Spring 5-1-2018

Hatch is Hatch: Building Building Drawings

Thomas Kuei

Hatch is Hatch: Building Building Drawings

A Capstone Project Submitted in Partial Fulfillment of the
Requirements of the Renée Crown University Honors Program at
Syracuse University

Thomas Kuei

Candidate for Bachelor of Architecture
and Renée Crown University Honors
Spring 2018

Honors Capstone Project in Architecture

Capstone Project Advisor: _____
Jonathan Louie, Assistant Professor of Architecture

Capstone Project Reader: _____
Zeke Leonard, Assistant Professor

Honors Director: _____
Chris Johnson, Interim Director

Abstract

The relationship of drawings to built architecture has changed drastically with the advent of technological advances that have automated drawing practices that once required skill, time, and effort. The focus of this body of research is on the hatch as an image-making tool, examining its current relationship to the translation from drawings to buildings. This paper will explore the implications of the hatch's complex history in relationship to the mediating technologies and techniques through which they have been produced to recapture lost intention with the use of the hatch today. The paper will then focus on the hatch's capacity to be disruptive or integrated within the design process. Within the context of architecture, no longer is the hatch a critically regarded aspect of design, but rather is used solely as graphic overlays and diagrammatic fills. By reinserting an understanding of how hatches were and how they are now, this thesis aims to reconcile the competing ambitions of drawing aesthetic and building impact.

The testing ground for this thesis is a generic farm lot in Lompoc, California. Utilized for its formal qualities at multiple scales, the traditional foursquare house and surrounding landscape acts as a rich resource of found hatches that can start to reconcile the translations from the 2D to the 3D. The site pushes the understanding of the hatch as something that is not only graphic, but also performative, acting as a set of limitations within which the farm can operate. Ultimately, this thesis focuses on material qualities of the found site and speculates on ways in which issues of atmosphere, effect, and signification can be collapsed and made clear within building construction processes.

This project is, on one hand, a model that suggests a way to reevaluate contemporary ubiquitous drawing techniques, and on the other hand, a concrete proposal for ways to apply abstract research into a design project.

Key words: hatch, drawing, architecture, material, history

Executive Summary

HATCH (v) : To mark something, such as a drawing or engraving, with fine closely spaced lines, especially one used to give the effect of shading. To inlay with metal.

HATCH (n) : an opening of restricted size allowing for passage from one area to another.

This final capstone project is focused on analyzing the hatch within architectural design and image making. The "hatch" within architecture has developed from art history, following the development of different image making techniques. From historical techniques such as etching and aquatint to more modern techniques such as scratchboard and the linocut, the hatch has always been a critical part of the way we read an image. However, contemporary architectural drawings are now largely created in the computer with little traces of human intervention. Drawings are created as perfect end products and the process of image making is lost.

The process of hatching, within this digital atmosphere, has become automated, operating similar to the ways in which color fills are used. It has lost its own discourse, history, and place in contemporary architectural drawing, and thus, its impact on architectural building design. This thesis aims to recapture control over the process of architectural drawing and resituate the hatch's relevance in the translation from drawing to building. Within the currently architectural atmosphere, it is so easy to get lost in what architecture *can* do with the rapidly expanding architectural form-making software, rendering software, and even fabrication methods such as 3D printing, CNC milling, and laser cutting. Because of the overwhelming number of new media, it is critically important for designers, architects, and students to take a step back and

reevaluate what these media, methods, and techniques *should* do. This thesis aims to do just that, focusing on the hatch, studying its influences not only in drawing, but also in construction and building.

This thesis utilizes a lot of farmland in Lompoc, California as a catalyst for the exploration of the translation from drawing to building. By recognizing that there are many found elements on the land that can be considered hatches, as defined by Merriam-Webster, this thesis posits that there are sets of limitations that hatches can define at multiple scales. Starting with the smallest scale, the qualities of the materials on the site, such as wood, shingles, brick, and dirt, are examined in relationship to the sets of limitations they produce as represented in drawing format as well as built format. The project aims to make visible the latent qualities of each of these materials by actively collapsing aspects of its texture and signification, looking at ways in which different methods of material manipulation are able to produce lasting effects. From the material studies, this thesis scales up and examines the ways in which the "room" can start to accept the new ways materials are utilized. The room allows for a new translation from the abstract and isolated material experimentations into a space that starts to integrate issues of building construction and use looking at ways in which the material transformations can start to produce effects on a larger scale.

