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Reading Images on the Wall:

The Camera Obscura in the Academic Library

Stephanie Beene and Meggan Gould

INTRODUCTION

Creative practitioners spend much of their time outside of libraries, working in studios, labs, galleries, and other spaces. For this chapter, we declare that anyone can be a creative practitioner and that inspiration can come from new ways of experiencing the world. However, developing spaces to nurture creativity can be challenging within traditional academic library spaces. For example, if creativity is nurtured through experiential¹ and embodied learning,² how do we craft spaces within our libraries to inspire new modes of seeing, being, and knowing in the world? While librarians have long studied the information needs of artists, designers, and architects,³ less has been written about the role that library installations play in facilitating these mindsets among patrons, and even less has been written about the use of the camera obscura, an optical device made via a darkened room and aperture.⁴ This chapter addresses the camera obscura's use in academic libraries, its pedagogical implications, and its phenomenological potential.

Through an innovative partnership between the University of New Mexico (UNM)'s Fine Arts & Design Library (FADL) and the Photography program within the College of Fine Arts (CFA), a camera obscura installation has extended creative learning for all who frequent the library. As a component of this partnership, the camera obscura installation

originated with a dialogue between us in 2017, which launched an ongoing collaborative endeavor. Since then, the camera obscura has been installed annually for up to a month at a time. This pop-up installation has become an anticipated event, with students and community members enthusiastically inquiring after its next installation date.

Since its inaugural installation, photography instructors have incorporated the camera obscura into their classes, and community members with no photography background are invited to experience a moment of mindfulness in our otherwise fast-paced, screen-mediated world. Upon entering, the mind becomes still and focused as the eyes adjust to the inverted dancing images on the opposite wall. The realization that the darkened room *is* the camera evolves as slowly as the image develops. No technical proficiency is required, and there is no barrier to entry. Anyone in the library can participate in an embodied moment of creative imagination, regardless of age, discipline, experience, or creative background as they reflect on new ways of seeing, representing, and understanding our world.

THE CAMERA OBSCURA: A BRIEF HISTORY

The camera obscura, as defined by Merriam-Webster, is “a darkened enclosure having an aperture ...through which light from external objects enters to form an image of the objects on the opposite surface.”⁵ Originating from the Latin for *dark room*, it is built around illustrating the concept of light and how it travels. As light hits objects, they absorb or reflect it, determining their color and brightness. These wavelengths of light emit straight lines from objects to the human eye, which transmits signals to the brain, ordering and making sense of the visual information. While the camera obscura is now rare, it was once “invaluable to astronomers, a must for travellers [sic] and a dilettante’s toy ...continuing to be used throughout the twentieth century.”⁶

It is easy to make a camera obscura. A room is darkened, with only a small opening of light allowed through a window, screen, or wall. Through this perforation, light rays are collected opposite the pinhole, forming an inverted and flipped image of the external reality. The size of the hole significantly affects the sharpness of the image. The smaller the aperture, the sharper the image, but the dimmer the light transmitted. Too small an opening and the image becomes distorted due to the diffraction of light. An ideal aperture is large enough to admit sufficient light so that the human eye perceives an image; too large, however, and the image is blurry and unfocused.

Documentation of the camera obscura stretches back to at least the fourth century BCE.⁷ Between 1011 and 1021, the medieval polymath Hasan Ibn-al-Haytham, also known as Alhazen, used a camera obscura for experimental mathematics, geometry, and optics.⁸ In the Renaissance, the camera obscura was used to observe solar eclipses and for perspectival studies, among other things.⁹ Despite these uses, the term “camera obscura” did not appear as such in the literature until German astronomer and mathematician Johannes Kepler coined it in his 1604 book, *Ad Vitellionem Paralipomena*.¹⁰

The camera obscura remained a relatively niche commodity until the eighteenth century when its widespread use began to inspire other photographic devices and techniques. Philosophers linked the camera obscura to creativity and extended cognition,¹¹

and by 1810, Johann Wolfgang von Goethe was describing a camera obscura in his treatise on *Color Theory*.¹² Indeed, the camera obscura created the *desire* for what we now know as the photograph. By 1827, early photographers like Joseph Nicéphore Niépce had fashioned a method for fixing a photograph with the aid of a camera obscura, called the Niepce heliograph.¹³ In Walter Benjamin's words, "The time was ripe for the invention, and was sensed by more than one—by men who strove independently for the same objective: to capture the images in the camera obscura."¹⁴ Seen as a technical precedent to visual culture, it would lead to the desire to fix the elusive imagery and the chemical technology to do so.

However, few contemporary artists have experimented with the camera obscura as an integral part of their practice. Of those who have, an example is Abelardo Morell, known for an exquisite series of works with a large-format camera, slowly rendering the camera obscura projection from outside of a space onto the interior of a vast array of rooms.¹⁵ As Luc Sante writes in an introduction to Morell's work, "Other photographers working today have employed the device as an instrument, but their pictures show only the results.... Morell is unique in rendering the process in its complete setting, thus bringing out the full strangeness of the experience."¹⁶ Ilan Wolff made similar juxtapositions of interior and exterior in a van camera obscura, recording traces of his body directly onto photographic paper, through and with the ethereal imagery.¹⁷ The camera obscura is more often experienced *as a happening*, foregrounding a simultaneously fleeting and infinite moment of perception rather than a static and fixed endpoint.

EXPERIENCING THE CAMERA OBSCURA

It is hard to resist the visceral magic of the camera obscura experience. Upon entering the darkened room, there is an immediate sense of disappointment: *Why can't I see anything?* Impatiently waiting for one's pupils to dilate, there is the sense that there might be something there in the dimly perceivable light. As if the mind is playing tricks: *Am I seeing things?* Images on the wall slowly coalesce into movement—a car driving upside down across the wall and onto the ceiling. Suddenly there is the realization: *I am witnessing the reality outside this room, outside this building, the bustling streets of Albuquerque.* It is dim and quiet, the hyper-sharp images syncopated in their inverted and never-ending rhythm, tap dancing across the wall. It is riveting. As Luc Sante describes in his introduction to Abelardo Morell's work:

The camera obscura seems little short of miraculous, even after the optical rationale has been explained. That one pinhole of light can carry all the visual information of a landscape into a darkened room is still, after many centuries, unknown to the great majority of humans and surprising when they learn of it. That one-half of the essential principle of photography is both ancient and technology-free still astounds.¹⁸

During the FADL camera obscura's installation in fall of 2021, the authors reached out to several people to gather their reactions to the camera obscura.¹⁹ Two professors within the School of Architecture & Planning, the building that houses the FADL, responded.

One of them, Associate Professor of Landscape Architecture and Art & Ecology Catherine Harris, wrote this testimonial:

[The] camera obscura—the dark room—is ...a kind of sucking in the outdoors into the indoors—turning the interior, the darkness, the quiet—into a reflection of the exterior—the cars, the heat waves off the pavement, the slowed movements of pedestrians—all made into movie magic sliding around the room, out and then in focus, and then out again—a silver screen in silence with no plot save the quotidian movements of externalities, sun, traffic....

