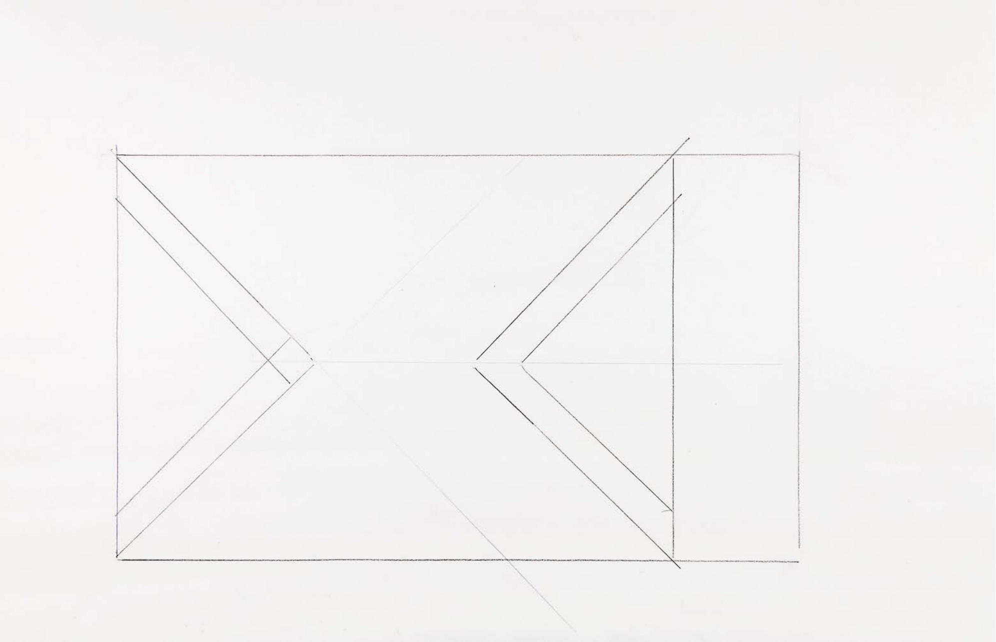
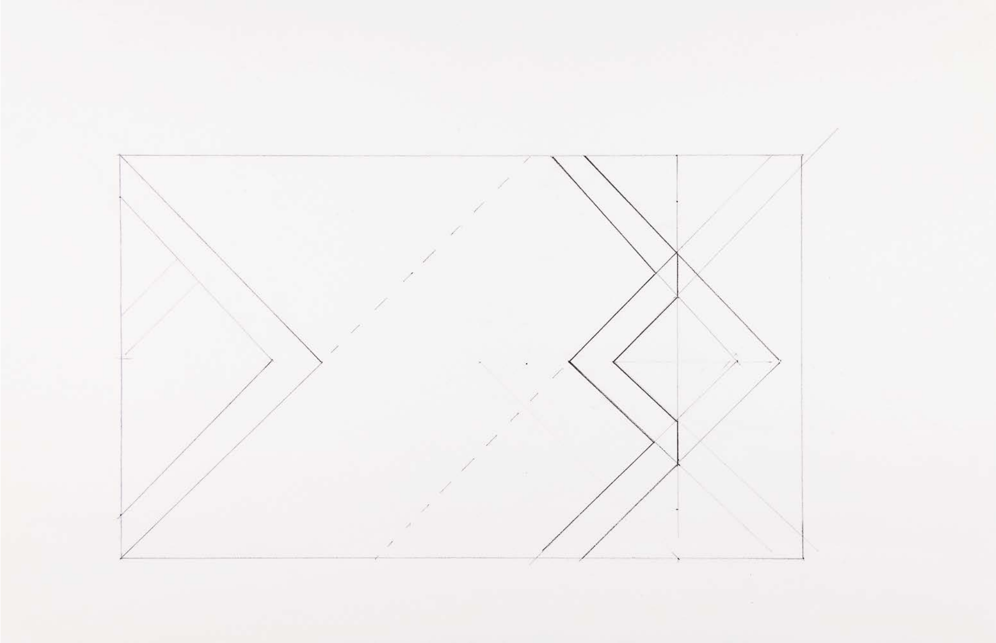
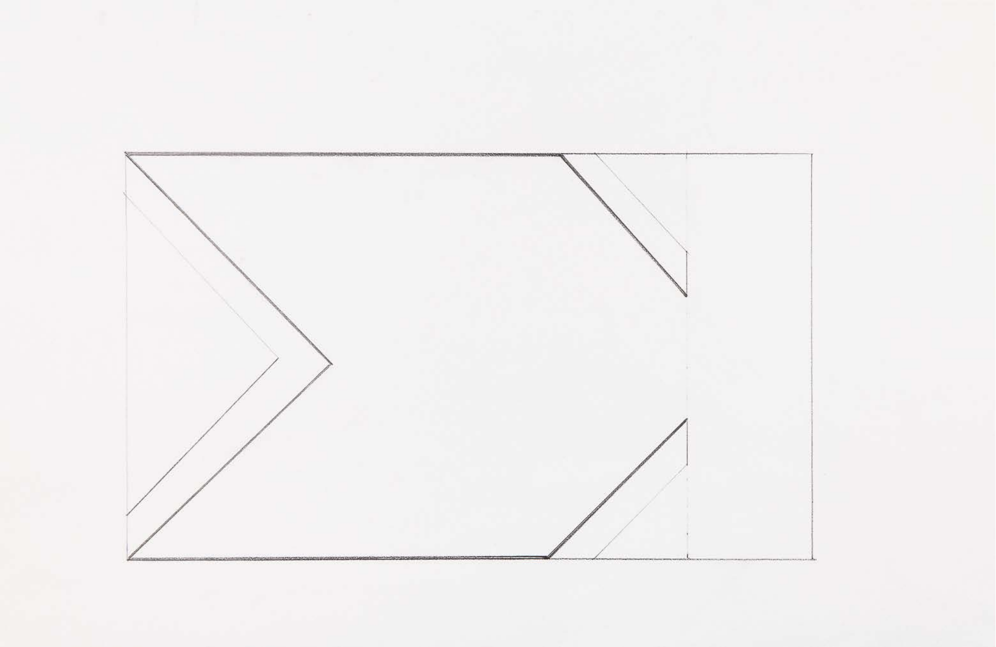
❼
❻