This thesis ultimately aims to be a way in which architectural design can be changed and alerted when the underlying techniques of contemporary architectural image making are called into question. No longer can architectural motifs be accepted because of its widely accepted use. It is critical to start to understand how architectural tools came to be and critically examine its place in a rapidly developing profession.

Table of Contents

(You may modify this format to suit the needs of your project.)

Chapter 1

Introduction

The origins of Architecture, according to Vitruvius in *De Architectura*, a collection of books regarded as the first Architectural treatise, can be traced back to when builders started "attending to the comforts and luxuries of civilized society."[1] It was only then that buildings were "carried to the highest degree of perfection."[2] In his fourth book in De Architectura, Vitruvius places the beginnings of Architecture -- with a capital A -- at the classical orders, the point where human proportions were adopted as the organizing principles of the three dominant column typologies.[3] Since then, the origins of Architecture's relationship to drawing has changed significantly as technologies and cultural ideologies have evolved. This thesis is critically examining the translation from drawings to buildings, focusing on the hatch as a ubiquitous image-making tool and on the hatch's deployment in architectural drawing practices. The passive acceptance of new aesthetics and focus on what digital tools can do instead of the implications they have on building design has allowed the hatch to become an empty signifier, stripping the technique and artifact of any spatial, cultural, and individual qualities. Over time, the deployment of the hatch has changed significantly from providing depth, pushing fantasy, and disseminating knowledge to instead act as visual noise and diagrammatic fills. No longer is it a critical part of an architectural composition, but rather as a pure aesthetic pursuit. To critically examine the hatch, it is necessary to first understand its drawing's relationship to architecture, the architectural movements that have changed drawing practices, and the contemporary

---

[1]Pollio, Vitruvius, and Joseph Gwilt. The architecture of Marcus Vitruvius Pollio: in ten books. Cambridge: Cambridge University Press, 2014

[2] ibid

[3] ibid

atmosphere in which the hatch now operates before it is possible to critically examine how the hatch can be deployed in today's architectural practice.

Architecture has not always been a profession concerned primarily with drawing. For much of history, architecture was a field for master-builders and a mechanical craft. Buildings were conceived of, and made by artisan workers. Alberti, in fact, was the first to claim that architecture is first an idea, conceived of by its author, and then copied from drawings into the physical world. He states that "the physical building that may follow [its drawing] is only a copy, devoid of any intellectual added value."[4] This idea is derived in the two ways the origins of drawings are recounted. David Allan, a Scottish painter and illustrator, painted the rendition told by Pliny the Elder, a Roman writer of the first century, in 1773, that told the story of Diboutades tracing the shadow of her late lover. By the light of a fire, she marked the contour of her lover on a wall.[5] Karl Friedrich Schinkel retold the story in his 1830 painting, replacing the interior condition of the original painting with an exterior rock face, the fire with the sun, and the drawer as a shepherd following Diboutades' direction.[6] While both paintings speak of the architectural drawing, Allan's rendition shows drawing post-architecture in a perspectival view while Schinkel's shows drawing preceding architecture in elevation. Schinkel's painting recognizes the necessity of drawing before architecture. In his essay, *Translations from Drawings to Buildings,* Robin Evans synthesizes this idea by stating that "drawing in architecture is not done after nature, but prior to construction; it is not so much produced by reflection on the reality outside the drawing, as productive of a reality that will end up outside the drawing."[7]

---

[4]Spiller, Neil, and Nic Clear. Drawing architecture. London: Wiley, 2013.
[5] Evans, Robin. *Translations from Drawings to Building and Other Essays*. London, England: Architectural Association Publications, 1997.
[6] ibid
[7] ibid

Namely, it is necessary to have drawing before architecture. The drawing of architecture cannot happen after the building is built, but rather is a prerequisite of architecture.