Perhaps the camera obscura in the library is the archive of the now—the archive that is never completed—creating an interior of the exterior—but not recording anything, simply providing a moment to see now as then ...the skin or the wall between outside and inside—to create an eternal archive that is never recorded.... In my experience, it is something utterly different—an experience of the sands of time falling through my fingers, of the now becoming the past, unarchived, and ever-present.²⁰

Indeed, the unfixed (and impractical to fix) images that define the experience of the camera obscura make it a stunning counterpoint to the library itself. In a library, patrons search for information that is (at least momentarily) tangible. The dimness of the light makes it challenging to document, even with modern camera sensors. In the camera obscura, one becomes receptive to the power of the unfixable and must merely succumb to the embodiment of the optical moment. Hovering within a space of perception, the mind buzzes. As Maurice Merleau-Ponty explains, art is often extra-linguistic; perception arrives first, and the ordering of perception comes later through the application of logic, order, and rationality.²¹

Graduate instructor and photography MFA student Daniel Hojnacki, who helped to install the camera obscura in fall 2021, wrote:

[My students] show genuine joy in the mystery of the obscura when inside it. It's usually a quiet and intimate experience, [and] the students all seem much more present.... I usually present it during the learning of the camera basics, how a camera works inside, and how our eyes register and see the world.²²

A former graduate instructor and photography MFA student Jess Peri, who implemented the camera obscura in fall 2018,²³ wrote, “My students absolutely loved [it]! They asked to stay in longer when I took them all together!”²⁴ The idea that a viewer can enter a library space and experience the power of multiple visual rhythms has made this specific installation particularly successful. As Associate Professor of Architecture Nora Wendl expressed, it “inverts the world and miniaturizes it to one small space ... [creating] a small moment of respite and wonder” within an otherwise familiar place of work.²⁵

Once settled into the camera obscura, one becomes keenly aware of one's senses and perceptions. Inside the FADL camera obscura, the cinematic rhythm is multisensorial

because of the eerie feeling that one *should* hear the traffic and feel the heat and wind, but instead, it is calm and quiet in the dark room. One becomes somewhat hypnotized at the rest-and-pause jazz dance of imagery crawling up the wall and onto the ceiling. This slowing down of the tempo of seeing sparks critical imaginings and a sudden awareness of time—hurried time, digital time, gendered time, racialized time, working-class time, privileged time; musings over what gets selected to be enshrined in the sanctuary of time in libraries, archives, and museums. The meanings of the camera obscura change over time because of the sun's position, work, and school schedules, but the experience of the camera obscura also changes because the viewer changes. In this multidirectional phenomenology of being, nothing is fixed. The camera obscura is thus dynamic, ever-shifting, and personal. To be within the room's space is to have the outside world projected around and onto the body. The room experience of the camera obscura is ultimately a moment of pure embodied experience, uncapturable and an end unto itself.

IMPLEMENTING A CAMERA OBSCURA



FIGURE 11.1

The converted northeast corner study room, Fine Arts and Design Library, the University of New Mexico, 2021, camera obscura. Photograph by Stephanie Beene.

Over the last forty years, several articles and resources have detailed how to install a camera obscura.²⁶ For the FADL camera obscura (figure 11.1), the Photography program purchased cheap, durable, and easily accessible materials, plentiful at local hardware, hobby, or supply stores. Essential camera obscura supplies include a piece of cloth or dark plastic that is opaque enough to block all light and large enough to cover any window(s) in the room, hardware, or gaffer tape to hang this cloth/plastic, and a means to make an aperture (hole) in the surface of the material. All the materials are easily stored when not in use and robust enough to be used for multiple iterations of the camera obscura (figures 11.2 and 11.3).

Materials have been purchased and tweaked as necessary over time, and the Photography program's lab manager has become a consistent part of the supply conversation. For example, while the basic supplies are easily acquired, the aperture may be modified for a more precise and accurate image. Originally, a small hole was pierced or cut into the plastic directly. A 2021 upgrade included a machine-drilled

aperture in a thin piece of aluminum, thanks to the generosity of the Sculpture lab manager, who donated time and scrap material. A machine-drilled aperture allows for better clarity and brightness in the camera obscura's image. For about thirty dollars, one can purchase an aperture for installing a camera obscura in any room or space.²⁷ Therefore, installing a camera obscura can be done on a shoestring budget and is highly adaptable for various libraries, well-resourced or not, of any size.



FIGURE 11.2

A roll of black plastic can be used to cover a window or any glass barrier to make a camera obscura. Fall 2021.
Photograph by Meggan Gould.

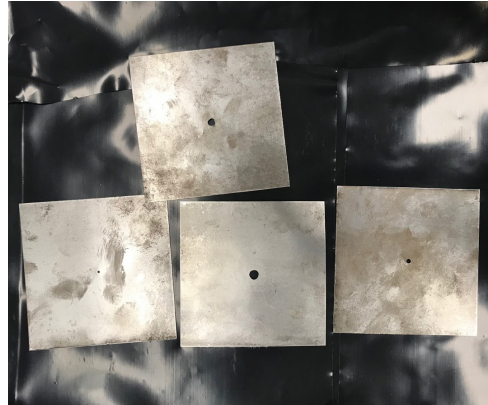


FIGURE 11.3

Machine-drilled apertures in four-inch square aluminum pieces. These act as apertures, so that light can be focused through the pinhole. Fall 2021.
Photography by Meggan Gould.

Logistically, it is a good idea to develop an exhibit, display, installation, and performance policy if one is not in place. Working within the institution's established administrative structure to develop such a policy can help with negotiating timelines and clarifying roles, partnerships, and procedures. The UNM Libraries formed the Exhibits Committee in 2017 and created an exhibit proposal form in response to an expressed need among library staff for a more formalized policy (see appendix). Anyone wanting to install, display, or exhibit works in the UNM Libraries fill out this form and collaborate with UNM library staff and faculty to orchestrate the exhibit. People who wish to use the FADL's spaces for installations, performances, displays, and exhibits are responsible for supplying the materials and installation and de-installation. FADL staff and faculty help coordinate and provide spaces, marketing, and signage.

Because the installation uses a study room, scheduling is accomplished online via Springshare's LibCal software.²⁸ Usually, patrons can do this themselves by visiting the "Reserve a Room" tab on the UNM library homepage, including the study room in question, which brings up a listing of campus libraries and the available study room spaces, each with photographs and booking times. To block this study room for the camera obscura installation, a library employee with LibCal admin privileges logs into LibCal and books

the room, so it no longer shows as available for scheduling. Because study rooms are a hot commodity, especially in the FADL, library staff and faculty book installations such as these in the slower times of the semester, when foot traffic lessens along with demand for study spaces, such as the beginning and end of semesters and fall and spring breaks (e.g., August, December, May).

Another consideration is to check with any building manager on duty about desired spaces for the exhibits or installations. For example, during this process, it was discovered that smoke detectors and an alarm indicator in the study room could not be covered. Additionally, the fire marshal requested that the door to the study room stay open when the camera was not in use. This requirement aligned with our goals to keep the camera as inviting as possible to the everyday passerby. With an open door, patrons are invited to step inside, close the door behind them, let their eyes adjust for a full five minutes, and experience the camera obscura (figures 11.4 and 11.5).

