Barbara Hammer, Optical Printing, and a Theory of Touch

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Abstract: The essay clarifies the material and conceptual foundations of Barbara Hammer's artistic practice by placing her theory of touch in cinema within its historical, theoretical, and technological contexts. I argue that technology, specifically optical printing, served as the conduit for Hammer's ideas about film form, corporeality, and the interplay of theory and practice. Through a physical relationship with the optical printer, Hammer reinvented her approach to visual aesthetics, discursively repositioned her identity as a queer filmmaker, and developed a sophisticated filmmaking program that explicitly challenged her mentor, Stan Brakhage. More broadly, this essay posits technology as a set of material constraints refigured as potentialities by calling attention to the ways in which material realities inform the filmmaker's physical and mental engagement with her material. It also investigates the avant-garde's use of film technology as a concept, a set of ideas that shapes filmmakers' theoretical orientations.

Keywords: avant-garde, experimental, technology, optical printing, Barbara Hammer, touch, queer aesthetics, haptic, Stan Brakhage, Ashley Montagu

Barbara Hammer's *Endangered* (1988) begins with an off-kilter double exposure of the filmmaker working steadily on her optical printer while snowflakes, depicted as particles of light energy, swirl around her silhouette. In a series of traveling mattes, boxes-within-boxes expand and contract, parsing shafts of light into discontinuous fragments. Through colored filters, we glimpse Hammer seated at her printer followed by dissected images of various endangered species, especially birds and tigers, which are broken apart and rearranged by the restlessly

swelling mattes. In the shots of Hammer at work, the filmmaker presents herself as both producer and protector of the film, her hand steady on the throttle of the optical printer as the natural world breaks into pieces around her. Visible evidence of painting, scratching, and sewing emphasizes the materiality of the filmstrip, as though to remind the viewer that celluloid is as imperiled as anything else. While *Endangered* is an urgent warning about the precarious position of experimental filmmakers, light, and life on planet Earth, the film is also a visualization of a physical relationship with film technology. The images of Hammer on her optical printer are less anti-illusionistic or "meta" than performative, a staging of the creative physical labor that brought the film into being. *Endangered* is also an emphatically tactile film, both in terms of the depiction of Hammer's corporeal connection to the printer and its appeal to haptic visuality (Marks, 2000; Totaro, 2001).

The aim of this essay is to clarify the material and conceptual foundations of a significant component of Barbara Hammer's artistic practice by placing her theory of touch in cinema within its historical, theoretical, and technological contexts. Perhaps paradoxically, I argue that technology, specifically optical printing, served as the conduit for Hammer's ideas about film form, corporeality, and the interplay of theory and practice. Through a physical relationship with the optical printer, Hammer reinvented her approach to visual aesthetics, discursively repositioned her identity as a queer filmmaker, and developed a sophisticated filmmaking program that explicitly challenged her mentor, Stan Brakhage.

For viewers unfamiliar with the scope of Hammer's prolific career, these may seem like a surprising set of concerns. Even within avant-garde circles, Hammer is best known for her pioneering work as a queer filmmaker. Her earliest films, which Richard Dyer (2003) and Greg Youmans (2012) have contextualized in relation to cultural feminism, are sincere and playful

depictions of same-sex erotic bonding, travels with lovers and friends, and politically engaged lesbian collectives. In addition to these diaristic films, which include *Dyketactics* (1974), *Superdyke* (1975) and *Women I Love* (1976), among many others, Hammer is celebrated for her experimental documentaries on LGBTQ history, such as *Nitrate Kisses* (1992), *Tender Fictions* (1996), and *History Lessons* (2000) (Kleinhans, 2007; Zita, 1981). Understandably, these films have received the bulk of critical attention, although perhaps at the expense of her work from the 1980s, which substitutes some of the radical content of her early films for more radical form. Shifting the emphasis to these films is not to downplay Hammer's trailblazing contributions to queer filmmaking, but to underscore the form/content dichotomy that has frequently rendered her a marginalized filmmaker. As Hammer points out, her early lesbian audiences were often aggravated by the formal challenges of her work, while her candid depiction of lesbian lifestyles seemed outside the purview of the male-dominated cinematic avant-garde. In an interview, Hammer recalled, "I could be rejected by both audiences for different reasons: for content by the avant-garde audience and for form by the lesbian, feminist audience" (qtd. in Haug, 1998a: 87). Moreover, Ara Osterweil (2010) has productively nuanced the usefulness of the term "lesbian filmmaker" to describe Hammer's work without downplaying sexuality's formative role in her artistic practice. Similarly, I argue that Hammer's sexual identity and feminist activism informs her relationship to film technology and the conceptual basis for her theory of touch without determining them.

More broadly, this essay demonstrates the viability of two overlapping approaches to film technology in the avant-garde. The first is to posit technology as a set of material constraints refigured as potentialities. While carefully avoiding a deterministic account, Hammer's films call attention to the ways in which material realities inform the filmmaker's physical and mental

engagement with her material, negotiate the interplay between concept and realization, and provide opportunities for energetically exploiting the technology's built-in "limitations." In Hammer's case, these "material realities" include the institutional structure that facilitated her access to the JK optical printer, the formal possibilities presented by optical printing, the specificities of Hammer's techniques, and the influence of optical printing on an artistic program that pursued the metaphoric visualization of emotional states, tactility, and a corporealized female body.