This fundamental dialogue between drawing and building, in the contemporary postdigital age of architecture has be largely renounced. The turn to the "digital" as a mode and technique is almost 20 years old, and computer-based architectural representation, design, and fabrication are now ubiquitous. Increased access, relatively low-cost services, processing power rendering tools, and programs such as photoshop and illustrator started to "[produce] rendered images -- glossy visions of soon-to-be-build projects, usually blue-skyed, lush-leafed, and populated by groups of groomed and grinning clip-art figures; where buildings appeared with a polished sheen and lens flares proliferated. Postcards from the near future."[8] Now, projects could be visualized before the design process was completed, clients were able to view snapshots of the future, and projects were started and finished with idealized versions of the built product. The drawing was rendered useless as renderings took the place of spatial description.

[8] Jacob, Sam. "Architecture Enters the Age of Post-Digital Drawing." Metropolis. March 30, 2017. Accessed February 05, 2018. http://www.metropolismag.com/architecture/architecture-enters-age-post-digital-drawing/.

Chapter 2

The Digital

The digital revolution has sparked a rediscovery of the architectural drawing, but has also "has made drawings more consumable...This consumability has most often been achieved by redefining their representational role...in the sense of being less concerned with their relation to what they represent than with their own constitution."[9] As the drawings have moved away from built work, the drawings have become the focus and are "repositories of effects and the focus of attention,"[10] leaving the translation between the drawing and building as an afterthought. This focus on the drawing is characteristic of the postdigital era of architecture. To understand this change, however, one must understand what the post-digital means. The postdigital is current architectural era that developed after the digital revolution. According to Ellie Abrons and Adam Fure, professors at the Taubman College at the University of Michigan, the post in postdigital "does not imply a time after or beyond the digital, but instead should be understood as both a continuation and interrogation of what we have known as 'the digital' to date."[11] This implies that we should accept the digital technologies that have developed within the digital revolution and use those as modes through which we design. This changes the nature of the digital as something that should be pushed to its boundaries in pursuit of extreme limits, but rather using new programs in a controlled, refined, and composed way. Abrons and Fure also posit that the postdigital "replaces the forward vector of 'progress' with an omnidirectional

---

[9] Evans, Robin. *Translations from Drawings to Building and Other Essays*. London, England: Architectural Association Publications, 1997.
[10] ibid
[11] Abrons, Ellie, and Adam Fure. "Materiality and Architecture." Lineament: Materiality, Geometry and Representation in Architecture, 2016, 185-95. doi:10.4324/9781315732732.

purview that is less interested in the creation of newness and developing the hidden aspects of computation."[12] This new way of approaching the postdigital halts the passive acceptance of digital norms that have been the result of ubiquity rather than intellectual rigor.

The current approaches to the reconsideration of digital technologies is twofold. While both modes of operation accept the digital techniques, one postulates that images that push the fictitious nature of drawings created with digital technologies can be considered postdigital, as the nature of the drawings themselves, even if they harken back to past aesthetic styles, have been fundamentally changed by the programs themselves. Sam Jacobs, an advocate for this school of thought, states that the postdigital "is in strict opposition to the digital render's desire to make the fiction seem 'real.'"[13] Jacobs starts to analyze programs such as photoshop and illustrator, calling out their respective characteristics, namely the ability to "freely manipulate content."[14] Instead of the traditional cut and paste technique of creating a collage, we are now able to zoom and control the relationship of image to image at a "forensic level,"[15] as well as the prevalence of flatness and the graphic outline. However, as long as the images push the fantastic nature that can be constructed via these programs, they add to the general discourse of postdigital architecture. The other school of thought postulates that aside from the aesthetics of the drawing, the mode of working needs, also, to come from digital means. This approach not only looks critically at the way in which "the 'grain' of computation shows up in physical things, by training the eye to see patterns and qualities that arise from ubiquitous yet often unintelligible