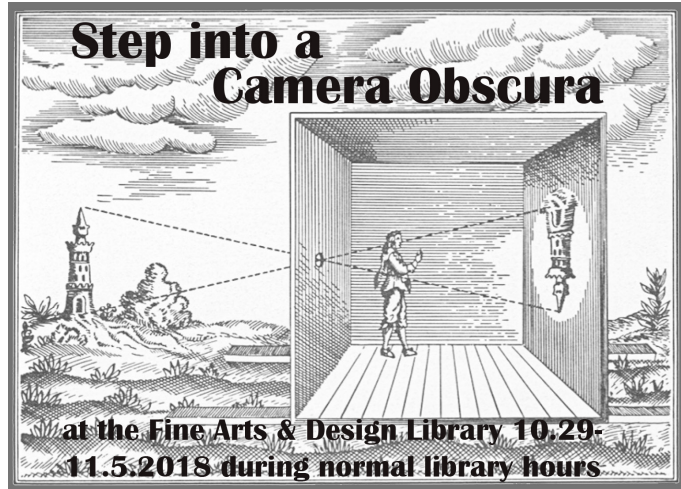
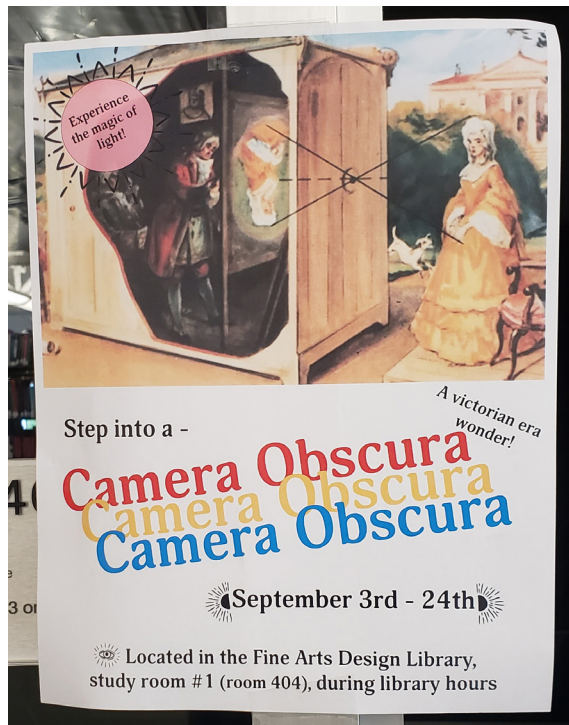


FIGURE 11.4

Marketing promotional flyer for the fall 2018 camera obscura, created by former University of New Mexico Photo Instructor Jess Peri. Used with permission.

FIGURE 11.5

A colorful image of the marketing promotional flyer for the fall 2021 camera obscura, created by University of New Mexico Photo Graduate Instructor Race Dillon. Used with permission.



ESTABLISHING AND STREAMLINING THE CAMERA OBSCURA EXPERIENCE AT UNM

The University of New Mexico (UNM) is a large public institution with five campuses and a combined student population of over 25,441, according to fall 2021 enrollment reports.²⁹ It is the flagship university for New Mexico, with its main campus located in Albuquerque. The Fine Arts & Design Library (FADL) is one of three libraries comprising the main campus University Libraries system and focuses on architecture and planning, studio art and art history, music, film, theatre, and dance programs. All UNM faculty, staff, students, and community members use the FADL's collections and study spaces. Located on the top floor of the School of Architecture & Planning, the FADL is well known for its panoramic views of the city and four mountain ranges, just off Central Avenue/historic Route 66 (figures 11.6 and 11.7), and its striking architectural design. It frequently places high in campus polls for “best places to study,” offering popular teaching, learning, and exhibit spaces for the UNM community.

The study rooms in the FADL line the back walls of the building, overlooking the Sandia Mountains, Central Avenue/historic Route 66, campus and urban buildings, and busy streets (figures 11.6 and 11.7). Because of their birds-eye view of Albuquerque's landscape and the incredible amount of light they let in, the FADL study rooms are ideal locations for the installation of a camera obscura. The northeast corner study room was chosen because it was the furthest from the central atrium and the least likely to be occupied—and it's large enough for an installation at approximately 100 square feet. Additionally, it has a



FIGURE 11.6

From inside the Fine Arts and Design Library, looking through the glass walls of the northeast corner study room, without the camera obscura, fall 2021. Photograph by Stephanie Beene.

wall opposite the window, perfect for image projection. From that corner room, a viewer can observe cars parking in the parking lot, the shifting light on the Sandia mountains, pedestrians rushing past on sidewalks or frequenting businesses, and people waiting for the crosswalk signal to change (figures 11.6 and 11.7). When transformed into a camera obscura, this vantage point splays both ground and sky across the floor and ceiling, and the room is neither so small that it fosters claustrophobia in the darkness nor so large that one cannot feel one's body surrounded by the imagery in the projection space from the window.



FIGURE 11.7

View from inside the Fine Arts and Design Library northeast corner study room, without the camera obscura, looking east toward the Sandia mountains, fall 2021. Photograph by Stephanie Beene.

The first camera obscura was meant to be a singular experience, but it has since been implemented annually, most recently in September 2021. Throughout multiple iterations, the planning and implementation of it have become more streamlined. From 2017 to 2019, the camera obscura was installed for just one week per iteration but has since been extended to a full month. This extended installation is partly due to the FADL staff becoming accustomed to what it is, who is involved, and what to anticipate in terms of logistics and timeline. Communication between all parties cannot be underscored enough; for a project like this to be successful, all stakeholders must feel like their role is valued in the outcome. To this end, the timeline, set-up, promotion, and marketing materials have become more streamlined as the partnership has evolved. For example, the photography graduate students' marketing materials have transformed from a schematic to more colorful and playful imagery (figures 11.4 and 11.5).

One of the challenges has been marketing it for the short time it is installed because both marketing teams within the CFA and the University Libraries require about a month of lead time to push events out to the many venues across campus (e.g., newsletters, advertising monitors, fliers, social media). Additionally, the camera obscura has traditionally been installed around fall break, when many students and staff leave for vacation, or at the beginning of the fall semester when workloads are high in preparing for the academic year. Additionally, graduate student instructors take charge of its installation and promotion and, thus, the camera obscura tends to be a whirlwind at the last minute of installation. This makes it challenging to market it effectively, except through the involved parties' personal networks.

However, the most significant challenge has been a turnover in personnel. Although permanent employees have been involved since its inception, the FADL experiences a steady turnover in work-study students who staff the front service desk and provide reference, circulation, and other types of assistance. With the camera obscura, each new cohort of student workers must be informed about its installation, the increase in patrons visiting it over the month that it is installed, the people to contact in case of questions, and the date and approximate time of its de-installation. They must also be made aware of any temporary arrangement of materials storage for it.³⁰

As for the Art Department, the graduate students who take charge of the camera obscura are three-year MFA students. Each graduate student works with the FADL slightly differently, from crafting promotional materials to scheduling the installation and de-installation of the camera. The graduate students are also the primary instructors incorporating visitation of the camera into their classes. Their word-of-mouth marketing to their fellow graduate students is invaluable. The strong partnership forged between the FADL and the Photography program is crucial to the project's success.

During the COVID-19 pandemic, the University Libraries has seen a dramatic downturn in library in-person visitation due to statewide mandates, campus lockdowns, and quarantines for most of 2020 and the spring semester of 2021. When the camera obscura was installed in fall 2021, a vaccination and masking mandate was put in place by campus administration, and a capacity limit was implemented for all library spaces. Therefore, visitors to the camera obscura were limited to three at a time and they needed to be masked. Additionally, the School of Architecture & Planning implemented a swipe-card access system for the building, allowing only UNM community members with Lobo cards entry, which impacted the FADL's patronage. While this certainly brought down the FADL's headcount, the camera obscura was still visited by an average of 200 Art Department students, whose instructors continued to make visiting it a requisite part of their classes.