The second approach is to investigate the avant-garde's use of film technology as a concept, a set of ideas that shapes filmmakers' theoretical orientations. On the one hand, a specific conception of optical printing as both physical process and tool for reworking becomes a major component of Hammer's cinematic theory of touch. On the other, this figuration of optical printing becomes a critical aspect of Hammer's discursive self-presentation and how she understands her own practice. Consider the set of metaphors that Hammer has used to describe the optical printer:

> "For me, the optical printer is a painting device, all about the composition of the frame, the colors I could use, and the control" (Hammer, 2014).
>
> "My connection with the printer was intimate. I would have my eye touching the eyepiece, my hand on the button, I was adjusting constantly what the f-stop was going to be. I rarely let the device run on its own. I was always connected to it that way" (Hammer, 2014) (see Figure 1).
>
> "It encouraged creative intimacy with its DIY come-on" (Hammer, 2010: 207).

[Figure 1 near here]

By designating the optical printer a "painting device," Hammer suggests a physical relationship with her materials, a working process rooted in touch, and a sense of discipline derived from the

artist's control over her body. She also implies that the printer is a kind of technological prosthetic, an extension of her body that she is always connected to, not dissimilar from Brakhage's gestural camera. And, of course, the printer is also figured as a lover, making a sexual appeal that promises physical pleasure and intimacy. As this essay will demonstrate, this intimate corporeal relationship with film technology occupies a central place in a more expansive theory of touch that in turn becomes a causal factor in Hammer's use of technology to shape film form.

A Theory of Touch

Before turning to Hammer's use of the optical printer, however, it is important to contextualize her theory of touch in relation to its most proximate intellectual sources. This mirrors Hammer's own trajectory, as the evolution of her ideas slightly predated her use of optical printing to explore them in cinema. Throughout the 1970s, Hammer's conception of touch was personal, rooted primarily in intuition and experience, but by the end of the decade, courses on feminism and psychology at San Francisco State prompted her to develop a theoretically ambitious approach to the subject. While touch was already an important component of her filmmaking, Hammer expanded this notion into a more elaborate artistic brief through exposure to the writings of Carl Jung and Ashley Montagu (Hammer, 2014).

The first pillar of Hammer's burgeoning theory was derived from Jung's well-known typology of psychological functions and attitudes. The result of a decade of research, Jung (1971) famously argued for two distinct modes of interaction with the world: extraversion, "an outward movement of interest towards the object," and introversion, "a movement of interest away from the object to the subject and his own psychological processes" (4). Because these

attitudes were especially general, Jung further identified four functions or orientations—thinking, sensation, intuition, and feeling—that combined with extraversion and introversion to produce eight possible function-attitudes. Although every individual possesses each of these mechanisms, he or she will customarily prefer one over another. "If one of these functions habitually predominates," Jung argues, "a corresponding type results" (6). For Jung, the value of the typology is its schematic explanation of the complexities of human behavior. Of particular appeal for Hammer was sensation, "the psychological function that mediates the perception of a physical stimulus" (461). For the personality type that favors sensation, conscious perception through the sense organs is the most predominant mode of engagement with objects. For the extraverted sensing individual, "those objects that excite the strongest sensations will be decisive," which tends to favor a materialist/hedonist orientation that values pragmatism, factual data, sensuality, and affective intensity (362). By contrast, the introverted sensing individual is marked by a reflective orientation that values subjective sensory experiences, inner consciousness, and an artistic disposition.

Jung cautions against the use of his typology to "stick labels on people," observing that slotting patients into the system as both means and end is "nothing but a childish parlour game" (xiv). Whether Hammer would self-identify as an extraverted sensing or introverted sensing individual (or some combination thereof) is less important than the fact that discovering Jung's system provided a validation of sensation as a way of orienting oneself to the world, a perspective with which Hammer strongly identified. Especially significant was the notion that sensation could be the predominant mode of experience for an individual. Years later, Hammer explained: "I am high on 'sensate intelligence,' that's my strongest [function]. I can feel a sense of smoothness or texture in an image in my body" (Hammer, 2014). Therefore, Jung was

especially important to Hammer because his typology provided a *post-hoc* explanation for her desire for intensely sensual experiences and her intuition that film was an inherently tactile medium, convictions that she had already been exploring in her films.

Hammer expanded upon Jung, however, by forging an explicit link between the sensing personality type and a specifically "lesbian aesthetics." Hammer's discovery of her own predisposition to the sensual was the direct result of touching a body that was like hers; "when I made love with a woman for the first time my entire worldview shifted," Hammer recalled (Hammer, 2010: 26).

> It was sensuality, the experience of touch and sensation, that was heightened for me as a woman loving a woman. I was so taken with the benefits of touch, pleasure, nurturance, visual imagery, and sexuality as a new lesbian that I wanted to convey these wonders to the audience (Hammer, 2010: 99–100).

In her public statements on her early work, the link to Jung is particularly evident in Hammer's suggestion that sensation and touch constitute a "worldview" or mode of experience. Furthermore, Hammer expands Jung's notion of sensation as an individualized orientation by connecting the concept to a specifically sexual identity that could in turn become the basis for an "aesthetics," a sensual way of being in the world that also could evoke physical sensations in a cinematic audience.