---

[12] ibid
[13] Jacob, Sam. "Architecture Enters the Age of Post-Digital Drawing." Metropolis. March 30, 2017. Accessed February 05, 2018. http://www.metropolismag.com/architecture/architecture-enters-age-post-digital-drawing/.
[14] ibid
[15] ibid

computational processes."[16] However, instead of accepting these faults within the design, the movement explores the design potentials in the defects of digital image-making; it "multiplies the grains that can be produced, identified, and revealed," ultimately taking back control over the image production as a whole. The resulting designs maintain "commitments to disciplinary development while exploring the aesthetic opportunities that emerge from changing conceptions of computation."[17]

[16] Abrons, Ellie, and Adam Fure. "Materiality and Architecture." Lineament: Materiality, Geometry and Representation in Architecture, 2016, 185-95. doi:10.4324/9781315732732.
[17] ibid

Chapter 3

Hatch Hatch Hatch Hatch

While there are many aesthetic forms of representation that have arisen in the postdigital age, a techniques that is heavily ingrained in many image-making processes is the hatch. This technique is of great interest because of the dichotomous coexistence of both their specificity and ambiguity. They, while specific in their part-to-part relationship, push neutral agendas, allowing them to become ubiquitous overlays in much of the postdigital image production. One such example of the loss of inherent meaning and use of the hatch can be seen in MOS Architects led by Michael Meredith and Hilary Sample, professors at Princeton University and Columbia University, whose body of work embraces a "screenshot aesthetic," which they posit is "central to a certain contemporary way of doing architecture."[18] This mode of representation harkens back to the writings on Modernism by Clement Greenberg, an essayist and Modernist art critic, where he defined the "essence of Modernism" as "the self-conscious thematization of the limitations of mediums -- making art about what mediums can do."[19] Furthermore, he states that "each art had to determine, through its own operations and works, the effects exclusive to itself."[20] The screenshot of an architectural project, in the way MOS Architects utilizes them, seeks to establish "an impression or mood rather than convey precise information…[while suggesting] that there is a precisely specified object alive in a virtual space."[21] This suggestion of authenticity and truthiness embedded within the snapshot comes from the fact that "no one

[18] Meredith, Michael, and Hilary Sample. MOS: selected works. New York: Princeton Architectural Press, 2016.
[19]" Greenberg, Clement. "Modernist Painting." MS, York University.
[20] ibid
[21] Meredith, Michael, and Hilary Sample. MOS: selected works. New York: Princeton Architectural Press, 2016.

would expect anyone to fake them,"[22] as they would with art photography. Examining images the firm has produced for the Foreclosed: Rehousing the American Dream exhibition at the MoMA and their House No. 1 project, a single family home in upstate New York,[23] it is clear that the use of the black line hatch is used as meaningless digital noise that pushes the reading of authenticity with the inclusion of digital detritus.

Another such example of the hatch being deployed ubiquitously with no consideration for the technique's historical relevance to image making can be found in the textbook *Building Construction Illustrated* by Francis D.K. Ching. While this book is solely a collection of illustrations of construction processes and materials, utilizes a very specific drawing technique that is referenced as "Francis D.K. Ching's signature style." His illustrations utilize the line hatch indiscriminately as renderings of shadow, section cut fills, wood paneling, abstracted atmosphere, and diagrammatic fill. The utilization of the same hatch in this sampling of ways reflects the embrace of diagram culture within architectural image production. Mark Garcia, an Author and Editor at John Wiley and Sons and a Senior Lecturer at the University of Greenwich's Department of architecture, states that a diagram is the "spatialization of a selective abstraction and/or reduction of a concept or phenomenon."[24] The hatch has been used prolifically in the diagram, apparently interchangeable with other forms of information representation such as the color fill and text. Anthony Vidler "distinguishes the ways in which

---

[22] ibid

[23]Chicago Architecture Biennial. "Axonometric Drawings by the Playfully Subversive..." Chicago Architecture Biennial. July 20, 2015. Accessed February 05, 2018. http://chicagoarchitecturebiennial/post/124589223881/axonometric-drawings-by-the-playfully-subversive.