Despite these challenges, the camera obscura has been an inspirational journey. One of the surprises has been witnessing patrons' anticipation and excitement over its annual installation. Community members with no photography experience participate in this phenomenological moment and look forward to the next. Meanwhile, photography instructors visit the camera obscura with their classes, and its relevance to other art disciplines has spread to Art & Ecology, Painting & Drawing, and Arts Foundation courses. FADL staff and faculty continue to receive questions and comments about the camera

obscura, the majority of which are resoundingly positive. It is fair to say that the camera obscura installation has become a highly anticipated annual event.

THE PEDAGOGY OF THE CAMERA OBSCURA

A camera obscura is an invaluable pedagogical tool in photographic education. Especially in a world of digital learning, where the mechanics of cameras are hidden behind opaque technology, it is critical to encourage moments where the fundamental basics of photography's magic can be foregrounded. Two of the learning outcomes for UNM's Introduction to Photography course are particularly relevant to the camera obscura project: (1) students will demonstrate an understanding of how camera controls affect the aesthetics of images, and (2) students will become familiar with practitioners of photography from throughout the medium's history but especially with contemporary practice. The camera obscura helps students understand how the aperture in a lens functions and the physics of light. Instructors use the camera obscura to discuss contemporary practitioners, using the simplified technologies represented by the pinhole camera and the camera obscura, showing the vast range of potential within lensless photographic work. Former UNM photography instructor Jess Peri marvels, "[Of] every resource, tool, or piece of writing I have ever used in teaching photography, I believe that the camera obscura is the most effective thing I have found."³¹

Moreover, a camera obscura can enhance visual literacy across disciplines in higher education. Helping students develop the dispositions necessary to thrive in an increasingly visual environment is essential in the twenty-first century. The camera obscura offers a unique opportunity for people to practice "slow looking," a term coined by Shari Tishman to describe the practice of honing one's critical perception over time through sustained looking.³² The newly drafted Association of College and Research Libraries' *Visual Literacy Framework in Higher Education*,³³ of which Beene is a co-author, elevates "slow looking" under the rubric of visual discernment to a threshold concept.³⁴ Regardless of discipline, threshold concepts are transformational, irreversible, and likely troublesome (i.e., through one's growth, there are affective experiences of discomfort before adopting a new mindset). When someone is first asked to step across the literal threshold of the camera obscura, they may be knocked off balance, especially if they are impatient for their eyes to adjust. Anxiety, boredom, and other emotions rush into the space left empty by what is usually filled with sensory overload. However, as they adjust, their body and mind become still and they ease into the silent silver cinema playing out before them. It may still not make sense—not until they understand what they are perceiving—that the outside world has been translated and inverted. Cloaked in velvety darkness, they must remember the reality outside of the windows in order to interpret the imagery. Indeed, emerging from the camera obscura, visitors may be startled to find that they may perceive the library, the cityscape, and the mountainscape with renewed appreciation. Learners can practice visual discernment and criticality through something as low-tech as the camera obscura, sharpening their ability to critically read imagery and perceive the world around them. This multisensory experience can be returned to multiple times to hone this critical reading

of images.³⁵ Instructors can reinforce critical looking and the reflection skills learned within the camera obscura by applying those same slowed-down techniques to a variety of contexts and formats outside of the camera. Indeed, perceiving that images communicate information and that one need only mindfully discern what that information contains might very well lead to more critically reflective citizens.

CONCLUSION

Already in its fifth consecutive year, this collaborative project illustrates the extraordinary possibilities that can occur when academic librarians partner with creators to extend experiential and embodied learning to all community members through adapting and modifying existing library spaces, albeit temporarily. Moreover, this chapter fills a gap in the literature by specifically addressing the camera obscura's use in academic libraries, its pedagogical implications, and its phenomenological potential. Indeed, by offering a moment of mindfulness in our increasingly screen-mediated world, it has offered a moment of respite in an otherwise high-pressure academic environment. Thus, it has become a popular experience among a broad range of patrons and staff across ages, disciplines, and backgrounds.

Future implementation plans include installing it in other spaces, such as the Centennial Science and Engineering Library and the Physics and Astronomy Interdisciplinary Science Building, which will expose new audiences to the camera obscura. Additionally, there is enormous potential for innovation in Arts Unexpected,³⁶ an annual, full-day, campus-wide gala, which transforms UNM. Potential future innovations include integrating sound, making it mobile, and so on. We look forward to further developing the camera obscura and conversations about how it expands our notions of the world around us.

Appendix. UNM's Exhibit Proposal Form



EXHIBITION PROPOSAL AND RELEASE FORM

Name of exhibitor: _____ Date: _____

Contact information (email and phone number): _____

Campus organization: _____

Exhibition title: _____

Exhibition description (including theme, objective, medium, materials, mounting, etc.):

Proposed site of exhibition (building and specific location): _____

Proposed exhibition start and end dates: _____ to _____

RELEASE INFORMATION

I fully understand that the College of University Libraries and Learning Sciences cannot provide security for the exhibition. The University Libraries are not responsible for damages to the exhibition, including shipping and handling damages.

Signature of exhibitor: _____

Print Name: _____ Date: _____

EXHIBITIONS COMMITTEE REVIEW (Internal Use Only)