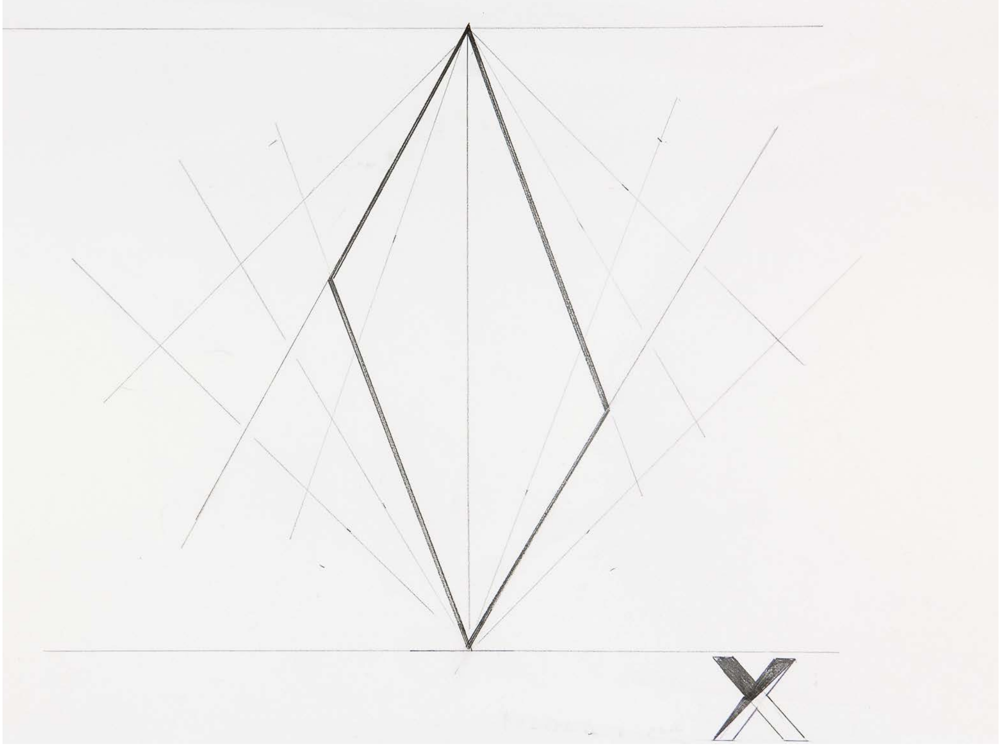
D-33
R&D

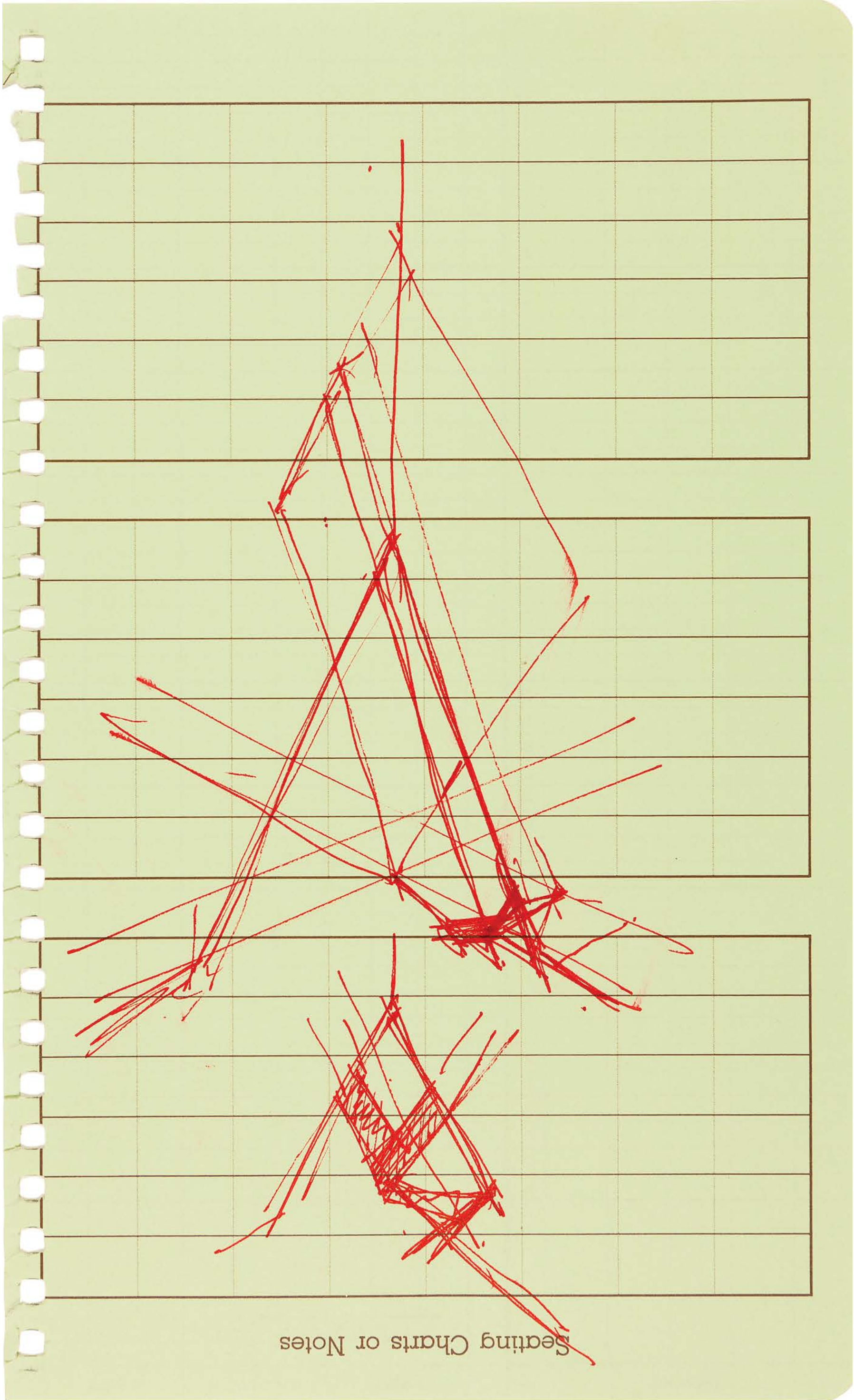


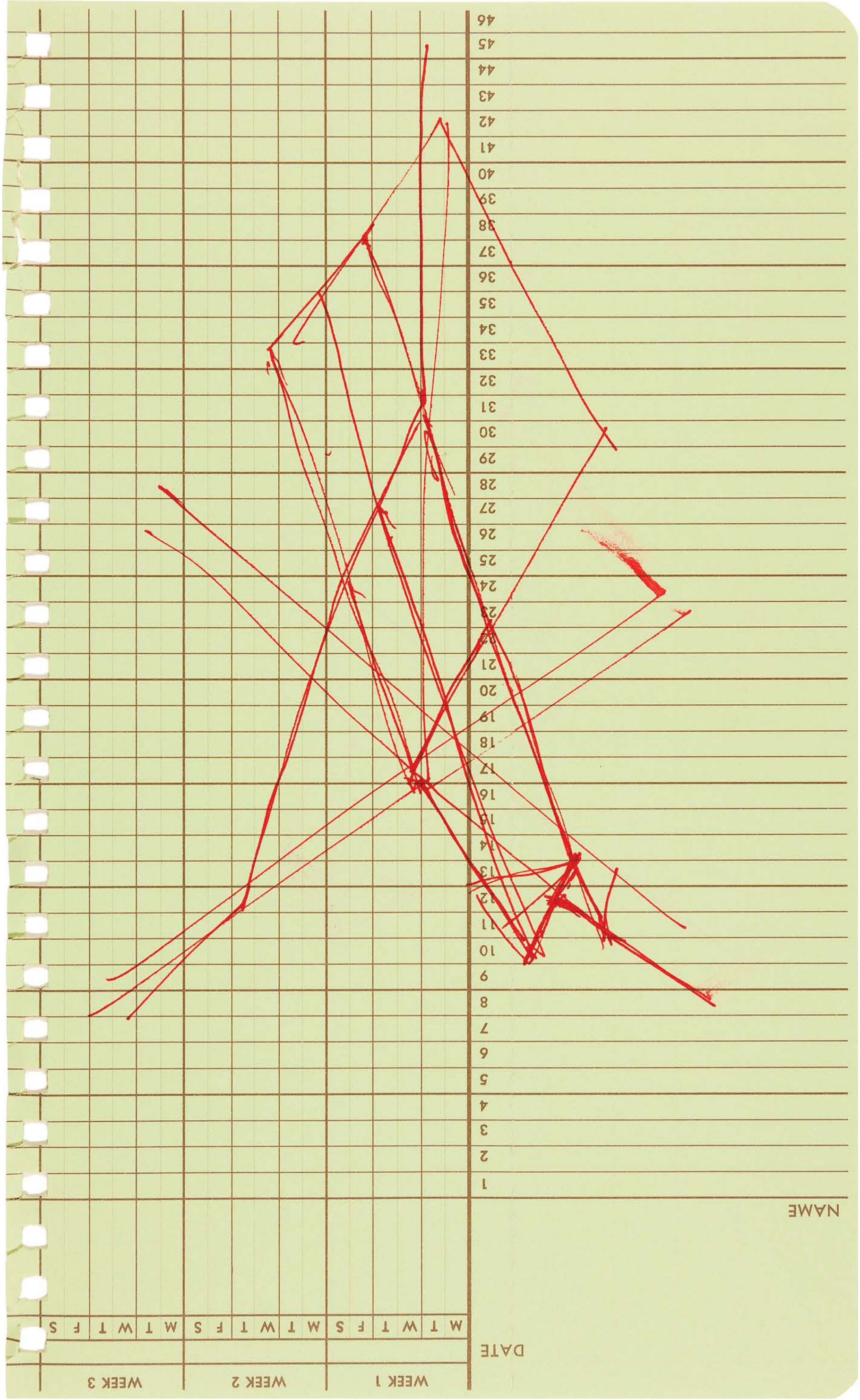


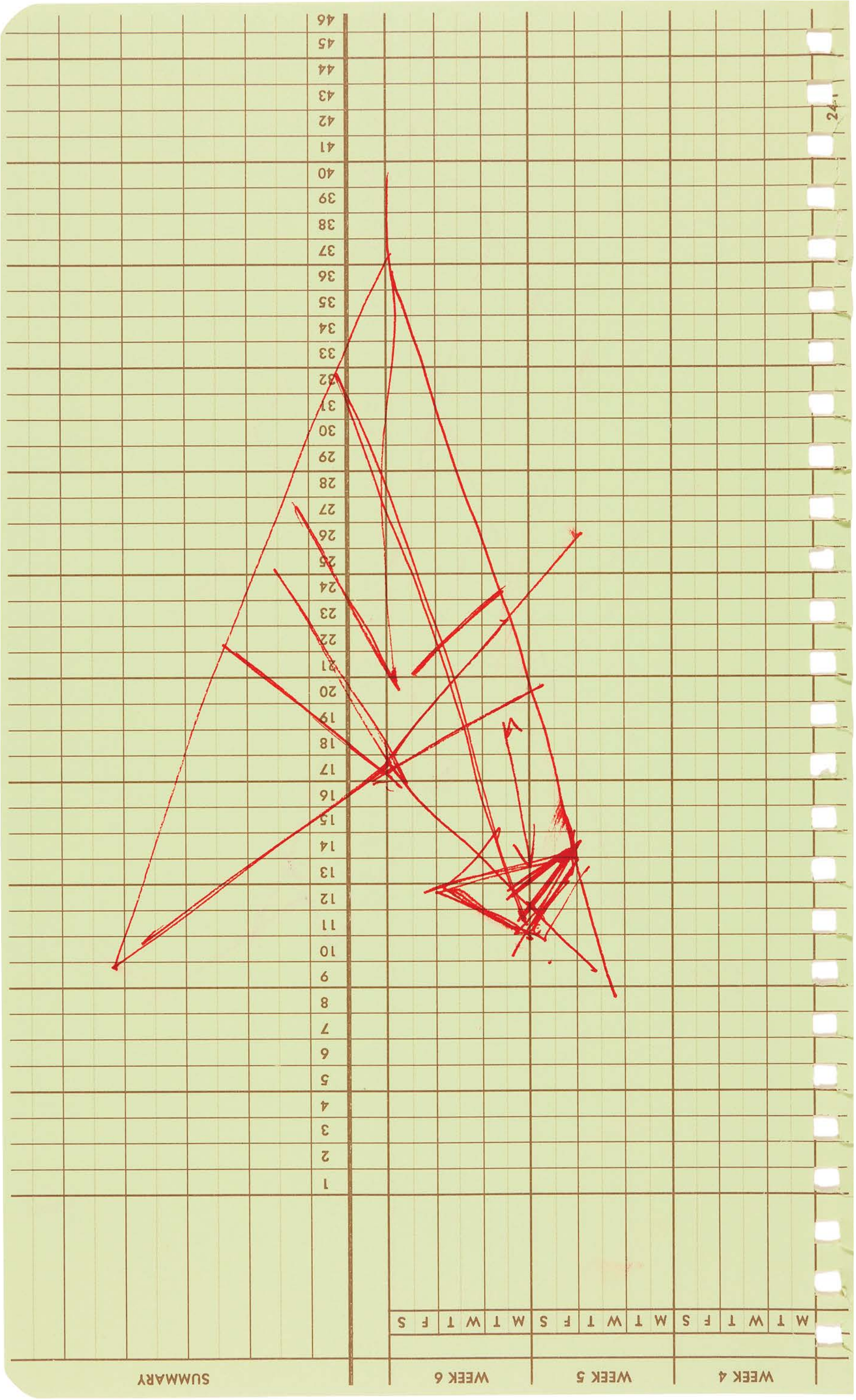


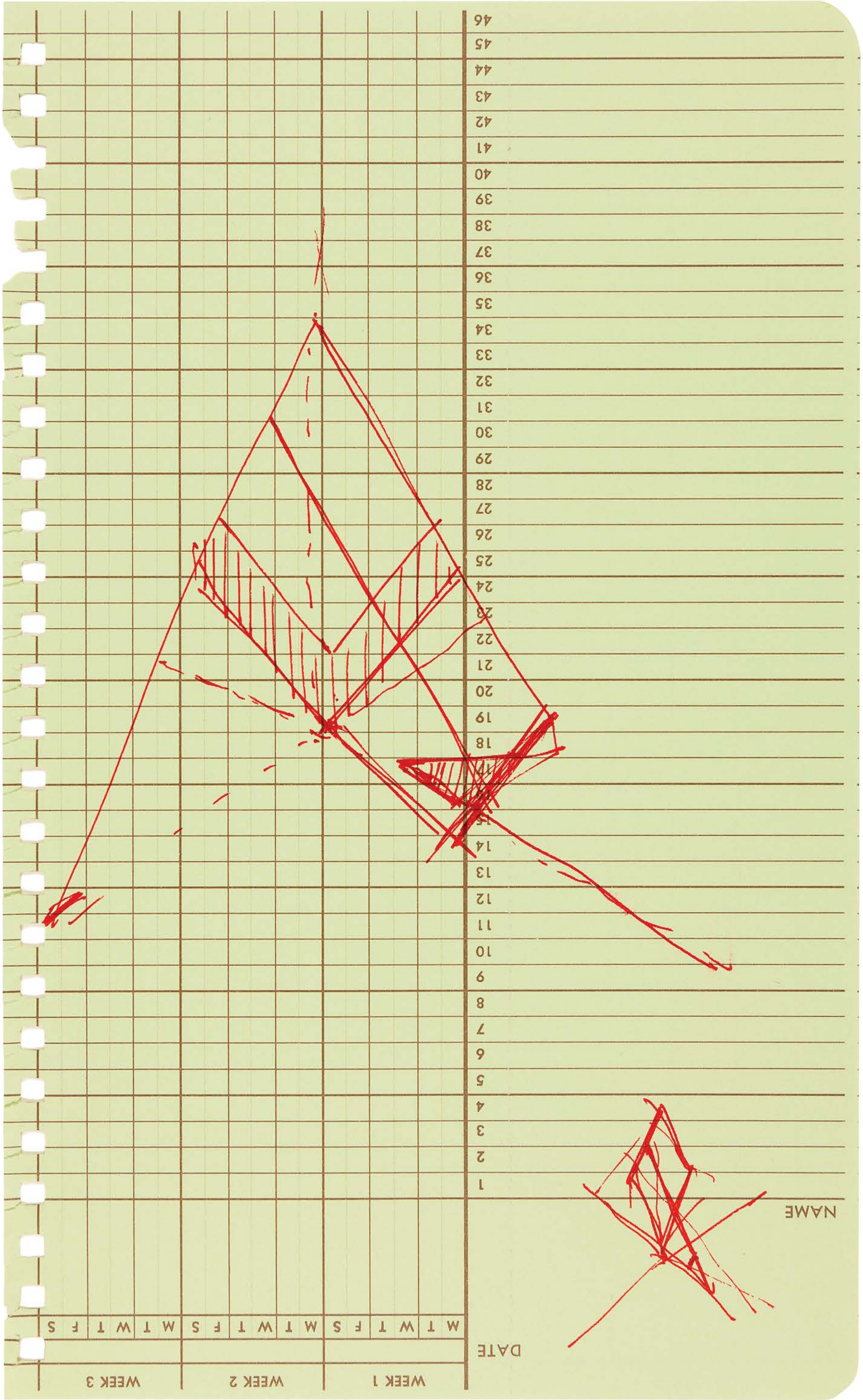





Seating Charts or Notes




SUMMARY
WEEK 6
WEEK 5
WEEK 4
24


NAME
DATE
WEEK 1
WEEK 2
WEEK 3

p. 121
A/B/C/D/E/F condition:
orientation diagram, 2012
Pencil on paper
22-½″ x 26-¼″ (57 x 66.6 cm)

p. 122
Elevation diagram, 2011
Pencil on paper
17″ x 11″ (43.2 x 28 cm)

p. 123
Elevation diagram, 2011
Pencil on paper
17″ x 11″ (43.2 x 28 cm)

p. 124
Elevation diagram, 2011
Pencil on paper
17″ x 11″ (43.2 x 28 cm)