A lesbian aesthetics rooted in touch is evident as early as *Dyketactics*, Hammer's self-described "lesbian commercial" (Hammer, 2010: 90). In the first half of this landmark film, a group of nude women relax in the countryside, where they dance, pose, touch, and enjoy the pleasure of each other's bodies in a string of in-camera superimpositions. In the second half, Hammer and Poe Asher make love on a sunny afternoon. Although Hammer and her co-director,

Chris Saxton, shot almost an hour's worth of material, Hammer edited the film down to four minutes, in which all 110 shots depict acts of touching. Recalling the editing, Hammer emphasized the intuitive decision to "cut for touch" and the physical intimacy between her and the technology:

> In the intimacy of the editing room in one sweaty night of work with machine (the Steenbeck flatbed editor) and body very close together, I cut the whole feature down to four minutes of body, body, body to achieve something different from my original intention… In cutting for the action I inadvertently cut for touch. That middle ground, that space between the splicer and the flickering light of the flatbed screen three feet away in the distance, brought me to my senses: literally, to my sense of the connection between sight and touch. This sight and touch union became the basis of my personal lesbian aesthetic (qtd. in Rhodes, 2012).

Ara Osterweil (2010) rightly argues that Hammer's corporeal cinema should not be reduced to "the relatively narrow realm of identity politics" through an insistence on her aesthetics as necessarily or even primarily "lesbian" (187). Indeed, the theoretical foundation for Hammer's touch-based filmmaking was broadening in the 1970s, as the idea of a corporeal cinema began to encompass realms of experience beyond identity and sexuality. A breakthrough for Hammer was her discovery of the first major book on touch, the anthropologist Ashley Montagu's *Touching: The Human Significance of the Skin* (Hammer, 2014). Published in 1971, *Touching* (along with an earlier work, *The Direction of Human Development*) was a groundbreaking work for its insistence upon love as an action rather than an emotion. In *Touching*, Montagu (1971) adopts a "centripetal approach" that asserts the primacy of the skin, which he declares to be "the most important of all our organ systems" and "the mother of the

senses" (1). Montagu's hypothesis is that healthy physical and behavioral development in infants depends upon the amount and quality of physical stimulation they receive. This leads him to advocate for a "tender, loving care" approach to child rearing that emphasizes maternal affection in which the child is "handled, and carried, and caressed, and cuddled, and cooed to" (84). Noting that the human fetus is precariously immature at the time of its birth, Montagu argues for the importance of touch, physical warmth, and breastfeeding in spurring healthy human development. Drawing from a range of scientific (and anecdotal) experiments involving mammals' exposure to skin at formative moments in their development, Montagu maintains that "for human beings tactile stimulation is of fundamental consequence for the development of healthy emotional or affectional relationships" (31).

Apart from further validation of the primacy of touch, Montagu's emphasis on child development provided an opportunity for Hammer to challenge one of the foundational texts of the postwar American avant-garde, Stan Brakhage's "Metaphors on Vision." Brakhage's advocation for the primacy of vision was axiomatic within an avant-garde that many feminist critics had begun to view as stiflingly patriarchal. By this point in her career, Hammer was friendly with Brakhage, although she had begun to question some of the ideological implications of his filmmaking, particularly his "macho and sexist way of looking at Jane in *Window Water Baby Moving*" (Hammer, 2014). In 1975, Hammer made a portrait film, *Jane Brakhage*, that sought to investigate Jane's role in her husband's artistic process, forming a kind of triptych with Hollis Frampton's critical interview of the Brakhages in *Artforum* and Brakhage's own *Hymn to Her* (1974), formulated as a response to the criticism (Frampton, 1973).

As is well known, Brakhage believed that prior to the imposition of language to classify and organize experience, the untutored infant's eye encountered each object through "an adventure of perception." Famously, Brakhage (2001) rhetorically asked:

> How many colors are there in a field of grass to the crawling baby unaware of 'Green'? How many rainbows can light create for the untutored eye? How aware of variations in heat waves can that eye be? Imagine a world alive with incomprehensible objects and shimmering with an endless variety of movement and innumerable gradations of color (12).

Although Brakhage argued that a return to this innocent state was impossible, his arsenal of defamiliarization techniques was marshalled in service of a radical "untutoring" that sought non-language based or pre-linguistic expressions of affective image-based ideas. While this is an admittedly reductive oversimplification of his artistic program, it solidified as the dominant reading practice for his films at the time that Hammer discovered Montagu.

Montagu's claim that touch was more primary than sight allowed Hammer to advance a revisionist, gendered rebuttal to Brakhage. Not only did Montagu provide theoretical scaffolding for the idea of touch as both preceding and inseparable from sight, but his observations were rooted in child development. Montagu (1971) argued that the signals the newborn "receives through the skin" are "its first medium of communication with the outside world" (50). Later, he argues for the primacy of skin in establishing object relations:

> What we perceive through the other senses as reality we actually take to be nothing more than a good hypothesis, subject to the confirmation of touch. Touch attests to 'objective reality' in the sense of something outside that is not myself (107).