Date of review: _____ Approve (Y/N): _____

Signature of Exhibitions Committee representative: _____

Print Name: _____ Date: _____

NOTES

1. Estelle Barrett, "Experiential Learning in Practice as Research: Context, Method, Knowledge," *Journal of Visual Art Practice* 6, no. 2 (January 1, 2007): 115–24, https://www.researchgate.net/publication/249918879_Experiential_learning_in_practice_as_research_Context_method_knowledge.
2. Emma Meehan et al., "Moving and Mapping: Exploring Embodied Approaches to Urban Design and Planning," in *Urban Sensographies* (Oxfordshire, UK: Routledge, 2020).
3. Hannah Bennett, "Bringing the Studio into the Library: Addressing the Research Needs of Studio Art and Architecture Students," *Art Documentation: Bulletin of the Art Libraries Society of North America* 25, no. 1 (Spring 2006): 38–42, <https://doi.org/10.1086/adx.25.1.27949400>; Lucy Campbell, "The Information-Seeking Habits of Architecture Faculty," *College & Research Libraries* 78, no. 6 (2017): 761–73; Stephanie Beene and Shannon Marie Robinson, "When Research Does Not Start with a Question: Teaching with the Framework and Visual Literacy Standards within Art and Architecture Librarianship," *Art Documentation: Journal of the Art Libraries Society of North America* 36, no. 2 (October 1, 2017): 254–80; Maggie Murphy, "Closed Stacks: Image Resources and the Future of Artistic Research Practice During the Covid-19 Pandemic," *Visual Resources Association Bulletin* 47, no. 2 (December 21, 2020), <https://online.vrweb.org/index.php/vrab/article/view/195>; Rose Orcutt et al., "COVID-19 Pandemic: Architecture Librarians Respond," *Art Documentation: Journal of the Art Libraries Society of North America* 40, no. 1 (March 1, 2021): 123–40, <https://doi.org/10.1086/714593>; Susie Cobbledick, "The Information Seeking Behavior of Artists: Exploratory Interviews," *The Library Quarterly* 66, no. 4 (1996): 343–72; William Hemmig, "An Empirical Study of the Information-seeking Behavior of Practicing Visual Artists," *Journal of Documentation* 65, no. 4 (2009): 343–62; Philip Pacey, "How Art Students Use Libraries," in *A Reader in Art Librarianship*, ed. P. Pacey (Munich: K.G. Saur, 1985): 51–55; Polly Frank, "Student Artists in the Library: An Investigation of How They Use General Academic Libraries for Their Creative Needs," *The Journal of Academic Librarianship* 25, no. 6 (1999): 445–55; Bonnie Reed and Donald R. Tanner, "Information Needs and Library Services for the Fine Arts Faculty," *The Journal of Academic Librarianship* 27, no. 3 (2001): 229–33; Tori R. Gregory, "Under-served or Under-surveyed: The Information Needs of Studio Art Faculty in the Southwestern United States," *Art Documentation* 26, no. 2 (2007): 57–66; Sandra Cowan, "Informing Visual Poetry: Information Needs and Sources of Artists," *Art Documentation* 23, no. 2 (2004): 14–20; Helen Mason and Lyn Robinson, "The Information-related Behaviour of Emerging Artists and Designers: Inspiration and Guidance for New Practitioners," *Journal of Documentation* 67, no. 1 (2011): 159–80; Jean Beaudoin, "Image and Text: A Review of the Literature Concerning the Information Needs and Research Behaviors of Art Historians," *Art Documentation: Journal of the Art Libraries Society of North America* 24, no. 2 (2005): 34–37; Sander Münster et al., "Image Libraries and Their Scholarly Use in the Field of Art and Architectural History," *International Journal on Digital Libraries* 19, no. 4 (2018): 367–83, <https://doi.org/10.1007/s00799-018-0250-1>; Catherine Larkin, "Looking to the Future While Learning from the Past: Information Seeking in the Visual Arts," *Art Documentation* 29, no. 1 (2010): 49–60.
4. One of the few mentions the authors found of libraries conducting outreach to the public with a camera obscura was San Mateo County Library's 2016 Press Release, "Take a Second Look at Your Surroundings With San Mateo County Libraries' Lookmobile" (November 29, 2016), <https://smcl.org/news/take-a-second-look-at-your-surroundings-with-san-mateo-county-libraries-lookmobile/>). There have been other cameras obscuras installed by students at various libraries, but their documentation is ephemeral, with outreach conducted primarily via word-of-mouth and social media. The artist Zoe Leonard mentions installing a camera obscura in a former library in her 2017 co-authored chapter with Elisabeth Lebovici, "Chapter Five, The Politics of Contemplation," in *Photography and the Optical Unconscious*, eds. Shawn Michelle Smith and Sharon Slwiniski (Durham, NC: Duke University Press, 2017), 93–103, <https://doi.org/10.1515/9780822372998-007>.
5. Merriam-Webster, "Definition of Camera Obscura," dictionary, merriam-webster.com, 2021, <https://www.merriam-webster.com/dictionary/camera+obscura>.
6. John H. Hammond, *The Camera Obscura: A Chronicle* (Farnham, UK: Taylor & Francis, 1981), Preface, vii.
7. The first evidence dates to at least the fourth century BCE in China. (See Naomi Rosenblum, *A World History of Photography* (New York: Abbeville Press, 1984): 192–93; Hammond, *The Camera Obscura*,

- 1; Reuben E. Alley Jr., “The Camera Obscura in Science and Art,” *The Physics Teacher* 18, no. 9 (1980): 632; Bonfoton, “What Is a Camera Obscura?,” Bonfoton, March 29, 2021, paragraphs 15 and 16, <https://bonfoton.com/blogs/news/what-is-a-camera-obscura>.
8. Bonfoton, “What Is a Camera Obscura?,” paragraph 17; Isabelle Pantin, “Simulachrum, Species, Forma, Imago: What Was Transported by Light into the Camera Obscura? Divergent Conceptions of Realism Revealed by Lexical Ambiguities at the Beginning of the Seventeenth Century,” *Early Science and Medicine* 13, no. 3 (January 1, 2008): 245–69, <https://doi.org/10.1163/157338208X285035>; Dominique Raynaud, “Introduction: A Key Milestone in the History of Optics and Ibn al-Haytham’s Legacy,” in Dominique Raynaud and Alhazen, *A Critical Edition of Ibn Al-Haytham’s On the Shape of the Eclipse: The First Experimental Study of the Camera Obscura*, Sources and Studies in the History of Mathematics and Physical Sciences (London: Springer Nature, 2016): 1–3.
 9. The Dutch mathematician Reinerus Gemma-Frisius used a camera obscura to observe a solar eclipse and included an illustration in *De Radio Astronomica et Geometrica* published in 1545, the first published illustration of a camera obscura. See Bonfoton, “What Is a Camera Obscura?,” paragraph 18. Leonardo da Vinci was so fascinated by the camera obscura that he drew approximately 270 diagrams of it (See Bonfoton, “What Is a Camera Obscura?,” paragraph 17.) In fact, he is quoted as saying, “I say that if the front of a building—or any open piazza or field—which is illuminated by the sun has a dwelling opposite to it, and if, in the front which does not face the sun, you make a small round hole, all the illuminated objects will project their images through that hole and be visible inside the dwelling on the opposite wall which may be made white; and there, in fact, they will be upside down,” in Andrew E. Hershberger, *Photographic Theory: An Historical Anthology* (Chichester, West Sussex, UK: Wiley Blackwell, 2014); Raz Chen-Morris, *Measuring Shadows: Kepler’s Optics of Invisibility. Measuring Shadows* (University Park, PA: Penn State University Press, 2021), <https://doi.org/10.1515/9780271077338>; Daniel Black, *Embodiment and Mechanisation: Reciprocal Understandings of Body and Machine from the Renaissance to the Present* (Farnham, UK: Taylor & Francis Group, 2014), 26.
 10. Sven Dupré, “Inside the ‘Camera Obscura’: Kepler’s Experiment and Theory of Optical Imagery,” *Early Science and Medicine* 13, no. 3 (January 1, 2008): 219–44, <https://doi.org/10.1163/157338208X285026>.
 11. Sean Silver, “Hooke’s Camera Obscura,” MIAC: The Mind is a Collection: A Born-digital Museum of Eighteenth-Century Thought, 2015, <http://www.mindisacollection.org/hookes-camera-obscura>.
 12. Johann Wolfgang von Goethe, *Theory of Colours*, trans. Charles Eastlake (Cambridge, MA: MIT Press, 1970), 16–17; quoted in Jonathan Crary, “Techniques of the Observer,” *October* 45 (1988): 3, <https://doi.org/10.2307/779041>.
 13. The University of Texas at Austin Harry Ransom Center, “The Niépce Heliograph,” 2021, <https://www.hrc.utexas.edu/niepce-heliograph/>.
 14. Walter Benjamin, “Little History of Photography,” in *The Work of Art in the Age of Its Technological Reproducibility, and Other Writings on Media*, eds. Michael W. Jennings, Brigid Doherty, and Thomas Y. Levin, trans. Edmund Jephcott, Kingsley Shorter, et al. (Cambridge, MA: Harvard University Press, 1931 [trans.2008]), 274–98. [Originally published as Benjamin, Walter, *Kleine Geschichte der Photographie, Die literarische Welt* (Berlin) 7, nos. 38, 39, and 40 (18 and 25 Sept., and 2 Oct.). Various reprints and translations in at least four previous anthologies (Mellor, 1978, 69–75; Trachtenberg and Meyers 1980, 199–216; Lugon 1997, 365–73; Kemp and von Amelnunx 2006, Vol. 2, 200–13.)
 15. Abelardo Morell, *Camera Obscura*, 1st ed. (New York: Bulfinch Press, 2004). View more at the artist’s website: Abelardo Morell, “Camera Obscura,” Abelardo Morell, 2021, <https://www.abelardomorell.net/camera-obscura>.
 16. Luc Sante, “Introduction,” in Abelardo Morell, *Camera Obscura*, 1st ed (New York: Bulfinch Press, 2004): 8
 17. Ilan Wolff, *Camera Obscura at Work 1982-1997* (Seysssel: Ilan Wolff, 1998).
 18. Sante, *Camera Obscura*, 7.
 19. The authors reached out to two School of Architecture & Planning professors, one of whose teaching crosses over with Art & Ecology, a program that spans the natural and social sciences. They also reached out to a Physics professor but received no response. Graduate student instructors’ responses were also collected.
 20. “Catherine Harris testimonial: Camera obscura at the library,” personal communication with Meggan Gould, Albuquerque, New Mexico, September 8, 2021.