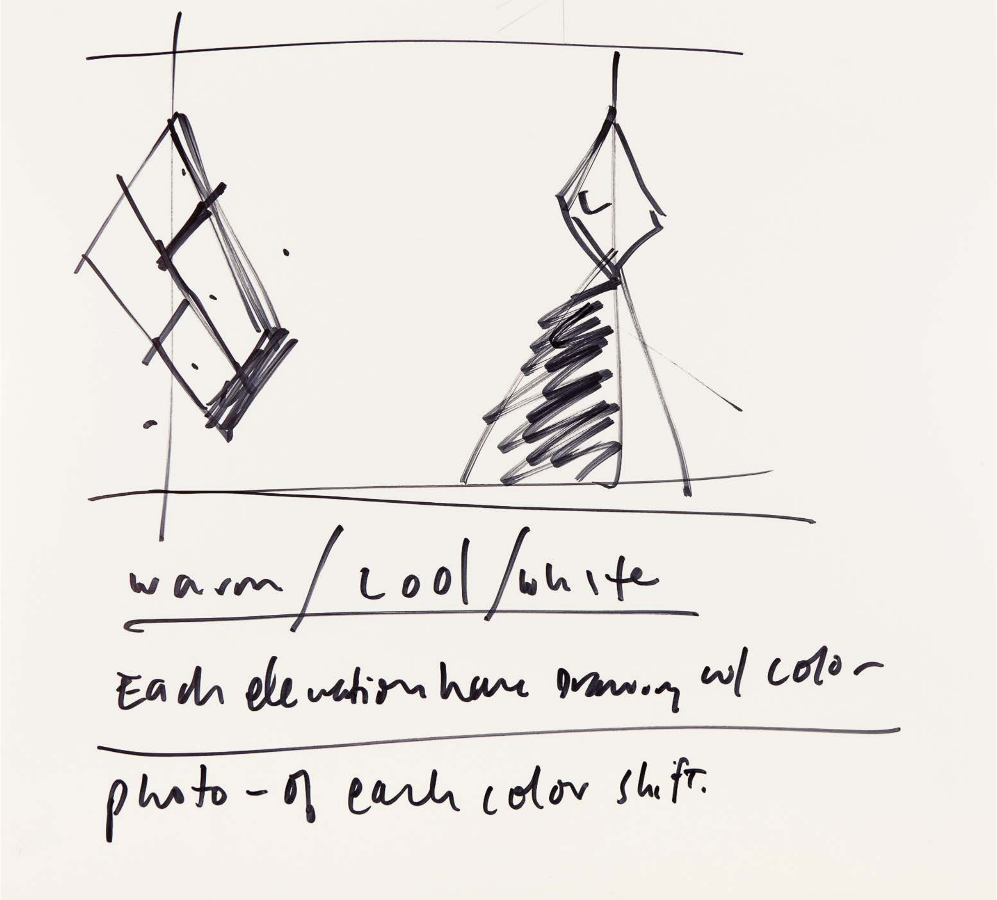
p. 125
Elevation diagram, 2011
Pencil on paper
17″ x 11″ (43.2 x 28 cm)

p. 126
A/B/C/D condition: orientation
notes, 2012
Ink on paper
9″ x 5-½″ (22.9 x 14 cm)

p. 127
A/B/C/D condition: orientation
notes, 2012
Ink on paper
9″ x 5-½″ (22.9 x 14 cm)

p. 128
A/B/C/D condition: orientation
notes, 2012
Ink on paper
9″ x 5-½″ (22.9 x 14 cm)

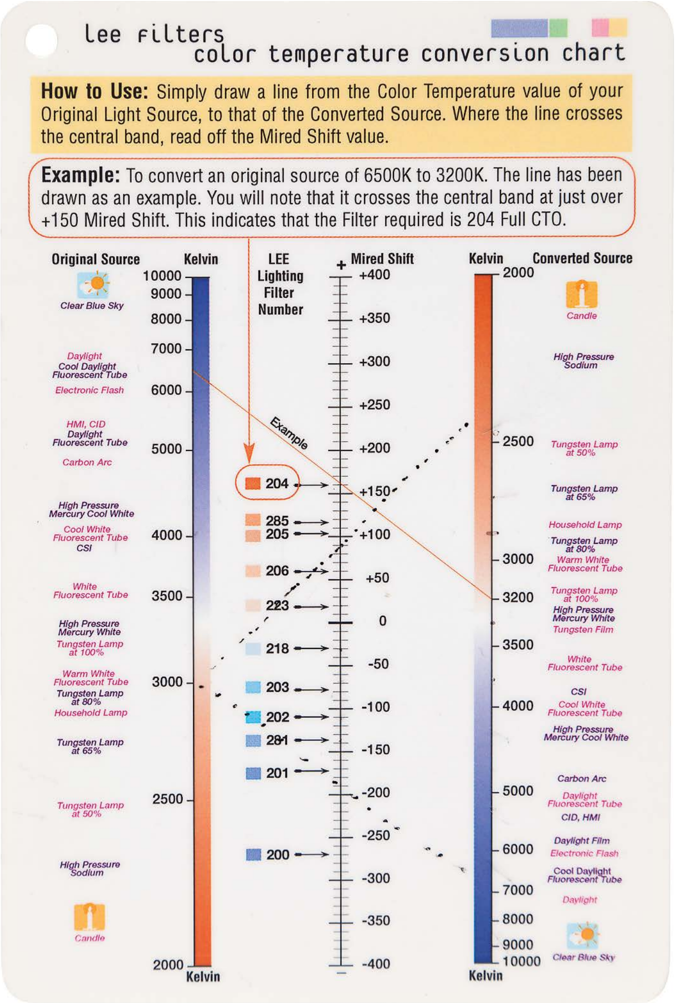
p. 129
A/B/C/D condition: orientation
notes, 2012
Ink on paper
9″ x 5-½″ (22.9 x 14 cm)



warm / cool / white

Each elevation have drawing w/ color

photo - of each color shift.

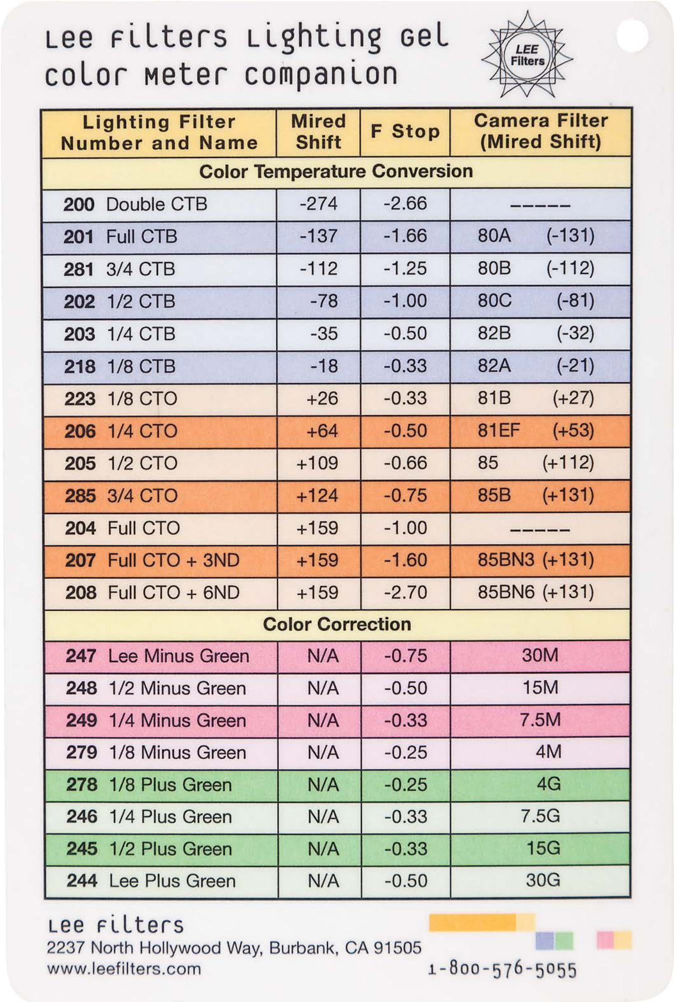


lee filters
color temperature conversion chart

How to Use: Simply draw a line from the Color Temperature value of your Original Light Source, to that of the Converted Source. Where the line crosses the central band, read off the Mired Shift value.

Example: To convert an original source of 6500K to 3200K. The line has been drawn as an example. You will note that it crosses the central band at just over +150 Mired Shift. This indicates that the Filter required is 204 Full CTO.

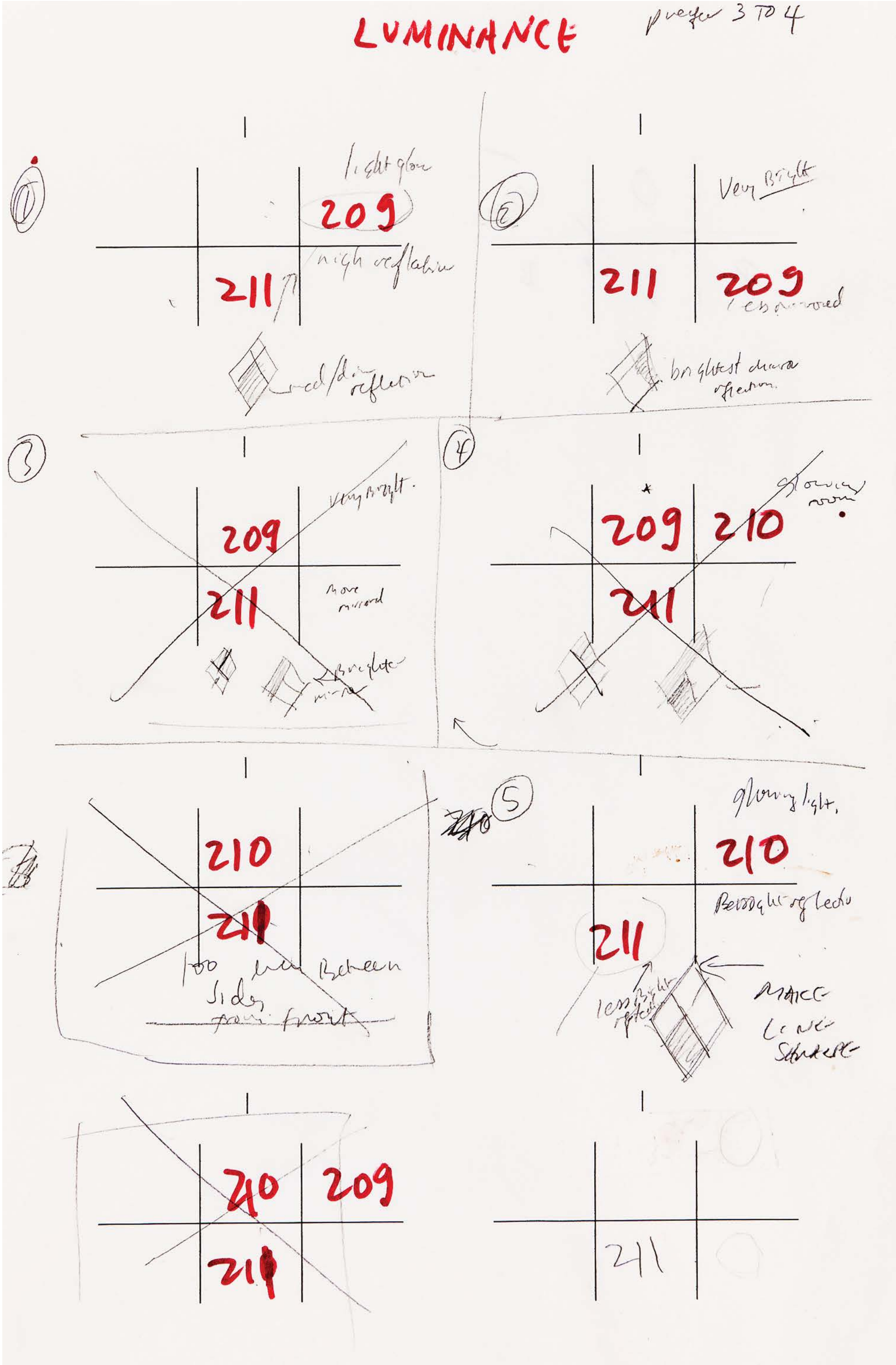
Original Source
Kelvin
LEE Lighting Filter Number
Mired Shift
Kelvin
Converted Source
Clear Blue Sky
Daylight
Cool Daylight Fluorescent Tube
Electronic Flash
HMI, CID
Daylight Fluorescent Tube
Carbon Arc
High Pressure Mercury Cool White
Cool White Fluorescent Tube
CSI
White Fluorescent Tube
High Pressure Mercury White
Tungsten Lamp at 100%
Warm White Fluorescent Tube
Tungsten Lamp at 80%
Household Lamp
Tungsten Lamp at 65%
Tungsten Lamp at 50%
High Pressure Sodium
Candle
10000
9000
8000
7000
6000
5000
4000
3500
3000
2500
2000
Kelvin
Example
204
285
205
206
223
218
203
202
281
201
200
+
+400
+350
+300
+250
+200
+150
+100
+50
0
-50
-100
-150
-200
-250
-300
-350
-400
2000
2500
3000
3200
3500
4000
5000
6000
7000
8000
9000
10000
Kelvin
Candle
High Pressure Sodium
Tungsten Lamp at 50%
Tungsten Lamp at 65%
Household Lamp
Tungsten Lamp at 80%
Warm White Fluorescent Tube
Tungsten Lamp at 100%
High Pressure Mercury White
Tungsten Film
White Fluorescent Tube
CSI
Cool White Fluorescent Tube
High Pressure Mercury Cool White
Carbon Arc
Daylight Fluorescent Tube
CID, HMI
Daylight Film
Electronic Flash
Cool Daylight Fluorescent Tube
Daylight
Clear Blue Sky