Although Montagu's text is not explicitly feminist (in fact, his views on sexuality are fairly patriarchal), one of his implicit aims is to recoup childbirth from its patriarchal institutional takeover by reasserting the importance of female bodies, breastfeeding, and sensation. Part of Montagu's argument is that a more "natural" approach to child rearing through touch contributes to the formation of an individual's future orientation to the world (although Montagu does not reference Jung specifically). For Hammer, Montagu provides a set of connections between touch as a mode of experience, a repudiation of Brakhage, and gender politics. These connections are evident in Hammer's own summary of Montagu: "The theory is that we touch before we see and so we know the world first through touch rather than sight. A child will know a mother's breast before her eyes can actually focus. For two months, the world is a blur, but we are touching" (Hammer, 2014; Haug, 1998a: 68–70).

Optical Touch: Barbara Hammer and the Optical Printer

In a sense, *Dyktactics* had taken an optic-centric approach to touch in that Hammer's "textural editing" strategy forged connections between shots on the basis of their visual depictions of hands and bodies touching. In the anecdote about the editing of the film included in the previous section, however, Hammer's emphasis on the "intimacy of the editing room," the "sweaty night of work with machine," and the "flatbed screen three feet away in the distance" provides insights into Hammer's expanded use of film technology, specifically the optical printer, to develop her theory of touch on film. In the early 1980s, Hammer began work on *Sync Touch* (1981), a film that she intended to be a theoretical justification for the role of touch in her cinema:

> After making the films in the ’70s, I was intellectually defining why I was putting so much touch in the film. I wanted to touch the film, scratch it, rephotograph it to feel in my body what I’m seeing in my eyes. I was making a statement (Hammer, 2014).

This intention provides insights into Hammer’s method. In addition to the visual representation of touch, she would bring her physical relationship with technology into her filmmaking process, thereby advocating for her theory both onscreen and in practice. In the two films that I will discuss, *Sync Touch* and *Pond and Waterfall* (1982), Hammer moves between images of touching, handmade and optical effects, a corporealized female body in relation to technology, and didacticism, such that image, process, and theory become completely fused.

The optical printer was not new to Hammer. In some of her earlier films, she had adopted a more functional use of the printer to develop image-based metaphors, convey an emotional orientation toward her material, or submit her own body to analytic self-scrutiny. For instance, in *Double Strength* (1978), a forthright portrait of the filmmaker’s affair with dancer and performance artist Terry Sendgraff, isolated printing effects serve as metaphors for the emotional stages of the relationship, moving from exhilaration to devastation, and, eventually, reconciliation. Sendgraff invented Motivity, an improvisational form of aerial dance performed on a low-flying trapeze, and Hammer uses the optical printer to generate freeze frames to analyze her muscular, fluid body as she practices in the nude. Their breakup is represented by another printing effect: a still image of Sendgraff’s face, which is pushed offscreen in increments, a black frame gradually standing in for her absence. Later in the film, Hammer superimposes a still image of herself grieving with a tire running vertically down the length of her body, using the

printer to suggest that losing love can engender physical pain, comparable to being run over by a tire.

In other early films, Hammer turned to the optical printer for analysis, using slow motion, freeze frames, and multiple exposures to arrest or multiply her images. In many cases, the printer serves a revelatory function, locating an emotional truth through intense scrutiny, often of the female body. *Multiple Orgasm* (1976) consists of two layers of imagery superimposed so that neither layer dominates. The first is a tight close-up of Hammer's vulva as she masturbates to orgasm, while the second is comprised of handheld panoramic views of porous rock formations. Surprising visual congruities between the vagina and the rocks begin to emerge, blurring the layers until it seems almost as if the gliding camera is going to slip inside her body. As she climaxes, Hammer freezes the image of her face; rephotographing the images through a purple filter represents the post-orgasm endorphin rush, as if to synaesthetize the afterglow. According to Hammer, "When I made *Multiple Orgasm*, I wanted to see what my face looked like. In contraction, it looked like a child being born. I was so surprised" (qtd. in Haug, 1998a: 91). In this instance, the use of the optical printer is motivated by a desire to dissect the sexual experience, as an effort for Hammer to understand the mechanics of her own body through self-scrutiny and visual analogy. As in *Double Strength*, Hammer uses the printer to devise potent visual metaphors for her affective responses.

Sync Touch represents a temporary move away from visual metaphor. As Hammer began to work on the film, she realized that her corporeal approach necessitated a more elaborate optical printing process, as well as a more reliable and intimate relationship with the technology itself. She was given access to a JK optical printer through David Heintz, a filmmaker who was teaching at Mills College in Oakland. As I have discussed elsewhere, the JK, which had been

invented by a Finnish machinist, Jaakko Kurhi, in Oakland in 1972–73, had become institutionalized as the most affordable standardized optical printer for the amateur market (Powers, forthcoming). Mills was home to the Center for Contemporary Music, an internationally renowned program for experimental composition that also maintained a variety of electronic equipment, including a Moog synthesizer and other cutting edge technologies. According to Hammer, Mills also had a JK

> in a little cabin tucked away at the back of the grounds of this beautiful private school. They had all kinds of other technical stuff, but they also had this printer, and no one was in this space. David taught me how to use it and gave me a set of keys to the cabin. I would take my handpainted film there and rephotograph it (Hammer, 2014).[1]