[24] Garcia, Mark, ed. *The Diagrams of Architecture*. AD Reader. Chichester, United Kingdom: John Wiley & Sons Ltd, 2010.

diagrams differ from drawings, namely that diagrams represent abstractions 'symbolically'."[25] The hatch's role in the diagram is only symbolic of something else, and so, has no value of its own. Despite this, architecture firms and artists alike have used the hatch in their architectural drawings, and in some cases, in building design. This fits with the diagrammatic turn in architecture, which has been "quickly assimilated into design practices that work with digital techniques of representation...The evident speed with which digitised images of traditional modes of representation can be modified and worked with has for many years supported the computer-aided design in practice."[26] This approach to architecture can be seen in the shift from hand-drafting to computational design. With the advent of programs such as Illustrator and AutoCAD, the hatches are readily available and automated, and thus easier to use.

This aversion to understanding the hatch and embrace of the Modernist ideal of exploring what a medium can do is combated by the Post-Digital's ideal of exploring what it means to use a certain medium. To critically examine the potential for the hatch, it's important to build a thorough understanding of the predecessors of the contemporary hatch. The hatch's origins in relationship to image production can be traced back to techniques such as woodcut, engraving, etching, stippling, scratchboard, photogravure, halftone printing, ben day printing, linocuts, dot matrix printing, and screentone printing. By closely reading quintessential images through the lens for the hatch, it is possible to start to create a collection of ways the hatch was deployed that were tied closely to the modes of production.

Albrecht Dürer's "The Annunciation (The Life of the Virgin)" c. 1503 is an example of an image produced by the woodcut technique. It presents the entire image as a material-less composition, with the outline of the individual components dominant. The hatch is acting as a

[25] ibid
[26] ibid

mode of idealized image rendering, as every subject is clearly defined and no differentiation between the resolution of the line work in the foreground and background. The hatch itself reinforces the constructed perspective while also calling attention to certain elements such as the stairs and the angel. The hatch is produced by carving the negatives of a mirrored image into the wood. Ink is applied to the smooth surface of the wood and printed onto paper. The hatch is produced by manual gouging of the medium.[27]

Martin Schongauer's "Saint Anthony Tormented by Demons" c. 1470 was one of the first images produced by engraving. This engraving piece elevated a technique that was derived from goldsmithing into high art.[28] Cross hatching is mixed with parallel hatching to provide depth and texture to the demons. Tick hatching is used in the background sky to give a sense of atmosphere that does not detract from the subject of the image, but rather accentuates Saint Anthony's vulnerability. The curved and horizontal lines on the demons accentuate movement and energy whereas the the subject itself is rendered with smaller, straight lines to reinforce stoicism.[29] The hatch is produced by carving linework directly into a plate of metal. The gouged portions catch link based on depth of the carve, emphasizing deeper cut lines.[30]

"The Smoking Fire" c.1761 by Giovanni Battista Piranesi was part of a larger series titled "Carciery" or "The Prisons." This etching utilizes the hatch technique as a way to reinforce the atmosphere and constructed fantasy of the scene. Primary lines follow individual subjects, but secondary cross-hatched lines reinforce the multiple perspectives while simultaneously

---

[27] *https://www.masterworksfineart.com/artist/albrecht-durer/the-annunciation-the-life-of-the-virgin-c-1503-2/*
[28] *https://www.metmuseum.org/toah/works-of-art/20.5.2/*
[29] ibid
[30] The Editors of Encyclopædia Britannica. "Engraving." Encyclopædia Britannica. December 14, 2015. Accessed February 05, 2018. https://www.britannica.com/art/engraving.

reinforcing the multiple light sources present in the construction.[31] The lines themselves are not independent anymore, but rather layers of scratches that create zones, reinforcing the frantic, oppressive nature of the scene. By divorcing from the graphic outline, he is able to flatten the image to create surreal scenes that don't question impossible geometries and abrupt terminations. The hatch is produced by carving away from a thinly applied layer of protective wax, allowing for more fluid linework similar to pencil drawings. Unprotected portions of the metal plate are eroded via an acid bath. While the mode of production is semi-automated by the acid, the image is controlled tightly by the author.

