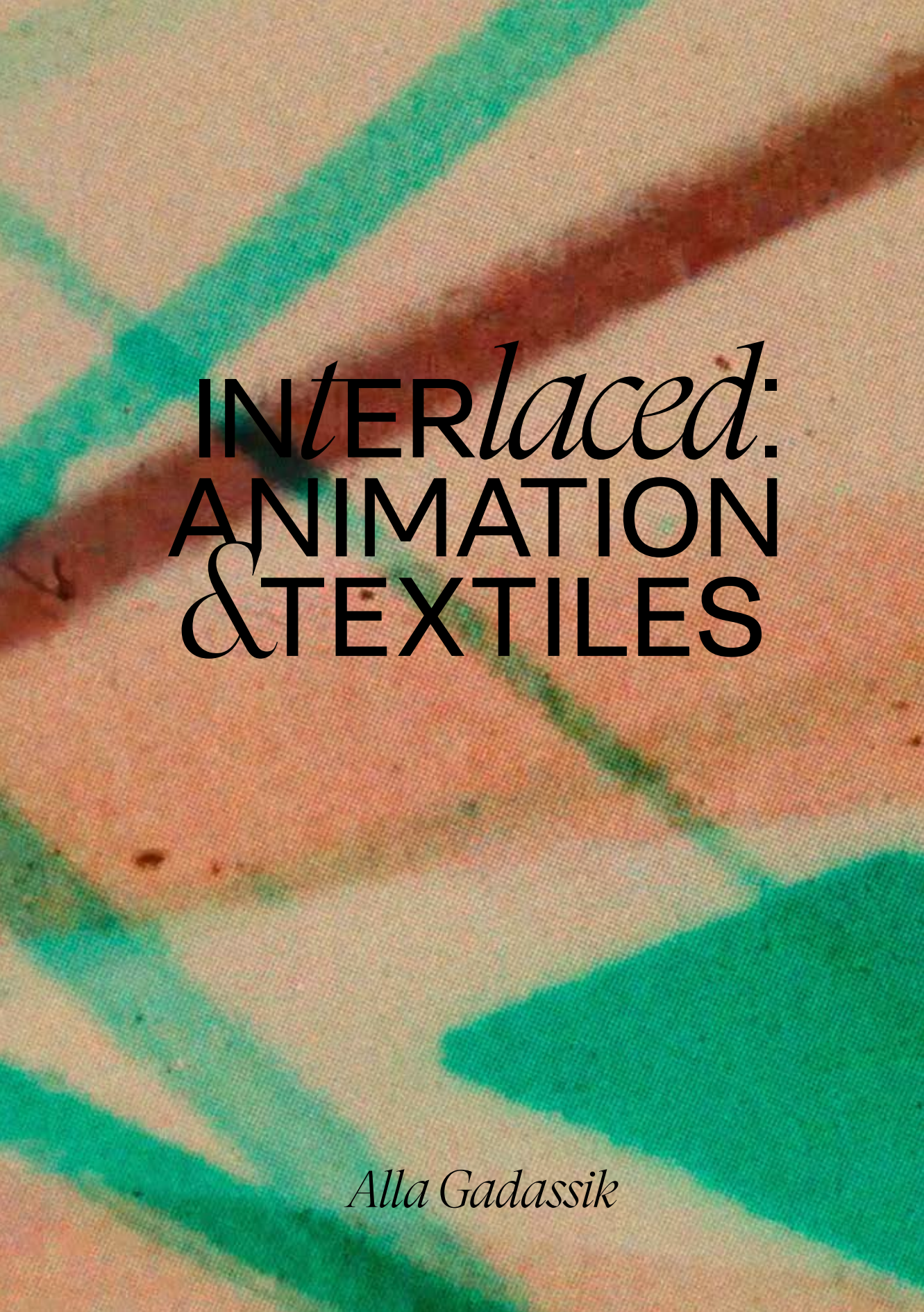