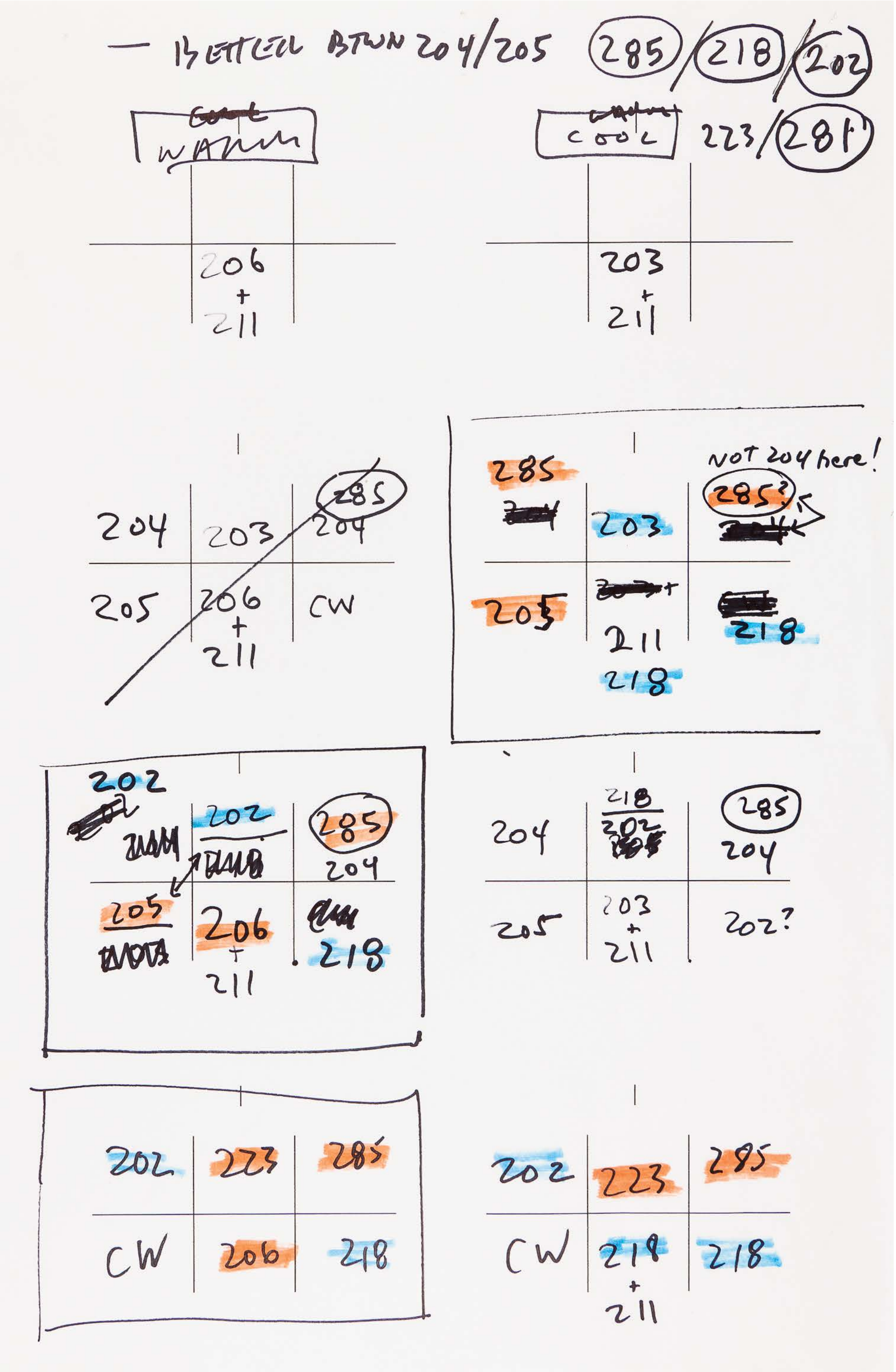


Lee Filters Lighting Gel
Color Meter Companion

Lighting Filter Number and Name	Mired Shift	F Stop	Camera Filter (Mired Shift)
Color Temperature Conversion			
200 Double CTB	-274	-2.66	-----
201 Full CTB	-137	-1.66	80A (-131)
281 3/4 CTB	-112	-1.25	80B (-112)
202 1/2 CTB	-78	-1.00	80C (-81)
203 1/4 CTB	-35	-0.50	82B (-32)
218 1/8 CTB	-18	-0.33	82A (-21)
223 1/8 CTO	+26	-0.33	81B (+27)
206 1/4 CTO	+64	-0.50	81EF (+53)
205 1/2 CTO	+109	-0.66	85 (+112)
285 3/4 CTO	+124	-0.75	85B (+131)
204 Full CTO	+159	-1.00	-----
207 Full CTO + 3ND	+159	-1.60	85BN3 (+131)
208 Full CTO + 6ND	+159	-2.70	85BN6 (+131)
Color Correction			
247 Lee Minus Green	N/A	-0.75	30M
248 1/2 Minus Green	N/A	-0.50	15M
249 1/4 Minus Green	N/A	-0.33	7.5M
279 1/8 Minus Green	N/A	-0.25	4M
278 1/8 Plus Green	N/A	-0.25	4G
246 1/4 Plus Green	N/A	-0.33	7.5G
245 1/2 Plus Green	N/A	-0.33	15G
244 Lee Plus Green	N/A	-0.50	30G

Lee Filters
2237 North Hollywood Way, Burbank, CA 91505
www.leefilters.com
1-800-576-5055


LUMINANCE
prefer 3 TO 4
①
light glow
209
high reflection
211
red/dim reflection
②
Very Bright
211
209
less mirrored
brightest mirror reflection
③
Very Bright.
209
211
more mirrored
Brighter mirror
④
209
210
Stovey room
211
210
211
100 [illegible] Between
Sides
~~from front~~
~~210~~
⑤
glowing light.
210
Brighter reflection
211
less Bright reflection
MAKE LINE SHARPER
210
209
211
211



— BETTER BTWN 204/205 285/218/202

~~COOL~~ WARM		
	206 + 211	

~~WARM~~ COOL		
	203 + 211	

223/281

204	203	285 204
205	206 + 211	CW

285	203	NOT 204 here! 285?
205	+ 211 218	218

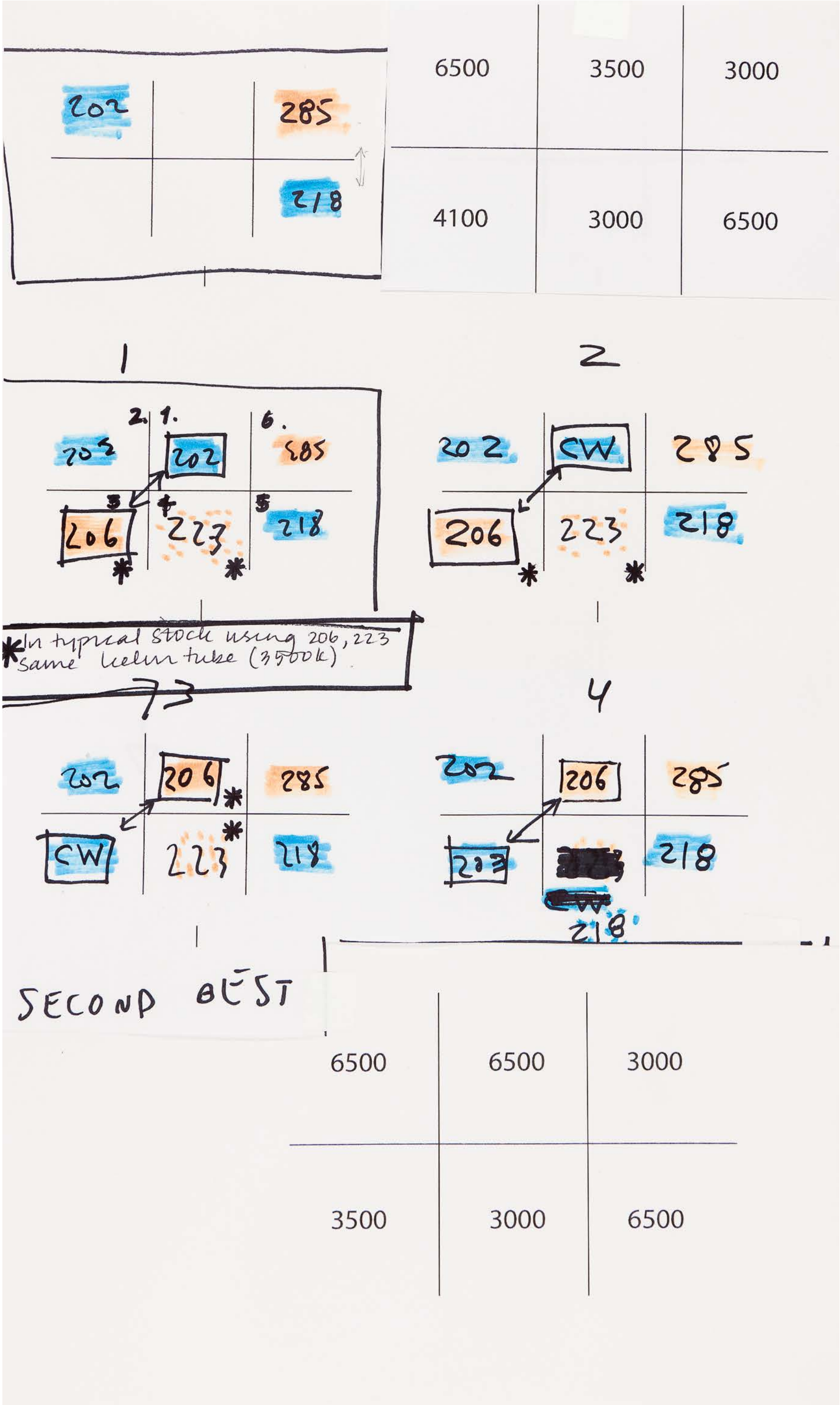
202

	202	285 204
205	206 + 211	218

204	218 202	285 204
205	203 + 211	202?

202	223	285
CW	206	218

202	223	285
CW	218 + 211	218



202		285
		218

6500	3500	3000
4100	3000	6500

1

202	2. 1. 202	6. 285
3 206 *	4 223 *	5 218

2

202	CW	285
206 *	223 *	218

*In typical stock using 206, 223 same kelvin tube (3500K)

3

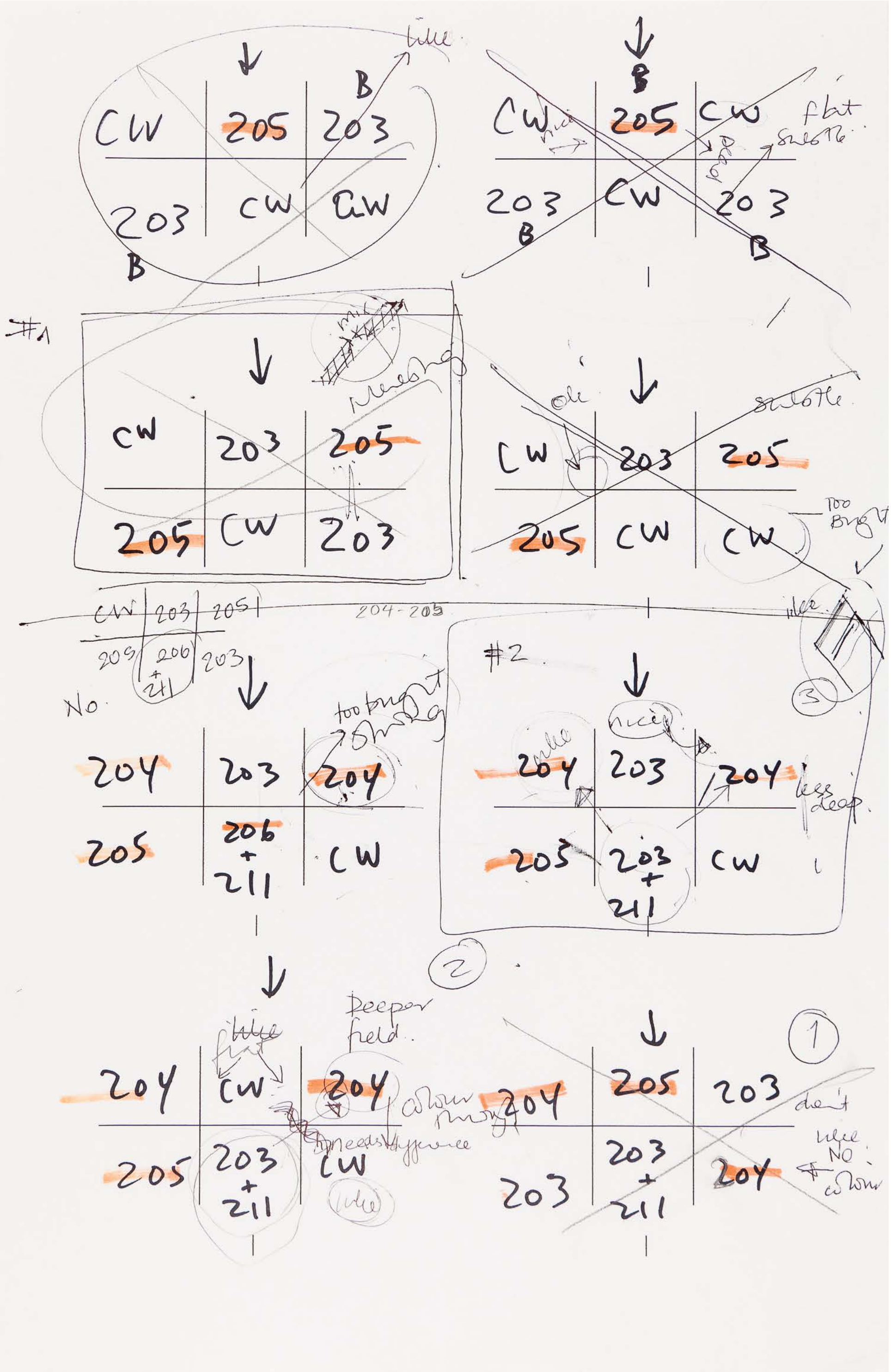
202	206 *	285
CW	223 *	218

4

202	206	285
203	[redacted] 218	218

SECOND BEST

6500	6500	3000
3500	3000	6500



like
B
B
B
flat
subtle
nice
deep
B
B
#1
missing
ok
subtle
too bright
204-205
like
No.
too bright / missing
#2
nice
like
less deep
③
②
like
flat
Deeper field..
colour missing
needs difference
like
①
don't like
NO colour