21. Maurice Merleau-Ponty, Hubert L. Dreyfus, and Patricia Allen Dreyfus, *Sense and Non-Sense*, Northwestern University Studies in Phenomenology & Existential Philosophy Series (Evanston, IL: Northwestern University Press, 1964).
22. “Daniel Hojnacki testimonial: Camera obscura at the library,” personal communication with Meggan Gould, Albuquerque, New Mexico, October 26, 2021.
23. Jess Peri went on to become an adjunct instructor at UNM and is now a professor at the University of South Carolina. See the artist’s website, “Jess Peri,” by Jess Peri, 2021, <https://www.jessperi.com>.
24. “Jess Peri testimonial: Camera obscura take down...,” personal communication with Stephanie Beene, Albuquerque, New Mexico, November 5, 2018.
25. “Nora Wendl testimonial: Camera obscura in FADL,” personal communication with Meggan Gould, Albuquerque, New Mexico, November 13, 2021.
26. Alley, “The Camera Obscura in Science and Art,” 638; Halima Flynt and Michael J. Ruiz, “Making a Room-Sized Camera Obscura,” *Physics Education* 50, no. 1 (December 2014): 19–22, <https://doi.org/10.1088/0031-9120/50/1/19>; Catherine Milne, “Intra-Actions That Matter: Building for Practice in a Liberal Arts Science Course,” in *Material Practice and Materiality: Too Long Ignored in Science Education*, ed. Catherine Milne and Kathryn Scantlebury, Cultural Studies of Science Education (Cham: Springer International Publishing, 2019), 81–100, https://doi.org/10.1007/978-3-030-01974-7_7; Bonfoton, *Camera Obscura, but Right-Side-up!? Yes, BonfotonUP!*, 2020, <https://www.youtube.com/watch?v=ZRGaR0t7ZDk>.
27. For those readers looking to make a camera obscura, the Bonfoton lens may be a great choice: PetaPixel, “The Bonfoton Lens Helps Turn a Room Into a Giant Camera Obscura,” review, PetaPixel, July 19, 2017, <https://petapixel.com/2017/07/19/bonfoton-lens-helps-turn-room-giant-camera-obscura/>.
28. Springshare’s LibCal, “LibCal – Calendaring, Event Management, and Booking Platform For Libraries,” 2021, <https://springshare.com/libcal/>.
29. Office of Institutional Analytics, University of New Mexico, “Official Enrollment Reports: Office of Institutional Analytics | The University of New Mexico.” Tableau, 2021. <https://oia.unm.edu/facts-and-figures/official-enrollment-reports.html>.
30. This is usually accomplished at staff meetings or at the reference desk.
31. “Jess Peri testimonial: Question...” personal communication with Meggan Gould, Albuquerque, New Mexico, November 20, 2021.
32. Shari Tishman, *Slow Looking: The Art and Practice of Learning Through Observation* (Oxfordshire, UK: Routledge, 2018). Also see Stephanie Beene and Dana S. Thompson’s 2022 article, “Focusing on Slow Looking: An Exploration of Techniques to Develop Critical Observation Habits,” *Art Documentation: Journal of the Art Libraries Society of North America* 41, no. 1 (March 2022): 1–18, <https://doi.org/10.1086/719405>.
33. The Association of College and Research Libraries (ACRL) Visual Literacy Task Force (2018–2022) published the “ACRL Framework for Visual Literacy in Higher Education,” a Companion Document to the 2016 ACRL *Framework for Information Literacy for Higher Education*, in June 2022, https://www.ala.org/acrl/sites/ala.org.acrl/files/content/standards/Framework_Companion_Visual_Literacy.pdf, which aligns with the 2016 ACRL *Framework for Information Literacy for Higher Education* (Framework for Information Literacy for Higher Education, American Library Association, 2015, <http://www.ala.org/acrl/standards/ilframework>). The *Framework for Visual Literacy in Higher Education* is based on empirical research undertaken from 2019–2021, which sought to re-envision visual literacy knowledge practices and dispositions for the twenty-first century and informed the authoring of the draft. Read about the research that informed its development the article that describes it: Dana Statton Thompson et al., “A Proliferation of Images: Trends, Obstacles, and Opportunities for Visual Literacy,” *Journal of Visual Literacy* 41, no. 2 (April 3, 2022): 113–31, <https://doi.org/10.1080/1051144X.2022.2053819>.
34. Ray Land, Jan H. F. Meyer, and Jan Smith, *Threshold Concepts Within the Disciplines*, vol. 16, Educational Futures: Rethinking Theory and Practice (Rotterdam/Taipei: Sense Publishers, 2008), <https://brill.com/display/title/37762?language=en>; Jan H. F. Meyer and Ray Land, *Threshold Concepts and Transformational Learning*, ed. Caroline Baillie, vol. 42, Educational Futures Rethinking Theory and Practice (Rotterdam/Boston/Taipei: Sense Publishers, 2010), <https://brill.com/display/title/37760?language=en>; Larissa Garcia and Jessica Labatte, “Threshold Concepts as Metaphors for the Creative

- Process: Adapting the Framework for Information Literacy to Studio Art Classes,” *Art Documentation: Journal of the Art Libraries Society of North America* 34, no. 2 (2015): 235–48, <https://doi.org/10.1086/683383>; Amy R. Hofer, Silvia Lin Hanick, and Lori Townsend, *Transforming Information Literacy Instruction: Threshold Concepts in Theory and Practice* (Santa Barbara, CA: ABC-CLIO, 2018).
35. Karen Manarin et al., *Critical Reading in Higher Education: Academic Goals and Social Engagement* (Bloomington, IN: Indiana University Press, 2015); Tishman, *Slow Looking*; Mary Jo Fresch, *An Essential History of Current Reading Practices*, illustrated ed. (Newark, DE: International Reading Association, 2012); Dana Statton Thompson, “Teaching Students to Critically Read Digital Images: A Visual Literacy Approach Using the DIG Method,” *Journal of Visual Literacy* 38, no. 1–2 (April 3, 2019): 110–19, <https://doi.org/10.1080/1051144X.2018.1564604>; Amy Herman, *Visual Intelligence: Sharpen Your Perception, Change Your Life*, First Mariner Books ed. (Boston: Mariner Books/Houghton Mifflin Harcourt, 2017).
36. College of Fine Arts The University of New Mexico, “Watch: Arts Unexpected 2017,” *College of Fine Arts, UNM* (blog), 2017, <https://finearts.unm.edu/watch-arts-unexpected-2017/>.