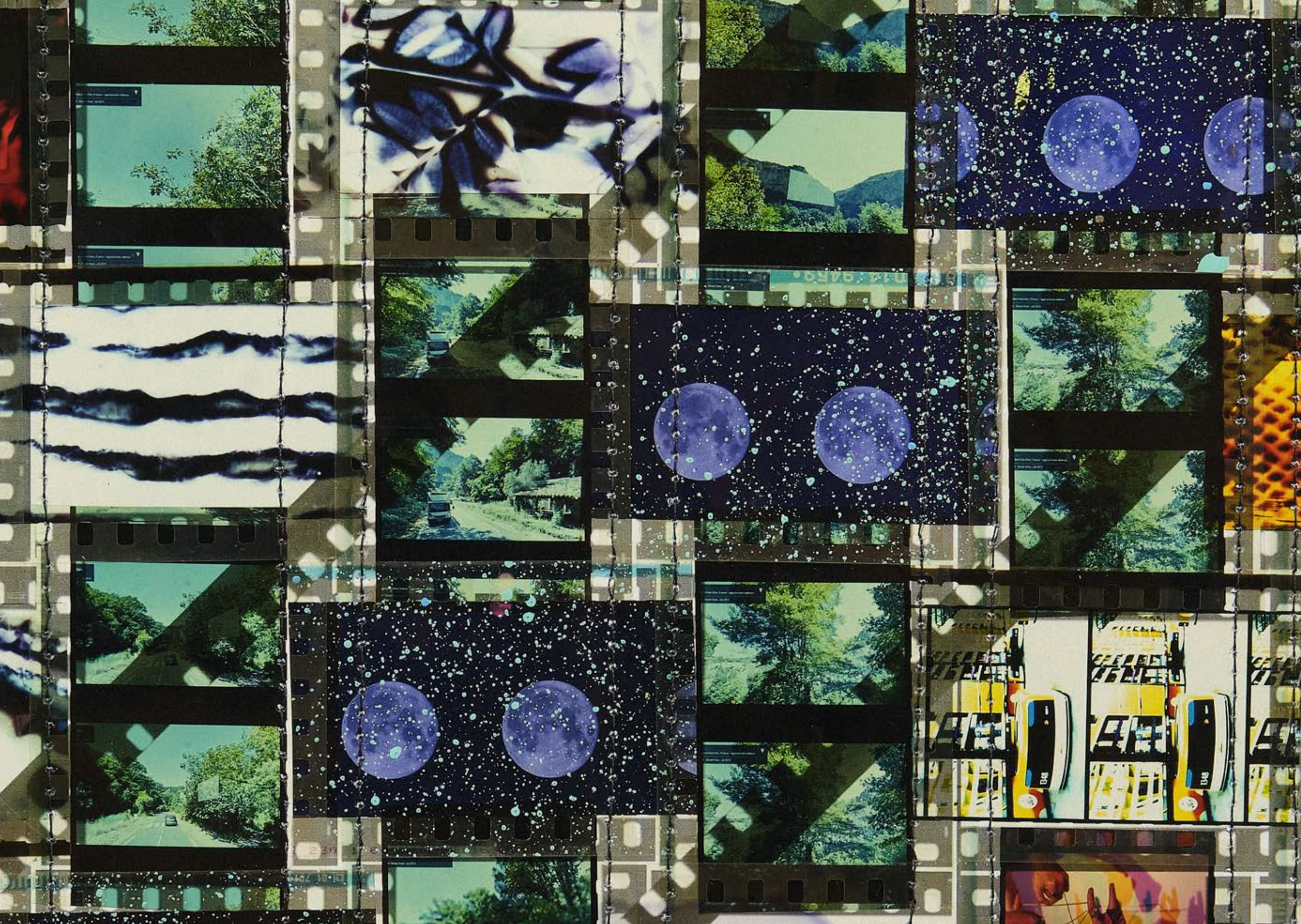