Stippling, as seen in Giulio Campagnola's "Young shepherd seated in a landscape looking toward an old man in the lower right, buildings in the background and a tree and mountain at left" c.1512 is the first example of a hatch that consists of dots rather than lines. In this case, the fidelity of image rendering is prioritized because a greater gradation of light to dark was made possible. However, no longer is it possible to visually examine the history of the drawing. With this technique, the dot is still subservient to the line, only being used to fill in the outlines of the forms. The technique is no longer prioritized and exploited, but rather an emphasis on the image as a whole is pushed. The hatch is produced by distributing dots of various sizes and densities within a set boundary. Similar to etching, the dots are carved out of a thin layer of protective wax and then eroded by an acid bath. The technique was a way to mimic the atmosphere produced by chalk drawings.[32]

The Scratchboard technique was popularized by Merritt Dana Cutler in her publication titled "Scratchboard drawing: A Technical Treatise" c. 1949

---

[31] *https://www.harvardartmuseums.org/art/262439*

[32] *https://www.metmuseum.org/art/collection/search/372060*

The scratchboard was used as a rendering tool, and most similarly reflects the process of engraving while also taking on the same priority of the line as etching. The lines carved provided tone and high quality image rendering, readily available to be reprinted.[33] However, singular subjects are most commonly shown through this technique, as backgrounds would be too time consuming to slowly reveal.[34] The hatch is produced by carving away at a top layer of black to reveal the white layer underneath. It is a direct translation of drawing to image production.

William Henry Fox Talbot spearheaded the creation of the photogravure technique with his piece titled "Dandelion Seeds" c.1858 This mode of image making is a direct translation of object to drawing.[35] The seeds were placed on a photosensitized metal board and exposed to light. While the image is seen as whole, the process produces small dots that have depths corresponding to how much exposure to light. Similar in past techniques, the dot hatching is subservient to the subject as a means of approximating a photorealistic image, however, it is not subservient to a graphic outline anymore. The hatch was not intentionally created, but composes the entire image. The process takes authorship away from the maker.

With the advent of mechanized processes came Ben Day Printing utilized by Roy Lichtenstein in many of his works such as "Drowning Girl" c.1963 and "Mirror" c.1997 Lichtenstein uses the Ben Day printing as a way to comment on the economies of commercial comic and newspaper printing.[36] By manually crafting the dots that were used in the mechanical reproduction of images, Lichtenstein took something that was supposed to be robotic and forced

---

[33] *Cutler, Merritt. Scratchboard drawing: a technical treatise. New York: Waston-Guprill, 1949.*
[34] ibid
[35] *https://www.metmuseum.org/toah/works-of-art/2004.111/*

[36] *Toledano, Keren Veisblatt. "Ben-Day Dots – An Artist's Dwelling." The Walk Up. June 24, 2012. Accessed February 5, 2018. http://thewalkupblog.com/ben-day-dot-an-artists-dwelling-9/.*

them to become the focus of the painting.[37] The manual production pushed the comic imagery into high art. The strict dot pattern does not fill the graphic outline in many cases, bringing the control of the author back into the painting. The image is flattened, with no tonal information. The colors themselves do not aim to imitate real life, but rather continue to push the constructed reality. "Mirror" utilized the diagonal linear hatch as a commentary on the abstraction of cartoon mirrors. Lichtenstein said "Now, you see those lines and you know it means 'mirror,' even though there are obviously no such lines in reality. It's a convention that we unconsciously accept."[38] The abstraction of the work calls attention to the fictitious, empty nature of the hatch as symbolism.

The Linocut was a method of quickly producing images with new, cheaper materials available. Pablo Picasso's "Buste de Femme au Chapeau" c.1962 can be read as a superimposition of blocks of zones of color, as each different color had to be printed separately on top of each other. The hatches, here, reinforce the flatness of the drawings, operating independently from the three dimensional form. Straight lines have their own logic, rather than following the logic of the subject. However, the lines still provide differentiated textures to each zone of the painting.[39] The Linocut was produced by manually carving away at linoleum, printing from dark to light, completing the composite image on linoleum in a step-by-step process. The steps are visible in the final product, almost as a collapse of time.

---

[37] ibid

[38] Kimmelman, Michael. "At the MET with: Roy Lichtenstein; Disciple Of Color And Line, Master Of Irony." The New York Times. March 30, 1995. Accessed February 05, 2018. http://www.nytimes.com/1995/03/31/arts/at-the-met-with-roy-lichtenstein-disciple-of-color-and-line-master-of-irony.html?pagewanted=all.