BIBLIOGRAPHY

- Alley Jr., Reuben E. “The Camera Obscura in Science and Art.” *The Physics Teacher* 18, no. 9 (1980): 632–38.
- American Library Association. *Framework for Information Literacy for Higher Education*. 2015. <http://www.ala.org/acrl/standards/ilframework>.
- B&H Photo, Video, Audio. “Delta 1 Black Out Heavy 6 Mil Plastic Opaque Material 4 Ft.x 16 Ft. Roll.” Photo video audio supplies, 2021. https://www.bhphotovideo.com/c/product/66796-REG/Delta_13630_Black_Out_Heavy_6.html.
- Barrett, Estelle. “Experiential Learning in Practice as Research: Context, Method, Knowledge.” *Journal of Visual Art Practice* 6, no. 2 (January 1, 2007): 115–24. https://www.researchgate.net/publication/249918879_Experiential_learning_in_practice_as_research_Context_method_knowledge.
- Beaudoin, Joan. “Image and Text: A Review of the Literature Concerning the Information Needs and Research Behaviors of Art Historians.” *Art Documentation: Journal of the Art Libraries Society of North America* 24, no. 2 (October 1, 2005): 34–37.
- Beene, Stephanie, and Shannon Marie Robinson. “When Research Does Not Start with a Question: Teaching with the Framework and Visual Literacy Standards within Art and Architecture Librarianship.” *Art Documentation: Journal of the Art Libraries Society of North America* 36, no. 2 (October 1, 2017): 254–80.
- Beene, Stephanie, and Dana Statton Thompson. “Focusing on Slow Looking: An Exploration of Techniques to Develop Critical Observation Habits.” *Art Documentation: Journal of the Art Libraries Society of North America* 41, no. 1 (March 2022): 1–18. <https://doi.org/10.1086/719405>.
- Benjamin, Walter. “Little History of Photography.” In *The Work of Art in the Age of Its Technological Reproducibility, and Other Writings on Media*, edited by Michael William Jennings, Brigid Doherty, and Thomas Y. Levin, translated by E. F. N. Jephcott, Rodney Livingstone, and Howard Eiland, 274–98. Cambridge, MA: Harvard University Press, 2008. <http://catdir.loc.gov/catdir/toc/ecip0810/2008004494.html>.
- Bennett, Hannah. “Bringing the Studio into the Library: Addressing the Research Needs of Studio Art and Architecture Students.” *Art Documentation: Bulletin of the Art Libraries Society of North America* 25, no. 1 (Spring 2006): 38–42. <https://doi.org/10.1086/adx.25.1.27949400>.
- Black, Daniel. *Embodiment and Mechanisation: Reciprocal Understandings of Body and Machine from the Renaissance to the Present*. 1st ed. Farnham, UK: Taylor & Francis Group, 2014.
- Bonfoton. “What Is a Camera Obscura?” *Bonfoton* (blog), March 29, 2021. <https://bonfoton.com/blogs/news/what-is-a-camera-obscura>.
- . *Camera Obscura, but Right-Side-up!? Yes, BonfotonUP!*. 2020. <https://www.youtube.com/watch?v=ZRGaR0t7ZDk>.
- Campbell, Lucy. “The Information-Seeking Habits of Architecture Faculty.” *College & Research Libraries*, August 31, 2017. <https://doi.org/10.5860/crl.78.6.761>.

- Chen-Morris, Raz. *Measuring Shadows: Kepler's Optics of Invisibility. Measuring Shadows*. University Park, PA: Penn State University Press, 2021. <https://doi.org/10.1515/9780271077338>.
- Chiochios, Maria. "Take a Second Look at Your Surroundings With San Mateo County Libraries' Lookmobile." Press release, November 29, 2016. <https://smcl.org/news/take-a-second-look-at-your-surroundings-with-san-mateo-county-libraries-lookmobile>.
- Cobbledick, Susie. "The Information-Seeking Behavior of Artists: Exploratory Interviews." *The Library Quarterly* 66, no. 4 (October 1, 1996): 343–72.
- Cowan, S. "Informing Visual Poetry: Information Needs and Sources of Artists." *Art Documentation*, no. 2 (2004): 14.
- Crary, Jonathan. "Techniques of the Observer." *October* 45 (July 1, 1988): 3–35. <https://doi.org/10.2307/779041>.
- Dupré, Sven. "Inside the 'Camera Obscura': Kepler's Experiment and Theory of Optical Imagery." *Early Science and Medicine* 13, no. 3 (January 1, 2008): 219–44. <https://doi.org/10.1163/157338208X285026>.
- Flynt, Halima, and Michael J. Ruiz. "Making a Room-Sized Camera Obscura." *Physics Education* 50, no. 1 (December 2014): 19–22. <https://doi.org/10.1088/0031-9120/50/1/19>.
- Frank, Polly. "Student Artists in the Library: An Investigation of How They Use General Academic Libraries For ..." *Journal of Academic Librarianship* 25, no. 6 (November 1999): 445. [https://doi.org/10.1016/S0099-1333\(99\)00077-4](https://doi.org/10.1016/S0099-1333(99)00077-4).
- Fresch, Mary Jo. *An Essential History of Current Reading Practices*. Illustrated ed. Newark, DE: International Reading Association, 2012.
- Fullmer, Millicent, Tiffany Saulter, Stephanie Beene, Katie Greer, Maggie Murphy, Sara Schumacher, Dana Statton Thompson, and Mary Wegmann. "ACRL Framework for Visual Literacy in Higher Education, a Companion Document to the 2016 ACRL Framework for Information Literacy for Higher Education." ACRL Frameworks, Standards, and Guidelines. 2022. https://www.ala.org/acrl/sites/ala.org/acrl/files/content/standards/Framework_Companion_Visual_Literacy.pdf.
- Garcia, Larissa, and Jessica Labatte. "Threshold Concepts as Metaphors for the Creative Process: Adapting the Framework for Information Literacy to Studio Art Classes." *Art Documentation: Journal of the Art Libraries Society of North America* 34, no. 2 (2015): 235–48. <https://doi.org/10.1086/683383>.
- Goethe, Johann Wolfgang von, Charles Lock Eastlake Sir, and Deane Brewster Judd. *Theory of Colours*. First M.I.T. Press paperback edition. Cambridge, MA: M.I.T. Press, 1970.
- Gregory, Tori R. "Under-Served or Under-Surveyed: The Information Needs of Studio Art Faculty in the Southwestern United States." *Art Documentation: Journal of the Art Libraries Society of North America* 26, no. 2 (October 1, 2007): 57–66.
- Hammond, John H. *The Camera Obscura: A Chronicle*. Farnham, UK: Taylor & Francis, 1981.
- Harry Ransom Center. University of Texas at Austin. "The Niépce Heliograph See the Earliest Surviving Photograph Produced in the Camera Obscura." Press release, 2021. <https://www.hrc.utexas.edu/niepce-heliograph/>.
- Hemmig, W. "An Empirical Study of the Information-Seeking Behavior of Practicing Visual Artists." *Journal of Documentation* 65, no. 4 (January 1, 2009): 682–703.
- Herman, Amy. *Visual Intelligence: Sharpen Your Perception, Change Your Life*. Boston: Mariner Books/Houghton Mifflin Harcourt, 2017.
- Hershberger, Andrew E. *Photographic Theory: An Historical Anthology*. Hoboken, NJ: Wiley Blackwell, 2014.
- Hofer, Amy R., Silvia Lin Hanick, and Lori Townsend. *Transforming Information Literacy Instruction: Threshold Concepts in Theory and Practice*. Santa Barbara, CA: Libraries Unlimited, 2019.
- Land, Ray, Jan H. F. Meyer, and Jan Smith. *Threshold Concepts Within the Disciplines*, vol. 16. Educational Futures: Rethinking Theory and Practice. Rotterdam/Taipei: Sense Publishers, 2008. <https://brill.com/display/title/37762?language=en>.
- Larkin, Catherine. "Looking to the Future While Learning from the Past: Information Seeking in the Visual Arts." *Art Documentation: Journal of the Art Libraries Society of North America* 29, no. 1 (April 1, 2010): 49–60.
- Leonard, Zoe, and Elisabeth Lebovici. "Chapter Five: The Politics of Contemplation." In *Photography and the Optical Unconscious*, 93–103. Durham, NC: Duke University Press, 2017. <https://doi.org/10.1515/9780822372998-007>.