CW	205	203
203	CW	CW

CW	205	CW
203	CW	203

CW	203	205
205	CW	203

CW	203	205
205	CW	CW

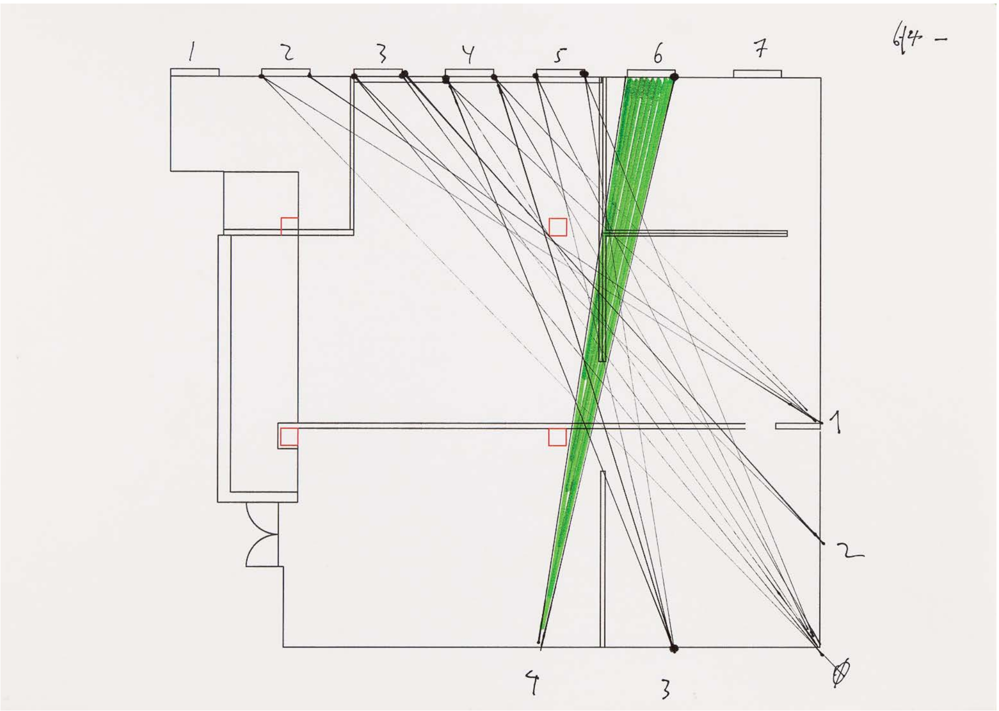
CW	203	205
205	206 + 211	203

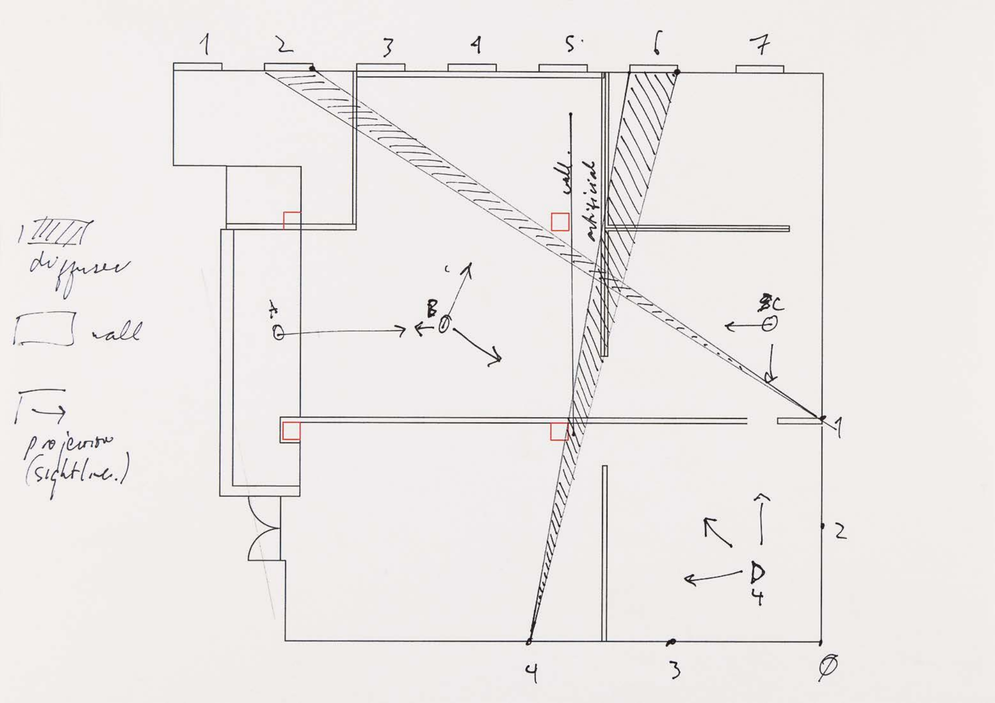
204	203	204
205	206 + 211	CW

204	203	204
205	203 + 211	CW

204	CW	204
205	203 + 211	CW

204	205	203
203	203 + 211	204


64 –
1
2
3
4
5
6
7
1
2
Ø
4
3


1
2
3
4
5
6
7
diffuser
wall
projection (sightline.)
wall.
artificial
A
B
C
D
1
2
3
4
0
4

p. 133
A/B/C/D/E/F condition:
lighting notes, 2012
Ink on foam core
17″ x 15-3/4″ (43.2 x 40.1 cm)

p. 134
Color temperature conversion chart, 2012
Ink on paper
4″ x 6″ (10 x 15.2 cm)

p. 135
Color temperature conversion chart, 2012
Ink on paper
4″ x 6″ (10 x 15.2 cm)

p. 136
Light temperature study, 2012
Pencil and ink on paper
17″ x 11″ (43.2 x 28 cm)

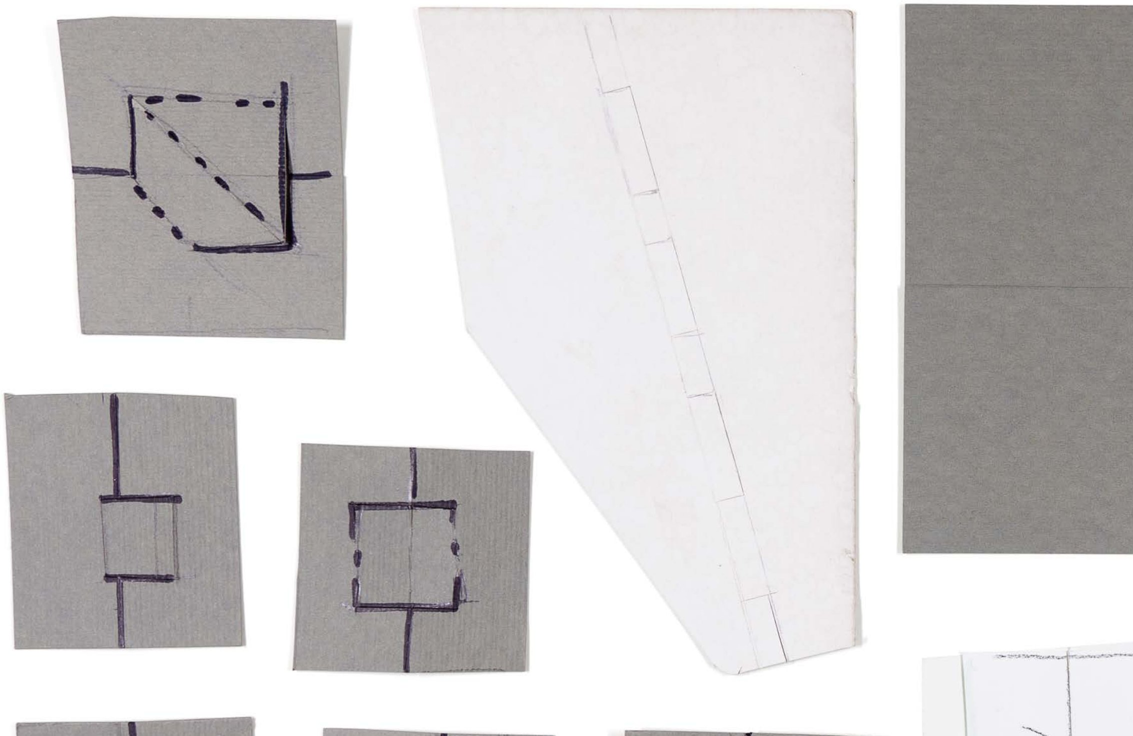
p. 137
Light temperature study, 2012
Pencil and ink on paper
17″ x 11″ (43.2 x 28 cm)

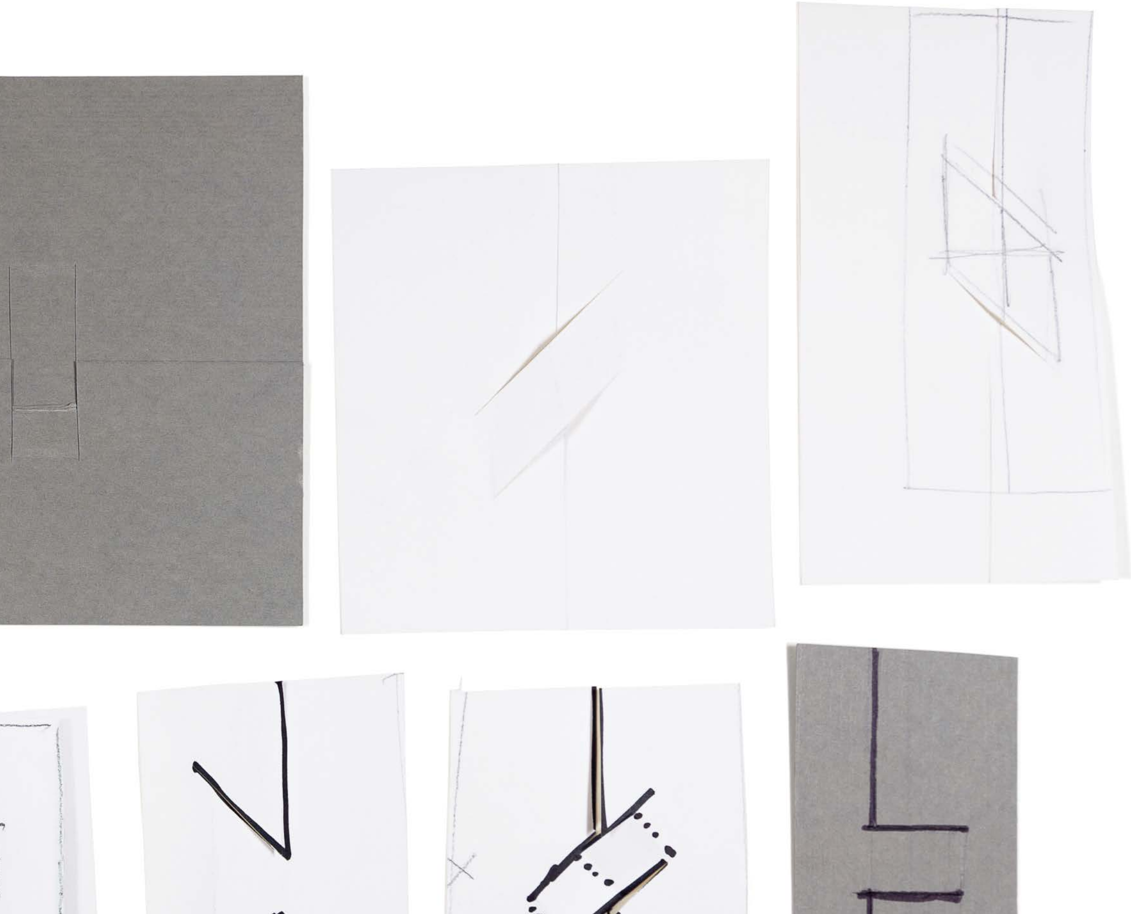
p. 138
Light temperature study, 2012
Ink on paper
17″ x 11″ (43.2 x 28 cm)