In the same way that Brakhage's *Anticipation of the Night* (1958) both announces and illustrates the ideas that he would later elaborate in "Metaphors on Vision," *Sync Touch* serves as an artistic declaration of a conceptual program. The film's first section is a complex synthesis of visual representations of touch and technology, artisanal working processes (painting, collage), and use of technology (the Bolex) to animate the images. The film begins with a slow tilt down a wall of filmstrips, an abstract jigsaw puzzle of frames and sprocket holes. Hand-drawn outlines of hands are filled in with paint through pixilation, a single-frame animation technique that was common in Hammer's films of the period. Soon, Hammer incorporates extreme close-ups of her own hands and fingers smearing globs of paint over film strips and photographic images, often of her own body. For instance, black-and-white photos (in positive and negative) of Hammer curled up in bed holding her camera like a lover are energetically colored using a variety of painting strategies and styles. In some instances, we see the identifying marks of the film stock ("Kodak

Safety Film 5063"), sprocket holes, and images of projectors as Hammer paints or scratches over them in pixilated "fast motion."

In the third section, Hammer turns to the optical printer to explicitly connect a corporeal relationship to film technology with her earlier lesbian-centric films, both justifying the abundance of nude female bodies to her critics and exploring the interconnections between touch and sight. Images of hands touching bodies are step printed (that is, slowed down by rephotographing each frame multiple times), providing the opportunity to notice the dirt particles, decay, and other material traces of 16mm film. Still and moving images of Hammer and another woman having sex are rephotographed in small boxes against a black background, which roll vertically as if to suggest that the viewer is looking at a filmstrip. The women's cavorting bodies are cut out and collaged in front of abstract blobs of color. An extreme close-up of fingers massaging a clitoris is rephotographed as it is pulled vertically through the printer gate, creating a blur that effectively negates any voyeuristic impulse. Hammer step prints an image of her holding and kissing her nude lover that has been scratched with a nail, using the optical printer in conjunction with artisanal techniques. The images frequently and unexpectedly stop, start, and break into fast or slow motion.

Hammer intercuts these handmade sequences with explicative sections clarifying their meaning in relation to Hammer's theory of touch, sight, and cinema. An unidentified woman, rendered in fragmented extreme close-ups of her mouth and face, delivers a lecture that serves as the most straightforward articulation of Hammer's theory of touch in any of her films:

> Underlying vision is the fact that feeling by touching precedes sight, phylogenetically and ontogenetically, in every human baby. We all touch first, learn to see later, and in learning establish a nearby visual world on a tactile base, giving a double quality to all

> perceptions of objects, first within immediate reach and later within ultimate or potential reach. All children, and many adults, want to handle a new sight. What is seeing and touched is always made part of ourselves more intensely and more meaningfully than what is only seen. And so in art, the representative picture we only see but cannot in imagination touch does not carry the same attention and concentration of interest as the one we can imaginatively handle and touch as well as see clearly (Kroeber, 1970: 267).[2]

In her use of this quotation, Hammer directly elucidates her theoretical concerns, which provides an

interpretive frame for the preceding passages of optical printing. While this section is easily read as an explicit refutation of Brakhage, the film's final sequence implicitly connects her theory to the "lesbian aesthetics" discussed earlier (Weiss, 2004: 49). Hammer and her lover are joined in an intimate embrace. The woman humorously tries to teach Hammer the correct pronunciation for a monologue delivered in French, a conceit that allows Hammer to restate key phrases multiple times. After comparing "feminist language" with French, the monologue concludes: "We are in a culture where expression of the heart and the senses are repressed. The heart of film is the rapport between touch and sight."

As a manifesto, *Sync Touch* offers multiple points of entry. The film argues for touch as an essential component of a "lesbian aesthetics," but also as mitigated and transformed by film technology. In the optically printed section, sexual intercourse is posited to be the primary tactile experience, with the freeze frames, blurriness, and other obfuscating techniques offering a corrective to critics who would view Hammer's earlier films as glorified lesbian pornography. In addition, Hammer's use of handpainting, pixilation, and the optical printer equates artisanal working methods with film technology in asserting the essential tactility of the cinematic

medium for both the maker and the spectator. Moreover, a corporealized female body is figured through an embodied, sensual approach to the optical printer. Addressing the making of *Sync Touch*, Hammer explained: "I was touching every frame on the printer. When I was looking at the frame in the printer, I would have the feeling in my body, the sensation that this is what I was going for" (Hammer, 2014). Hammer's phrasing in this statement is revealing in that it suggests that the printer was a prosthetic that allowed her to touch each frame, which in turn produced an affective response—film technology as multiplying pathways to sensation.

Although *Sync Touch* was a statement of purpose, Hammer surprisingly dropped many of its techniques for her next series of films. Conspicuously absent were images of touching, direct explications of theory, and, most strikingly, images of or overt references to nude bodies, lesbianism, or sexuality. Instead, Hammer used the optical printer to explore the phenomenology of touch in cinema, especially conceived as an implicit reconfiguration of Brakhagean aesthetics, in the form of kinaesthetic landscape studies. In films such as *Arequipa* (1981), *Pools* (1981), *Stone Circles* (1983) and *Bent Time* (1983), the printer becomes a vehicle for combining an embodied physicality with the phenomenological experience of place. As Claudia Gorbman (1987) has argued, Hammer's films from the early 1980s strive to uncover the ways in which a corporeal female body exists in relation to the phenomenal world. These films were shot on multiple continents, including North America, South America, and Europe, and many of them adopt the subjectivized, handheld camera of Brakhage and other lyrical filmmakers. In these films, Hammer's idea of touch becomes less literal and more kinaesthetic, not so much about an orientation as an experience. Interestingly, a set of concerns that would seem to favor a direct, unmediated approach provided opportunities for Hammer to delve more extensively into optical printing.