[39] *Christie's Editors. "Picasso and the Linocut | Christie's." Picasso and the linocut | Christie's. March 5, 2016. Accessed February 05, 2018. http://www.christies.com/Features/Picasso-and-the-linocut-5770-1.aspx.*

Dot matrix printing brought the pixel itself to the forefront. Primarily used in printing text, each dot became integral to the whole composition. While still approximating the composite form, the relationship between form and unit became equal, where one could not exist without the other. Because it operates at such a small scale, the produced image is flattened to an abstract, two-dimensional artifact.[40] The term "DPI" is the result of this form of printing.

Finally, screentone printing, as seen in S.P. Burke's comic titled "Post-Modernism" c.1950 was the direct precursor to the modern computer hatch. Patterns are transferred from pre-printed sheets of printed plastic onto paper. Although this technique was a manual version of computer printing, it had no regard for the image being created, but rather only provided a way to quickly fill space with patterns and textures to create general differentiations in tone.

From these close readings of specific art pieces' relationships to their modes of production, it is possible to start to draw out motifs of the hatch and arrange them utilizing existing modes of categorization. The hatch, firstly, cannot be considered in relationship to painting practices because, as Celement Greenburg states in his essay titled "Modernist Painting," the "limiations that constitute the medium of painting [are] the flat surface, the shape of the support, and the properties of the pigment."[41] The action of hatching inherently consists of removing material whether it be wood from a wood block or wax from a metal sheet. The does not necessarily conform to a rectangular frame, and is tied to reproduction. However the hatches can start to imitate the painterly and linear effects of paintings in their end products as defined by Heinrich Wölfflin. The linear means that all figures and significant subjects and surrouding

---

[40] *http://www.how-ocr-works.com/OCR/word-character-segmentation/dot-matrix-sample2.png*
[41] Clement Greenburg. "Modernist Painting." Modernist Painting. http://www.yorku.ca/yamlau/readings/greenberg_modernistPainting.pdf

forms are clearly outlined with clear, solid boundaries.[42] Each figure is evenly illuminated and can be seen autonomously from its surrounding subjects. In contrast, the painterly effects references images that have a single light source with the figures fused together with softer, more expressive brush strokes.[43] Informed by these two art theororists, hatches, then are deployed as atmophere, which is determined by the perceived compression and expansion created by the density and thickness of a line, effect which is informed by tonal information that blurs figures and edges, and finally signification which references external bodies of information such as material or program.

By understanding the hatch's historical lineage and ways in which to categorize the outcomes of the image making processes, it is possible for my thesis to delve into examining what the hatch means for architecture within a contemporary architectural atmosphere. To start to situate the project in the physical realm I have explored sites with inherent hatches integrated to the landscape and building typology that I can draw from, ultimately choosing a flower farm in Lompoc, California because of its neutral environmental conditions, inherent 3D elements, range of tonal values produced by the flowers themselves, and integrated architectural elements embedded with the program, specifically the traditional foursquare house.

Starting first at the scale of individual building materials, this thesis explores the different ways hatches can start to reveal themselves based on atmosphere, effect, and signfication through processes of "making." Looking at materials such as wood, drywall, brick, concrete, dirt, shingles and glass, the thesis aims to bring latent qualities of materials and examines ways in which it is possible to collapse multiple meanings on the same material. In

---

[42] Witcombe, Christopher L.C.E. "Art & Theory in Baroque Europe." Art and Theory in Baroque Europe: Wolfflin - Renaissance and Baroque Style. 2013. Accessed April 18, 2018. http://arthistoryresources.net/baroque-art-theory-2013/wolfflin-renaissance-baroque.html.
[43] ibid