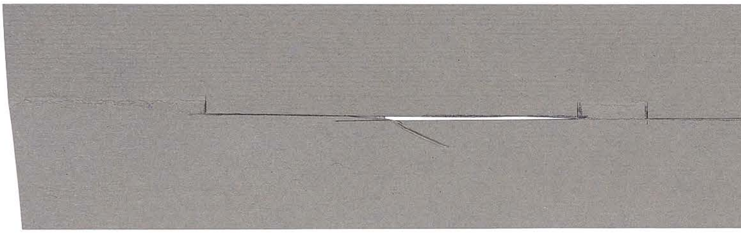
p. 139
Light temperature study, 2012
Ink on paper
17″ x 11″ (43.2 x 28 cm)

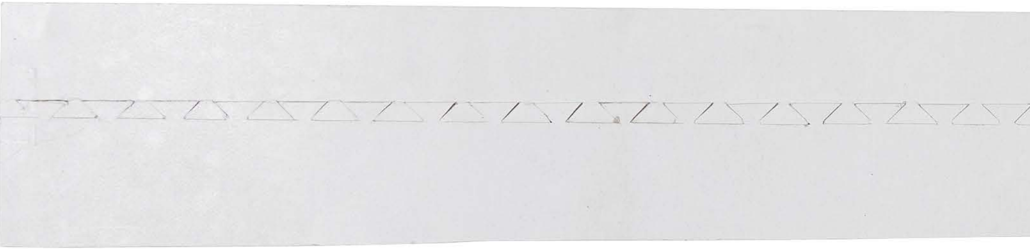
p. 140
Sightline diagram, 2011
Ink on paper
17″ x 11″ (43.2 x 28 cm)

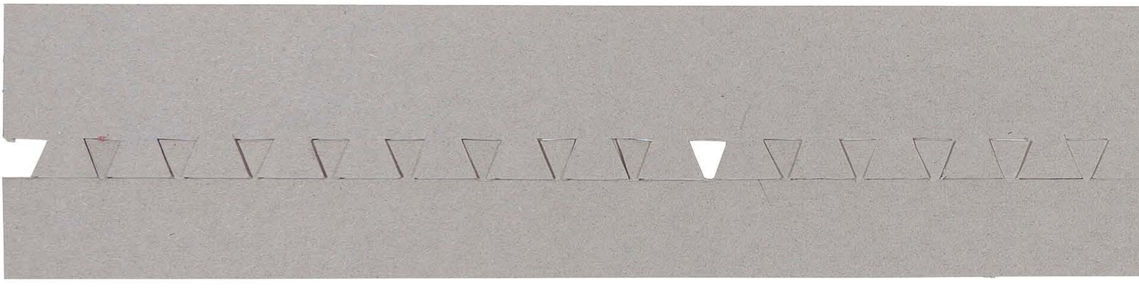
p. 141
Sightline diagram, 2011
Ink on paper
11-3/4″ x 8-1/4″ (29.7 x 21 cm)