- Manarin, Karen, Miriam Carey, Melanie Rathburn, Glen Ryland, and Pat Hutchings. *Critical Reading in Higher Education: Academic Goals and Social Engagement*. Bloomington, IN: Indiana University Press, 2015.
- Mason, Helen, and Lyn Robinson. "The Information-Related Behaviour of Emerging Artists and Designers: Inspiration and Guidance for New Practitioners." *Journal of Documentation* 67, no. 1 (2011): 159–80. <https://doi.org/10.1108/002204111111105498>.
- Meehan, Emma, Natalie Garrett Brown, Amy Voris, and Christian Kipp. "Moving and Mapping: Exploring Embodied Approaches to Urban Design and Planning." In *Urban Sensographies*. Oxfordshire, UK: Routledge, 2020.
- Merleau-Ponty, Maurice, Hubert L. Dreyfus, and Patricia Allen Dreyfus. *Sense and Non-Sense*. Northwestern University Studies in Phenomenology & Existential Philosophy Series. Evanston, IL: Northwestern University Press, 1964.
- Merriam Webster. "Definition of 'Camera Obscura.'" 2022. <https://www.merriam-webster.com/dictionary/camera+obscura>.
- Meyer, Jan H. F., and Ray Land. *Threshold Concepts and Transformational Learning*, edited by Caroline Baillie, vol. 42. Educational Futures Rethinking Theory and Practice. Rotterdam/Boston/Taipei: Sense Publishers, 2010. <https://brill.com/display/title/37760?language=en>.
- Milne, Catherine. "Intra-Actions That Matter: Building for Practice in a Liberal Arts Science Course." In *Material Practice and Materiality: Too Long Ignored in Science Education*, edited by Catherine Milne and Kathryn Scantlebury, 81–100. Cultural Studies of Science Education. Cham: Springer International Publishing, 2019. https://doi.org/10.1007/978-3-030-01974-7_7.
- Morell, Abelardo. *Camera Obscura*. 1st ed. New York: Bulfinch Press, 2004.
- . "Camera Obscura." Artist website, 1991-2022. <https://www.abelardomorell.net/camera-obscura>.
- Münster, Sander, Christina Kamposiori, Kristina Friedrichs, and Cindy Kröber. "Image Libraries and Their Scholarly Use in the Field of Art and Architectural History." *International Journal on Digital Libraries* 19, no. 4 (November 2018): 367–83. <https://doi.org/10.1007/s00799-018-0250-1>.
- Murphy, Maggie. "Closed Stacks." *Visual Resources Association Bulletin* 47, no. 2 (December 21, 2020). <https://online.vraweb.org/index.php/vrab/article/view/195>.
- Orcutt, Rose, Lucy Campbell, Maya Gervits, Barbara Opar, and Kathy Edwards. "COVID-19 Pandemic: Architecture Librarians Respond." *Art Documentation: Journal of the Art Libraries Society of North America* 40, no. 1 (March 1, 2021): 123–40. <https://doi.org/10.1086/714593>.
- Pacey, Philip. "How Art Students Use Libraries." In *A Reader in Art Librarianship*, edited by Philip Pacey, 51–55. IFLA Publications: 34. Munich: K.G. Saur, 1985.
- Pantin, Isabelle. "Simulachrum, Species, Forma, Imago: What Was Transported by Light into the Camera Obscura? Divergent Conceptions of Realism Revealed by Lexical Ambiguities at the Beginning of the Seventeenth Century." *Early Science and Medicine* 13, no. 3 (January 1, 2008): 245–69. <https://doi.org/10.1163/157338208X285035>.
- Peri, Jess. "Jess Peri." Artist website, 2022. <https://www.jessperi.com>.
- PetaPixel. "The Bonfoton Lens Helps Turn a Room Into a Giant Camera Obscura." Review. PetaPixel, July 19, 2017. <https://petapixel.com/2017/07/19/bonfoton-lens-helps-turn-room-giant-camera-obscura/>.
- Raynaud, Dominique, and Alhazen. "Introduction: A Key Milestone in the History of Optics and Ibn al-Haytham's Legacy." In *A Critical Edition of Ibn Al-Haytham's On the Shape of the Eclipse: The First Experimental Study of the Camera Obscura*, 1–3. Sources and Studies in the History of Mathematics and Physical Sciences. London: Springer Nature, 2016.
- Reed, Bonnie, and Donald R. Tanner. "Information Needs and Library Services for the Fine Arts Faculty." *Journal of Academic Librarianship* 27, no. 3 (May 2001): 229. [https://doi.org/10.1016/S0099-1333\(01\)00184-7](https://doi.org/10.1016/S0099-1333(01)00184-7).
- Rosenblum, Naomi. *A World History of Photography*. 4th ed. New York: Abbeville Press Publishers, 2007.
- Silver, Sean. "Robert Hooke's Camera Obscura." In *The Mind Is a Collection: Case Studies in Eighteenth-Century Thought*. Philadelphia: University of Pennsylvania Press, 2015. <http://www.mindisacollection.org/hookes-camera-obscura>.
- Springshare. LibCal. "LibCal – Calendaring, Event Management, and Booking Platform For Libraries." Library Calendaring, 2021. <https://springshare.com/libcal/>.
- Thompson, Dana Statton, Stephanie Beene, Katie Greer, Mary Wegmann, Millicent Fullmer, Maggie Murphy, Sara Schumacher, and Tiffany Saulter. "A Proliferation of Images: Trends, Obstacles, and

- Opportunities for Visual Literacy.” *Journal of Visual Literacy* 41, no. 2 (April 3, 2022): 113–31. <https://doi.org/10.1080/1051144X.2022.2053819>.
- Thompson, Dana Statton. “Teaching Students to Critically Read Digital Images: A Visual Literacy Approach Using the DIG Method.” *Journal of Visual Literacy* 38, no. 1–2 (April 3, 2019): 110–19. <https://doi.org/10.1080/1051144X.2018.1564604>.
- Tishman, Shari. *Slow Looking: The Art and Practice of Learning Through Observation*. 1st ed. London: Taylor and Francis, 2017.
- University of New Mexico, The. College of Fine Arts. “Watch: Arts Unexpected 2017.” *College of Fine Arts, UNM* (blog), 2017. <https://finearts.unm.edu/watch-arts-unexpected-2017/>.
- . Office of Institutional Analytics. “Official Enrollment Reports.” Tableau, 2021. <https://oia.unm.edu/facts-and-figures/official-enrollment-reports.html>.
- Wolff, Ilan. *Camera Obscura at Work 1982-1997*. Seyssel: Ilan Wolff, 1998.