In *Pond and Waterfall*, a first-person camera represents the point-of-view of an unseen swimmer as she moves through an underwater vernal pool. The embodied camera pushes past thickets of slowly undulating plants and algae, burning fiery orange against the cool blue of the water. It hovers at the surface of the water and then plunges again, inverting the reeds that crisscross the frame. Light flares and stray glimpses of the sun illuminate the ripples. Later in the film, the camera emerges, but it remains perched at eye level with the waterline bisecting the frame horizontally, as if the swimmer is peeking out of the water. A flower hovers over the surface as the swimmer watches from below. A succession of underwater barrel rolls recalls Michael Snow's *La Region Centrale* (1971). The end of the film veers into abstraction as the swimmer reaches the base of a waterfall, revealing the rocky coastline, and splashing bubbles collide with the camera, showering the swimmer's face (i.e. the camera lens).

A crucial aspect of *Pond and Waterfall* that is not evident from this description is the fact that Hammer step printed all of the footage on her optical printer, sometimes in ratios as high as 4:1. This lends the film a stuttering, mechanical quality, less of a glide through the water than a succession of incremental pushes. In certain segments, Hammer alters the ratio of her printing—3:1 or 2:1—to introduce fairly abrupt rhythmic variation. In *Pond and Waterfall*, the sensual, experiential quality of swimming through water (the film was shot at Point Reyes National Seashore in Marin County) exists in tension with the distinctive, mechanized rhythm of the step printing, which produces an uncannily hypnotic effect, something close to automated meditation. Life underwater feels slow and sluggish—the imagery possesses a lyrical beauty, but there is also an undercurrent of lethargy, as though experience has slowed to a crawl.

By step printing her footage, Hammer undercuts the subjectivity of the first-person camera. While the film clearly signals the phenomenological experience of moving through

water, it feels more like a slideshow of a swimmer's experience, not an embodied simulation. Paradoxically, the printing heightens the viewer's perceptual sensitivity. In contrast to a Brakhage film, where flashes of light and color appear and disappear on the retina before they can be fully processed, Hammer's lyrical imagery lingers, conveying a heavy tactility. In fact, the transformation of the landscape through rephotography could also be read as another gentle rebuke to Brakhage. In Brakhage's cinema, the camera is often understood to be an extension of his body, with the artist's gestural movement serving to transform his surroundings through a reorientation of consciousness or vision. While Hammer adopts the first-person camera so strongly associated with Brakhage, she subverts the insistence that the viewer adopt his unmediated encounter with the world by introducing a layer of mechanical distance, suggesting that in some cases, mediation actually brings us closer to the rhythms of lived experience.

Optic Nerve as Synthesis

Hammer's decision to remove the explicit depiction of sexualized bodies from her films was also partly strategic. By the early 1980s, feminist criticism had caught up to Hammer's pioneering work, which some critics felt was too Romantic in its outlook, borrowing idioms from the traditions that it purported to critique (Weiss, 1981). In addition, Hammer was eager to challenge herself to make different kinds of films, especially because she felt pigeonholed by the New York establishment as a "West Coast lesbian filmmaker." For all of these reasons, Hammer packed up and moved to New York in 1983, increasing her presence in the galleries and closed circuit of avant-garde exhibition venues to see if it would inform her practice (Hammer, 2010: 108-111). After *Sync Touch*, Hammer had grown tired of the inevitable disruption that resulted from using optical printers that were not her own, finding that packing and unpacking all of her

rolls of film on a daily basis interfered with the flow of the creative process. Consequently, she purchased her own used JK optical printer directly from the manufacturer, Jaakko Kurhi, which came with her to New York (see Figure 2).

[Figure 2 near here]

The portability of the JK printer, which could be dismantled and carried in a backpack onto an airplane, proved to be a boon when Hammer was hired to teach film production at Columbia College in Chicago in 1985. Hammer had recently undergone the emotionally overwhelming experience of putting her 97-year-old grandmother, Anna, into a nursing home. Hammer packed up the rolls of black-and-white Super-8 that she had shot of her grandmother in the institution, along with her printer, and set out for Chicago. In her youth, Anna had been a cook for D.W. Griffith, so Hammer found herself taken by the irony of setting up her optical printer on her new kitchen table and processing her emotional response to such a traumatic event in a medium to which her grandmother had a connection (Hammer, 2010: 110, 144).