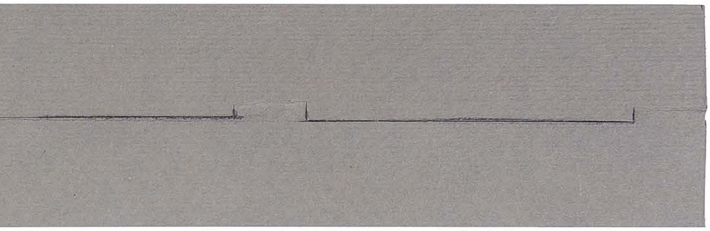


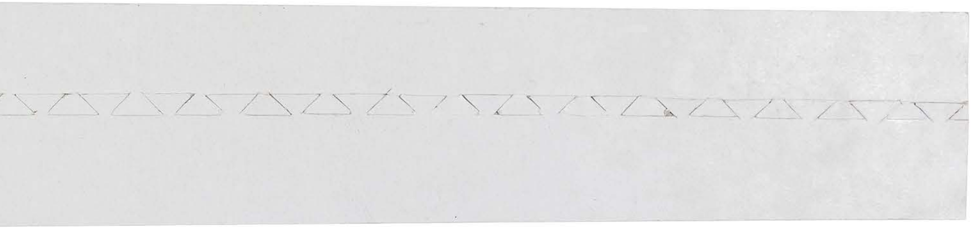


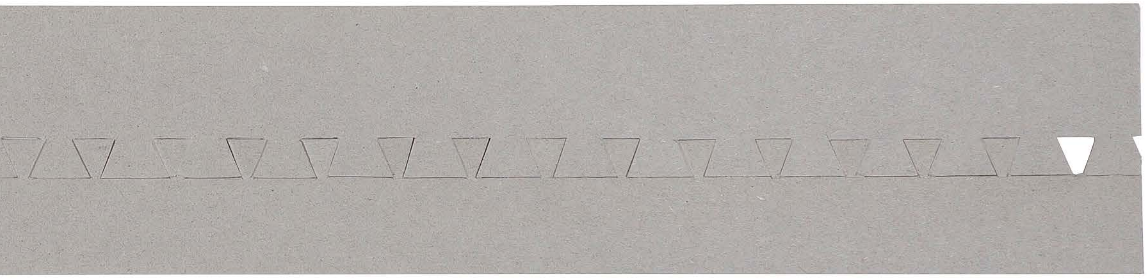


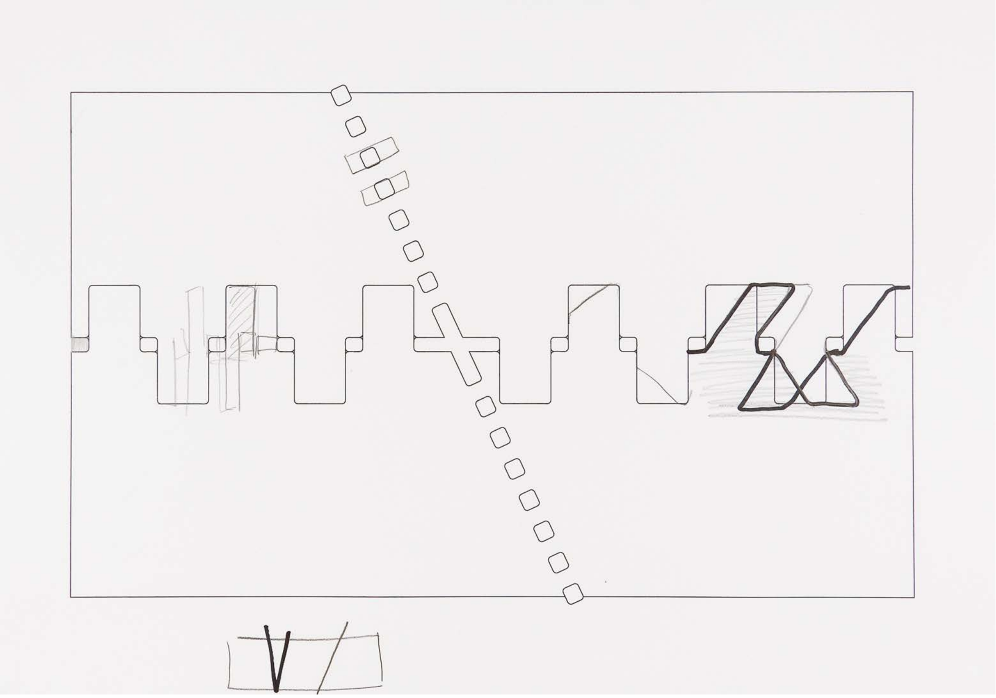


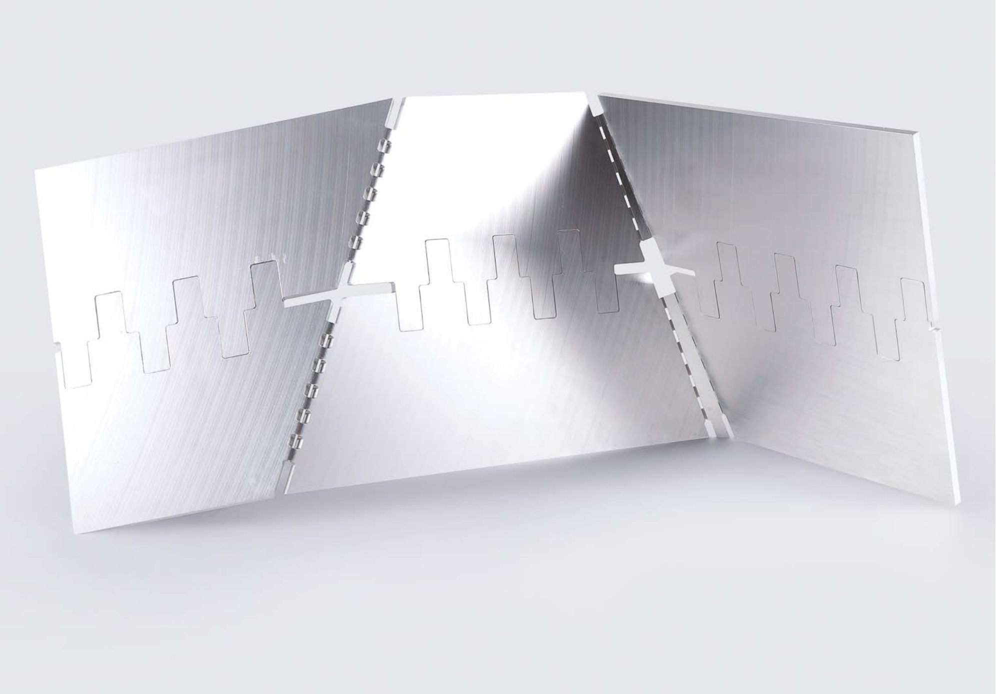


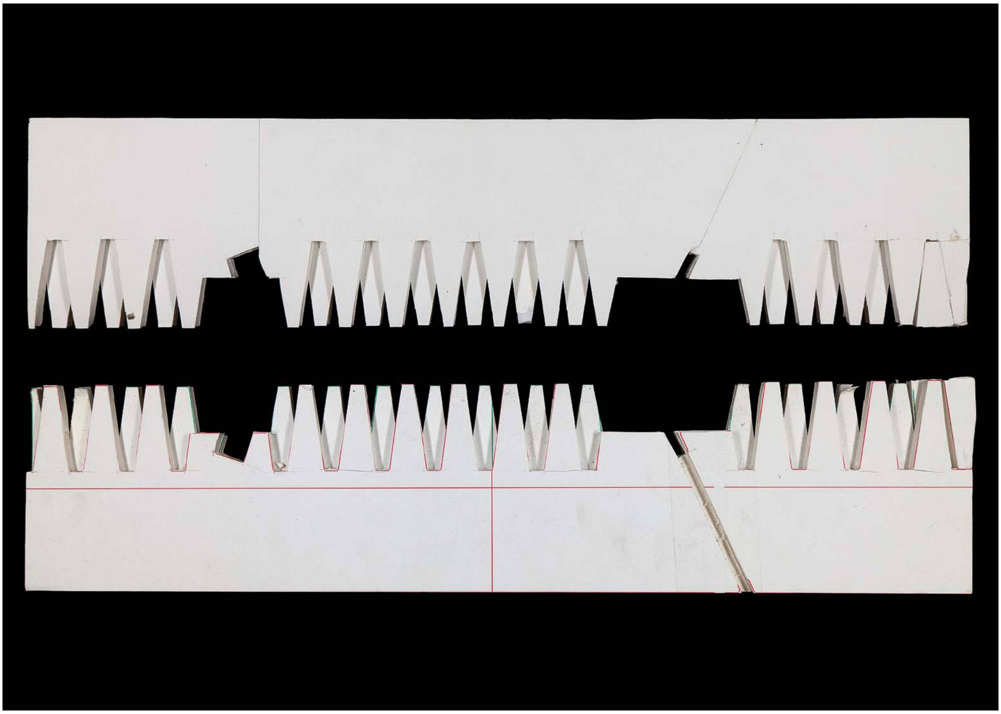


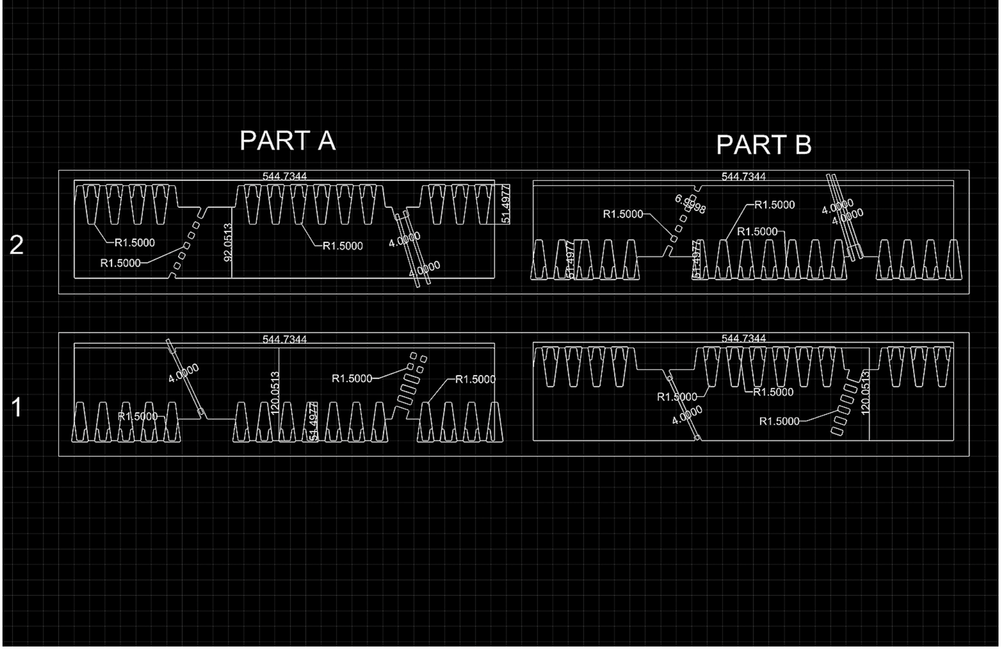








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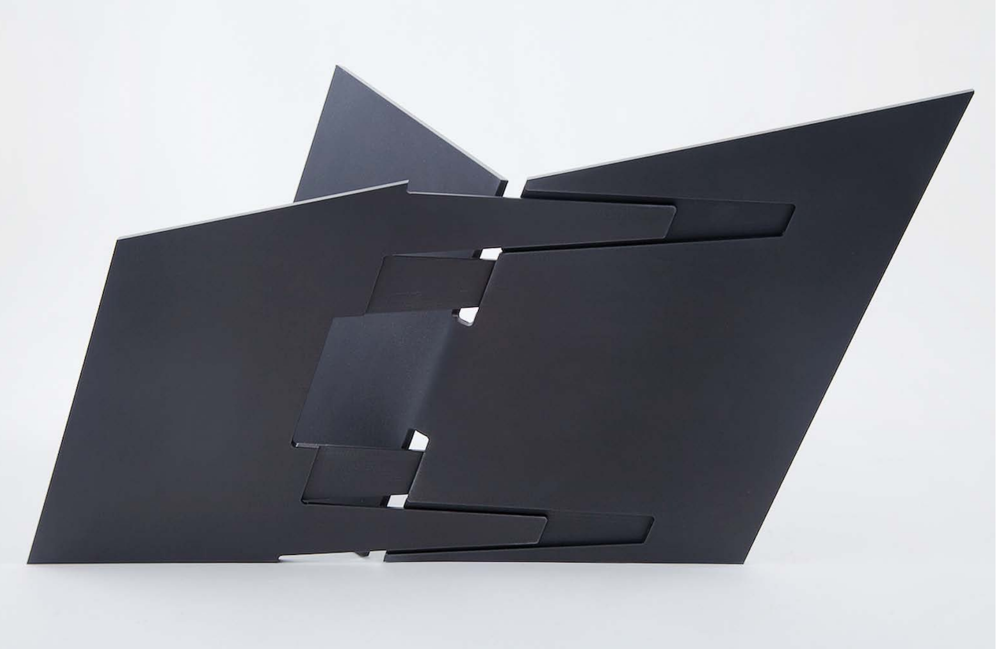


p. 144–145
Hinge patterns, 2011
Ink and pencil on paper
Various dimensions

p. 146–147
Hinge patterns, 2011
Ink and pencil on paper
Various dimensions

p. 148
Rectangular teeth model, 2011
Ink and pencil on paper
21″ x 11-¾″ (53.3 x 30 cm)

p. 149
S - RT_1, 2011
Aluminum, Edition of 3+1 AP
21-½″ x 13″ x 9-¾″
(55 x 33 x 25 cm)

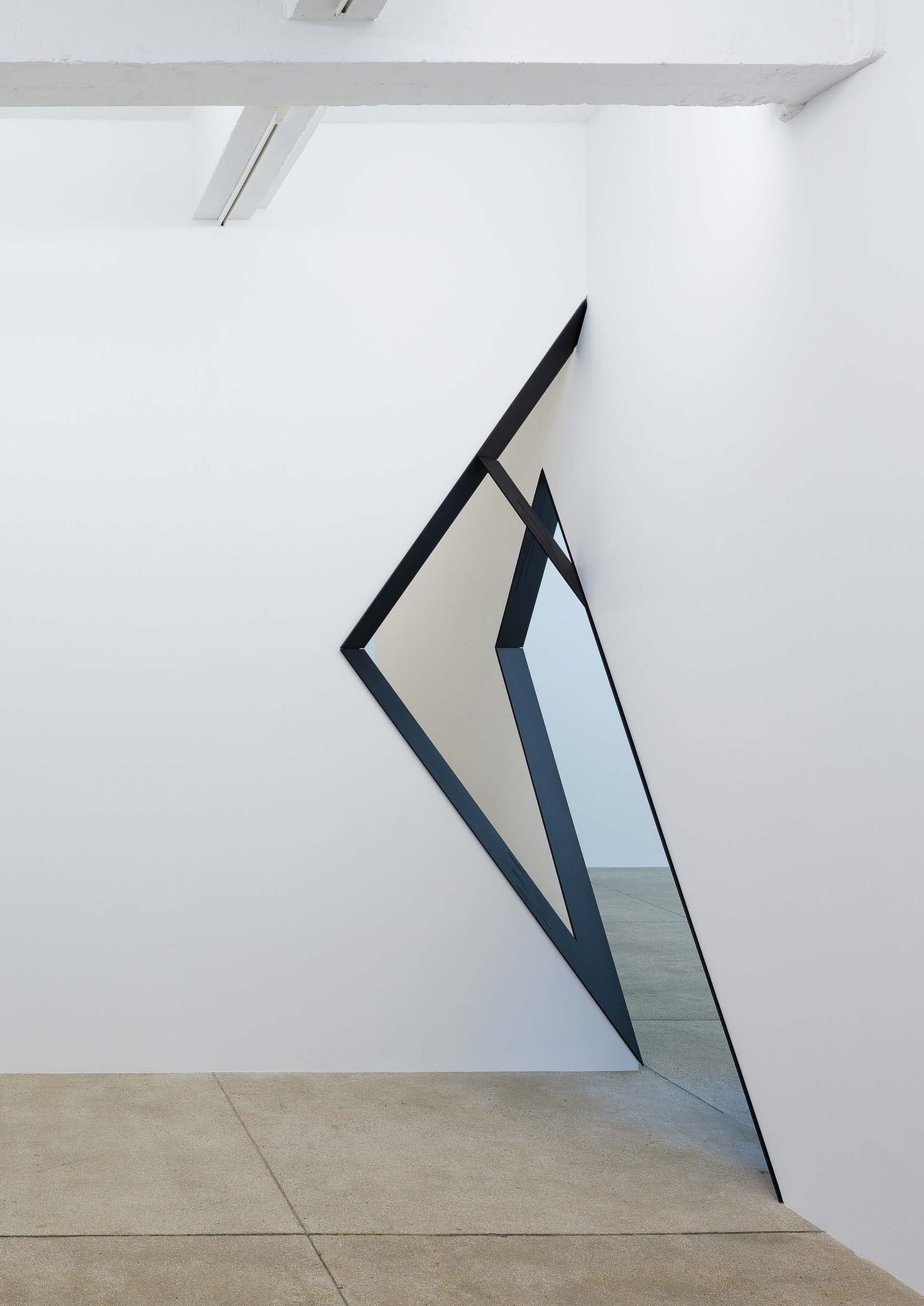
p. 150
Diagonal teeth model, 2011
Ink on foam core
21-½″ x 10-¾″ (54.5 x 27 cm)

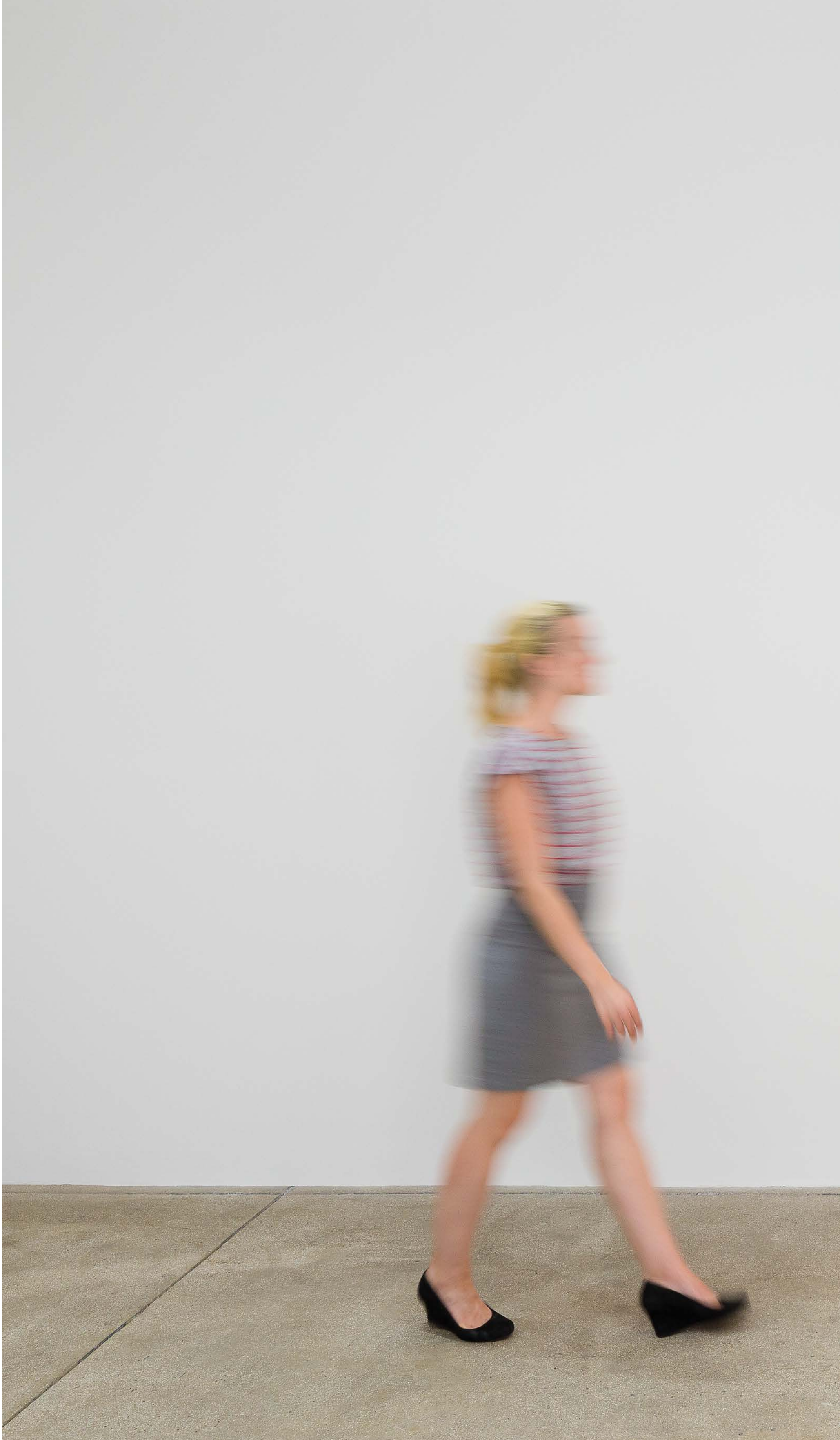
p. 151
Fabrication drawing: diagonal
teeth, 2011
Screenshot
Dimensions variable