William Hogarth's *The Analysis of Beauty,* he speculates on the eye's ability to read an object. He says to "let every object under our consideration, be imagined to have its inward contents scooped out so nicely, as to have nothing of it left but a thin shell, exactly corresponding, both in its inner and outer surface, to the shape of the object itself: and let us like-wise suppose this thin shell to be made up of very fine threads, closely connected together, and equally perceptible, whether the eye is supposed to observe them from without, or within; and we shall find the ideas of the two surfaces of this shell will natrually coincide. The very word, shell makes us seem to see both surfaces alike"[44] Hogarth references the diminishing availabilty of objects to an individual's vision by only percieving the surface. By imagining "the within," he directs us to a conceptual approach to visual culture that allows us to partially see an object in its totality via the visual reproduction of found subjects. Utilizing Hogarth's base theology, the physical material studies produced aim to "see" each material in separate ways, each with their own truths via the re-representation of the materials through the categories of atmosphere, effect, and signfication. Once again following Hogarth's speculations, it is critical to move from physical material studies to the drawing as a facilitator of the collapse of information to make latent qualities perceptible. Because of this, the thesis moves from the material studies and applies them at the building scale, taking note of building and landscaping practices.

This thesis is producing a body of knowledge and exploration surrounding critical ideas of the hatch, taking into consideration art and production practices to reinvigorate the current drawing practices with a depth of knowledge perviously lost. By critically situating this ubiquitous drawing technique, this thesis project aims to act as an outline for future reconsiderations of convention.

---

[44] Hogarth, William, and William Hogarth. The Analysis of Beauty. New York: Cosimo Classics, 2009. 17.

Works Cited

Abrons, Ellie, and Adam Fure. "Materiality and Architecture." Lineament: Materiality, Geometry and Representation in Architecture, 2016, 185-95. doi:10.4324/9781315732732.

Chicago Architecture Biennial. "Axonometric Drawings by the Playfully Subversive..." Chicago Architecture Biennial. July 20, 2015. Accessed February 05, 2018. http://chicagoarchitecturebiennial/post/124589223881/axonometric-drawings-by-the-playfully-subversive.

Christie's Editors. "Picasso and the Linocut | Christie's." Picasso and the linocut | Christie's. March 5, 2016. Accessed February 05, 2018. http://www.christies.com/Features/Picasso-and-the-linocut-5770-1.aspx.

Evans, Robin. *Translations from Drawings to Building and Other Essays*. London, England: Architectural Association Publications, 1997.

Garcia, Mark, ed. *The Diagrams of Architecture*. AD Reader. Chichester, United Kingdom: John Wiley & Sons Ltd, 2010.

Greenberg, Clement. "Modernist Painting." MS, York University.

Hogarth, William, and William Hogarth. The Analysis of Beauty. New York: Cosimo Classics, 2009. 17.

Jacob, Sam. "Architecture Enters the Age of Post-Digital Drawing." Metropolis. March 30, 2017. Accessed February 05, 2018. http://www.metropolismag.com/architecture/architecture-enters-age-post-digital-drawing/.

Kimmelman, Michael. "At the MET with: Roy Lichtenstein; Disciple Of Color And Line, Master Of Irony." The New York Times. March 30, 1995. Accessed February 05, 2018. http://www.nytimes.com/1995/03/31/arts/at-the-met-with-roy-lichtenstein-disciple-of-color-and-line-master-of-irony.html?pagewanted=all.

Meredith, Michael, and Hilary Sample. MOS: selected works. New York: Princeton Architectural Press, 2016.

Pollio, Vitruvius, and Joseph Gwilt. The architecture of Marcus Vitruvius Pollio: in ten books. Cambridge: Cambridge University Press, 2014

Spiller, Neil, and Nic Clear. Drawing architecture. London: Wiley, 2013.

Toledano, Keren Veisblatt. "Ben-Day Dots – An Artist's Dwelling." The Walk Up. June 24, 2012. Accessed February 5, 2018. http://thewalkupblog.com/ben-day-dot-an-artists-dwelling-9/.

The Editors of Encyclopædia Britannica. "Engraving." Encyclopædia Britannica. December 14, 2015. Accessed February 05, 2018. https://www.britannica.com/art/engraving.

Witcombe, Christopher L.C.E. "Art & Theory in Baroque Europe." Art and Theory in Baroque Europe: Wolfflin - Renaissance and Baroque Style. 2013. Accessed April 18, 2018. http://arthistoryresources.net/baroque-art-theory-2013/wolfflin-renaissance-baroque.html.