The resultant film, *Optic Nerve* (1985), became Hammer's most elaborately printed film up to that point. It became a synthesis of her work on the optical printer, pre- and post-*Sync Touch*. On the one hand, it represents another approach to her exploration of touch and sight in cinema. Ara Osterweil (2010) argues that the film "depicts and attempts to recreate the sensory experience" of her grandmother, presenting "fragmented and layered imagery that is indicative of Anna's internal consciousness" and asking viewers to "see the world through what Hammer imagines as her grandmother's eyes" (191). Like *Pond and Waterfall*, this is ultimately a phenomenological project. On the other hand, *Optic Nerve* marks a return to an earlier strategy: to develop complex visual metaphors for emotional propositions or feeling states, not unlike *Double Strength* or *Multiple Orgasm*. In this respect, the printing effects in the film not only

replicate Anna's perceptual experience, but also represent Hammer's feelings about her grandmother's plight through visual metaphor. This synthesis became central to Hammer's use of film technology throughout the next decade, as a means for making her images more expressive by introducing formal manipulation that was dictated by the emotional valence of the content of her footage.

The density of visual effects in *Optic Nerve* makes it somewhat laborious to describe. The film has a fuguelike structure, developing a small set of visual motifs that interweave in increasingly complex variations. Hammer's footage is optically transformed by a virtual catalogue of optical printing and editing techniques, which are deployed one after another in short, rapid bursts. Alternation of black-and-white frames generates heavy flicker, recalling involuntary pupillary reflex. Positive and negative images are bipacked. Shots of similar and divergent content are superimposed, decayed through multiple generations of rephotography, step printed for rhythmic variety, and shot through veils of oscillating colored filters, usually in combination. The film pushes toward its climax with a final, long pass through the unending corridor, the screen pulsing with such visual intensity that it provokes a physiological response in the viewer, the images reverberating across the retina. How do we interpret this barrage of printing effects?

In one respect, Hammer is using the optical printer to replicate what she imagines to be Anna's perceptual experience. As she grew older, Anna suffered from damage to her optic nerve, or cranial nerve II, which transmits visual information from the retina to the brain. Although she was unable to communicate the extent of her impairment, Anna was blind in one eye, which can cause a loss of depth perception, diminished color vision, double vision, blurriness, and irregular saccadic movement (Haug, 1998a: 72–73). In the opening section, Hammer establishes the idea

that the film will optically align the viewer with her grandmother's damaged sense of sight: we see rapid alternation between images of Anna's face, her eye, and a composite of a hospital window with a bucket on a chain hanging in front of it. Each image is onscreen for only a frame or two, often rephotographed through a red or green filter, and sometimes held as a freeze frame, a disorienting legion of effects that mimics the flattened sense of depth, diminished color vision, and involuntary eye movement that results from damage to the optic nerve. Therefore, the cinematic correlates of this physical condition—juxtaposition of positive and negative imagery, strobing, superimposition, color filters, grainy rephotography, stuttering rhythms, misaligned framelines, and flattened depth perspective—force the viewer into an embodied identification with Anna, to see the world through her eyes.

If these images can be taken as Anna's subjectivity, the visual motif that will recur throughout the film—a point-of-view shot of Anna as she is pushed in a wheelchair through the labyrinthine institutional corridors of the hospital—suggests a visual metaphor for Hammer's experience. Splotches of saturated red, green, and pink are smeared across the black-and-white image, which rolls vertically, as though the filmstrip is having difficulty maintaining proper registration. In the next set of images, color footage of Anna in a domestic setting, perhaps in earlier days, is submitted to a technically complex series of effects: bisected by a splice mark with rolling images moving in opposite directions on either side, jittery misregistration, superimposition and rack focus, sprocket holes restlessly traversing the surface of the image, and red–green strobing that becomes so intense that the colors bleed together to produce yellow on the retina.

Later in the film, the perception of flatness is accentuated through rephotography of successive generations of footage, which transforms Anna's descent into the hospital into a

degraded nightmare of inaccessibility. Hammer's use of the optical printer invokes a grainy Impressionism, recalling smudged photos that hover on the brink of legibility, allowing the viewer furtive, sepia-toned glimpses of the ill, elderly faces that line the periphery of Anna's journey. Anna's passage through the hospital corridor is paralleled by footage of another journey, in which she is pushed in her wheelchair through a supermarket. The trip is printed in negative with mottled orange-and-blue patterns of light superimposed over it, almost as though the image was shot through a fish tank.

These printing techniques, then, function as metaphors for Hammer's own emotional experience, conveying to the viewer how she feels about saying goodbye to her grandmother. Pushing Anna through the corridors of the hospital, which Hammer has described as "very traumatic," is printed again and again, the increasing fuzziness of the degraded image paralleling the gradual numbing of Hammer's senses (Haug, 1998a: 73). The superimposition of Anna's old life with her new one represents taking stock of a lifetime of memories, not so much on the part of Anna herself, but of her granddaughter, who seems to be poring over the images on the printer, enlarging some details while diminishing others. The intense flicker makes it seem as though the frame is growing, with colors shooting in every direction, which for Hammer serves as a metaphor for her grandmother's death: "it's to say that we don't need to be confined… *Optic Nerve* is also about grandmother as an angel—as a metaphor—for her spirit leaving the space" (qtd. in Haug 1998a: 81).

At first glance, this barrage of optical effects may seem haphazardly deployed, but, in fact, *Optic Nerve* stands as one of the most complicated instance of content influencing form in Hammer's filmography. Explaining the structure of her films, Hammer writes:

> My films are not formalist; that is, they do not strictly adhere to an a priori rule of

> form, but instead spring from my intuitive gut experiences and so are phenomenological. The form is directly determined by the content… My films begin in what I call feeling images, an inseparable unity of emotion and thought/idea/image and internal bodily states of excitement (Hammer, 2010: 85).