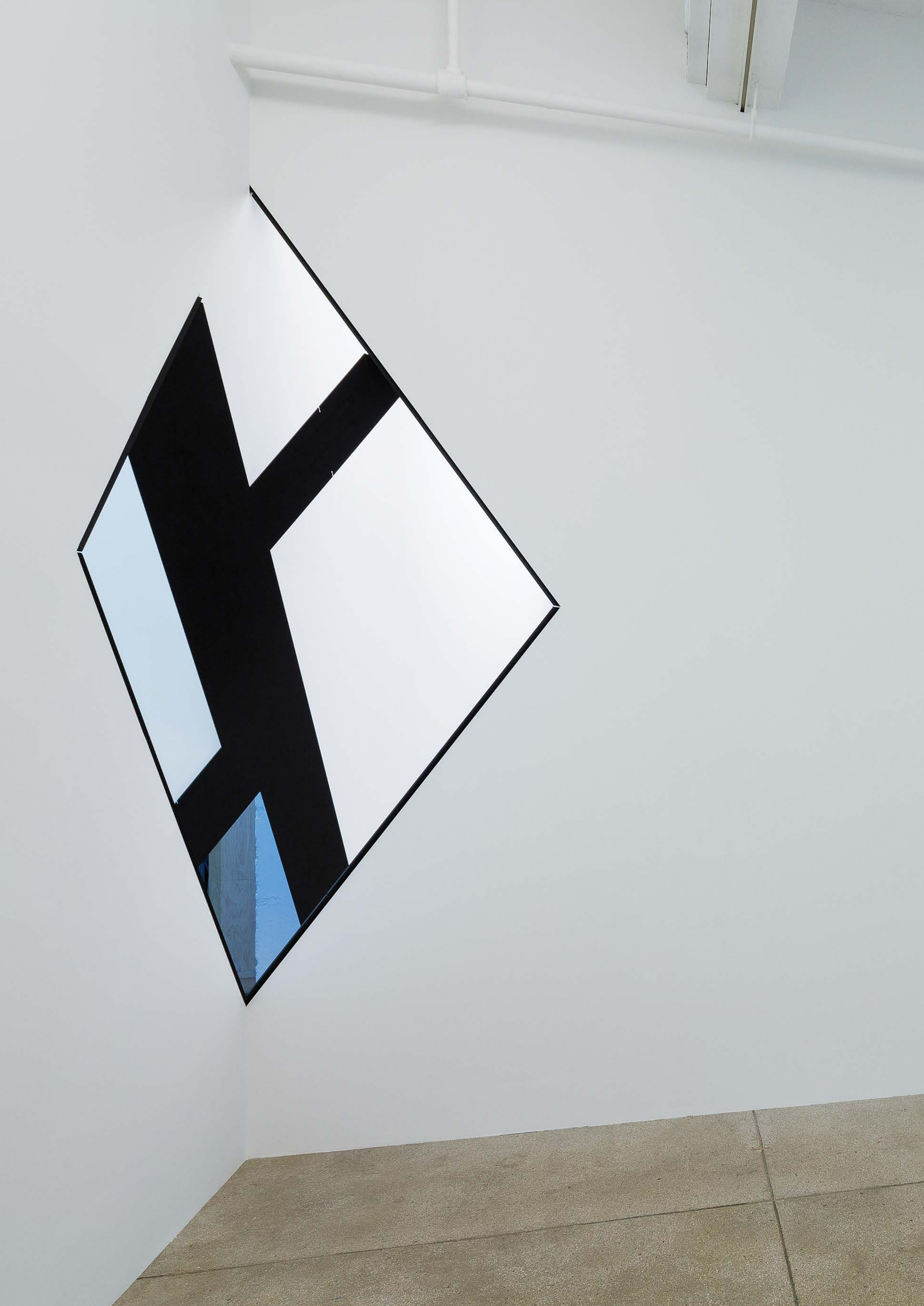
p. 152
3-way joint: open position, 2012
Aluminum
18-½″ x 7-⅞″ x 11-⅝″
(50 x 20 x 29.5 cm)

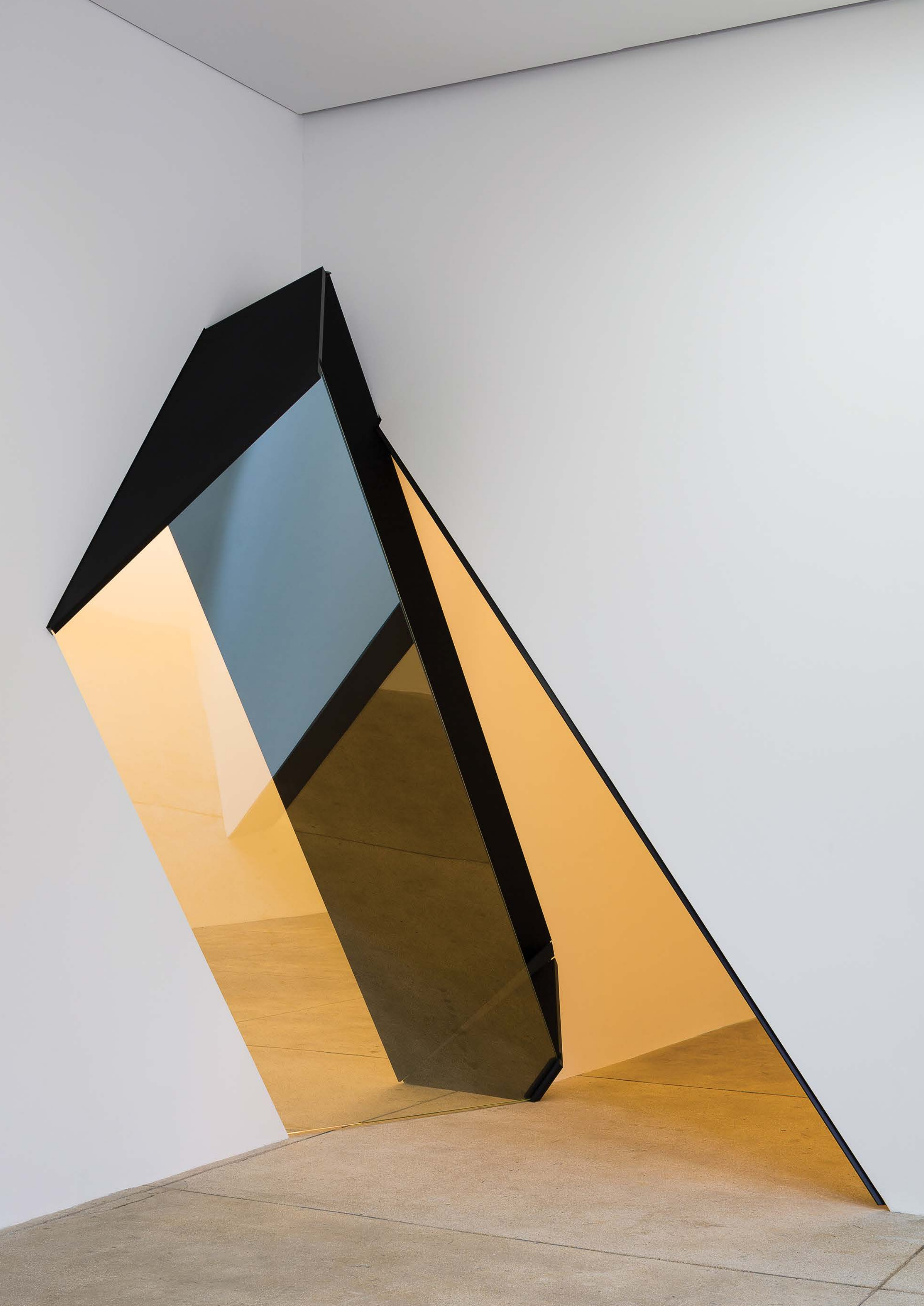
p. 153
3-way joint: closed position, 2012
Aluminum
18-½″ x 7-⅞″ x 11-⅝″
(50 x 20 x 29.5 cm)

p. 154–155
Detail. *D-33*, 2012
Aluminum, glass, architecture
Dimensions variable



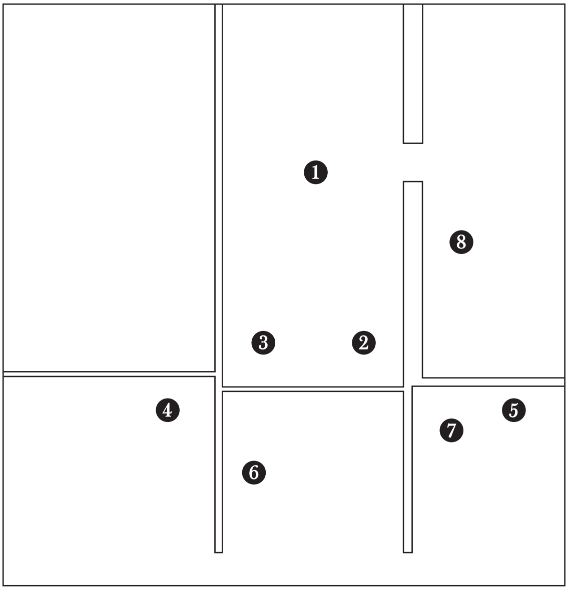






p.160–175
D-33, 2012
Aluminum, glass, architecture
Dimensions variable
P.P.O.W, New York

Floorplan showing camera position of plates.



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CONTRIBUTORS

Julian Rose is a senior editor at *Artforum* and a founding principal of the design studio Formlessfinder. He received his Masters of Architecture from Princeton University, and a B.A. in Art and Architectural History from Harvard University. His design work has been exhibited at institutions such as The Museum of Modern Art in New York, Storefront for Art and Architecture in New York, and The MAXXI in Rome. His writing on both art and architecture has been featured in numerous publications including *Artforum*, *Log*, and *October*. He edited, with Garrett Ricciardi, *Formless*, published by Lars Müller in 2013, and, with Spyros Papapetros, *Retracing the Expanded Field: Encounters between Art and Architecture*, published by the MIT Press in 2014.

Stephanie Weber is an art historian and curator of contemporary art at Lenbachhaus in Munich. In her previous role as assistant curator at The Museum of Modern Art, New York, she coordinated *Isa Genzken: Retrospective,* and *Francis Alÿs: A Story of Deception,* and co-curated *Projects 97: Mark Boulos.* Her recent projects at MoMA include a film program dedicated to Christoph Schlingensief and his peers as well as performances and film screenings with Charles Simonds, Tom Thayer and C. Spencer Yeh.

ARTIST BIOGRAPHY

Sarah Oppenheimer's work spans the disciplinary boundaries between sculpture and architecture. Oppenheimer's first solo exhibition was held in 2002 at the Drawing Center, New York. Since that time, her work has been exhibited internationally. Her projects include *W-12302*, an architecturally embedded permanent commission at the Baltimore Museum of Art (2012) and *33-D*, a double threshold at Kunsthaus Baselland (2014). Her work has also been shown at The Andy Warhol Museum; the Museum of Contemporary Art, San Diego; the Saint Louis Art Museum; and the Sculpture Center, Long Island City. Upcoming exhibitions include projects at MassMoCA and the Wexner Center for the Arts, Columbus.

ACKNOWLEDGMENTS

Sarah Oppenheimer

Significant alterations of the inhabited environment are not the work of a single individual. Space and place come into being through a process of dialog, conversation and collaboration. As such, none of my work is realized alone. My work evolves through the complex processes of exchange between many individuals and institutions.

Some of these individuals have had a lasting effect on the scope and direction of projects over the past several years and the range of their contributions is far too extensive to summarize here. I would like to thank these core participants, who have greatly impacted my creative life. They include Levi Murphy and Uri Wegman, who have deeply influenced the direction of the studio over the past several years. In particular, I would like to thank Richard Joon Yoo, who continues to work tirelessly in the conceptualization and realization of new work. His influence continues to enrich an ever increasing number of projects.

Many others have contributed specific expertise to various projects, allowing the scope of work to expand in scale and complexity. Some of these extremely talented individuals have been involved in the work of the studio for years, and have shaped the direction of studio research. I would like to thank Andrew Heuman for introducing me to the power of code and for his extraordinary contributions to the studio's visualization software. With their engineering expertise, Edward Stanley, Hauke Jungjohann and David Bott have enabled the studio to integrate complex structures seamlessly into the surrounding environment. Joe Ayube and Alex Orlande contributed tirelessly to the digital fabrication of metal skins. Linnea Tillett generously donated her expertise in lighting technology and design. I am also indebted to Courtney Childress, Aoife Considine, Max Golden, Erik Gonzales, Oliver Minder, Marius Thurnherr, David Zimmerman and Aaron Zimmerman for their creative and technical assistance.

The realization for *D-33* and *33-D* would not have been possible without the faith and commitment of those individuals overseeing the space in which these pieces were realized. In this context, I would like to thank Ines Goldbach, curator and director of Kunsthaus Baselland, and Wendy Olsoff and Penny Pilkington, co-owners of P.P.O.W, for making *33-D* and *D-33* a reality. Deep thanks also go to Stefan, Margareta and Miklos von Bartha, David Juda and Pieter and Marina Meijer.

I have gained tremendous insight from my in depth conversations with both Julian Rose and Stephanie Weber. Their extraordinary generosity and intelligence has greatly expanded my conceptualization of my own work. I am certain their texts will continue to influence my thinking in the years to come.

Finally, I am deeply grateful to Stephanie Hanor, Maysoun Wazwaz, the extraordinary crew at Mills College Art Museum and the Graham Foundation, for making this exhibition and publication a reality.

ISBN: 978-0-9854600-1-3
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