At this point in her use of film technology, an emotional core in the subject matter of a film dictates Hammer's formal choices—the thread connecting the artistic decision-making process may appear obscure, but only because it is dictated by an affective rather than intellectual logic.

Hammer also connects emotion with "internal bodily states of excitement," which connects a heightened physiological state with her theory of cinematic touch. Paradoxically, *Optic Nerve* would seem to be about sight or vision, but Hammer's use of the optical printer expands this into the realm of the affective. Although it is less didactic and more removed from the "lesbian aesthetics" that predominated *Sync Touch*, *Optic Nerve*'s use of visual metaphors for feeling-states represents the next step in the evolution of Hammer's theory of cinematic touch.

Conclusion: Hammer in Context

This essay has argued that Hammer's physical relationship with the optical printer played an integral role in her development of a cinema of touch, prompting a reappraisal of her approach to visual aesthetics and furnishing her with a set of metaphors that shaped her own self-definition as an artist. But how typical was Hammer in her use of the optical printer specifically and film technology more generally? I conclude by briefly assessing Hammer's contributions in

comparison with other approaches to personal filmmaking, a physical relationship with technology, the interplay between theory and practice, and the notion of material potentialities.

Like Hammer, some filmmakers found the optical printer to be a tool for exploring the political, social, and formal ramifications of images, often in terms of visual metaphor or analysis. For example, Su Friedrich's *Gently Down the Stream* (1981), made the same year as *Sync Touch*, consists of condensed, epigrammatic textual renderings of twelve of the filmmaker's dreams, which are punctuated by fairly minimal visual reinforcement (a few images, leader, hole punching, scratching) that provides elliptical metaphors for Friedrich's process of investigating her subconscious on film. Friedrich uses the optical printer to streak text and image by disengaging the registration pins, generate a frame-within-a-frame effect, and manipulate rhythm through freeze frames and step printing. In Friedrich's hands, the printer provides a means for excavating her personal history, and her images are often visual metaphors for her own self-scrutiny, as well as what Bruce Jenkins (1986/87) aptly calls "the psychic consequences of religious constraints, familial binds, and sexual conflicts" (196).

Of course, Hammer's corporeal relationship with film technology has a long history within the avant-garde. To cite a particularly important precedent, Carolee Schneemann incorporated the 16mm filmstrip directly into her process, describing the act of artistic creation as "a meeting, head–on, with some subject or material that can then become the process out of which a work develops" (qtd. in Haug, 1998b: 38). Schneemann's performative insistence on film technology as an extension of her own body, a complete system that includes artist, materials, space, and time, provided an influential model for filmmakers who investigate their own physicality in relation to their materials. In describing their relationships with the optical printer, other filmmakers invoke detail-oriented, process-based arts with strong corporeal

dimensions. Hammer's "painting tool" is Ken Kobland's "sewing machine," and the process of working with the film is "a dance" or, for Pat O'Neill, akin to the combinatory logic of car-building (Hammer, 2014; Kobland, 2014; James, 1997: 121). As this essay suggests, these metaphors for the process of working with technology have material dimensions, but they also function as concepts that help us reimagine the avant-garde's embodied and personal approach to film technology.

By explicating Hammer's theory of touch, my intention is to illuminate the relationships between theory and practice and concept and realization. In Hammer's case, the formulation of the theory predates its application on the optical printer, but I would argue that its precise contours are inextricably informed by the printer, especially as explored in *Sync Touch*.[3] Of course, this essay has also placed a good deal of emphasis on the material realities of technology in the avant-garde, including Hammer's access to the JK optical printer, its institutionalization within the Academy, and the specific techniques that it allowed for (freeze frames, step printing, superimposition, frame-within-a-frame, blurring and streaking, flicker, bipacking, rephotography through colored filters).[4] While it is possible to conceive of these technical parameters as constraints, I would argue that "potentialities" more adequately conveys the ways in which these material realities productively open up a range of options for active engagement with the physical and intellectual labor of filmmaking. In the case of Barbara Hammer, the potentialities of optical printing inform, but do not entirely determine, a personal cinema rooted in expressivity, tactility, and corporeality.

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1 All of the information about Hammer's access to optical printers and specific printing techniques is derived from this interview, unless stated otherwise.

2 This passage is derived from Theodora Kroeber, *Alfred Kroeber: A Personal Configuration*. This is a biography of anthropologist Alfred Kroeber written by his wife after his death. This passage is an excerpt from a letter that Kroeber wrote to art historian Meyer Schapiro that the author includes as an example of Kroeber's "sense of beauty." In his anthropological work, Kroeber did not explicitly deal with issues of touch or sensation.

3 Of course, Hammer may object to my characterization of her approach to touch as a bona fide "theory," but one need not insist upon a unified system of thought to argue that technology can work in conjunction with a set of conceptual concerns.

4 In this respect, it shares some affinities with Carlos Bustamante's (2000) brief analysis of the Bolex H16's role in facilitating Maya Deren and Alexander Hammid's *Meshes of the Afternoon* (1943) (hand crank and frame counter, D-shaped three lens turret, allowance for variable film speed).

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