INterlaced:
ANIMATION
&TEXTILES
Alla Gadassik





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Interlaced: Animation & Textiles
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ALLA GADASSIK

Acknowledgement

My interest in the relationship between animation and textiles began with the work of Len Lye, and I could not envision this project anywhere but at the Len Lye Centre. The curatorial residency that led to this exhibition and accompanying book was supported by the Govett-Brewster Art Gallery | Len Lye Centre, as well as the Canada Council for the Arts. Paul Brobbel encouraged this project from its earliest stages. Zara Stanhope supported its ambitious scope and offered valuable guidance. Jon Geehan's elegant exhibition architecture and technical direction enabled it to take shape. Anna Briers stewarded all aspects of this project with remarkable acumen, and Megan Denz assisted with every thread and detail. My deepest gratitude goes to the artists and lending institutions who participated in *Interlaced: Animation & Textiles*, especially to Vaimaila Urale and Sione Faletau for orienting it in contemporary Moana practice with their newly developed work.



ZARA STANHOPE

Director's Foreword: Weaving Frames | Framing Fibres

As a scholar of animation and contemporary media art, Dr Alla Gadassik brings her unique research expertise to the curation of *Interlaced: Animation & Textiles*, a groundbreaking exhibition demonstrating the reciprocal influences of textile history and culture on moving images. Alla's deep inquiry into the historical lineages of handmade filmic media brings to light their entwinement with textile forms. The Govett-Brewster Art Gallery | Len Lye Centre (GBAG|LLC) is pleased to collaborate with Alla on this project and support her research into the experimental filmmaking of Len Lye, which has seen her make frequent visits to the Len Lye Foundation Archive as part of her role as International Film Curator in Residence (2022–25).

During the twentieth century, Western art-historical perspectives were responsible for marginalising both animation and textile arts. Craft-related practices were associated with folk art and popular culture, devalued as amateur, and endowed with lesser cultural and economic value than other artforms. Textile practices held connotations of women's work that belonged in the domestic sphere, even following industrialisation. Recent scholarship on both media has led to enhanced understanding and appreciation of their cultural and political histories. Aware of these histories and versed in the languages and concepts of animation and textiles, Alla, in *Interlaced*, reveals how both are inherently disciplinary, and lend themselves to bridging analogue and digital artistic divides.

Following Anni Albers, *Interlaced* reflects on the question: were either a thread or a single animation frame an event, then what would their collective or dialogic association be?[01] Albers was inquiring into the nature of weaving — whether its identity was a process or what follows that process. Bringing together works by artists from an intersecting range of contexts and interests, Alla's articulate text in this publication explores the rich variations arising from Albers' questioning of materials, media and meaning. This investigation starts by considering the connections between fabric and celluloid from the turn of the twentieth century in Europe, and describing how stop-motion photography animated cloth. Notably, the publication also illuminates how principles of animating pattern and the transformation created by the interplay of variation in design have bought their own expressive spirit to these media.

Albers' initial question endowed thread with temporality, as an event that becomes unfixed and in motion. Woven, quilted, filmic, printed or virtually sewn, the varied works in *Interlaced* comprise complex codings of warp, weft, pattern and energy that hold time within their making and form connections across periods, communities and cultures. They invite us to think about the role and experience of time — understanding the ways animation creates images frame by frame, alongside the durational creation of textiles woven thread by thread.

Both media allow a looping of time back to their precedents or legacies in the past, as well as the transference of knowledge or imagination into the future. Len Lye drew on a modernist appreciation of siapo patterns and tapa designs from Te Moana-nui-a-Kiwa during time spent in Sāmoa in the 1920s, which transformed his practice in handmade film. GBAG|LLC is excited to have worked with

01 Anni Albers traced weaving "to the event of a thread." *On Weaving* (Studio Vista, 1974), 15.

Alla to commission new works by Sione Faletau and Vaimaila Urale containing temporal cultural significance. Alongside historical tapa included in *Interlaced*, Faletau's and Urale's works contain the time of connections through whakapapa, and inherited and invented patterns, to offer the energy of innovation that is grounded in familial and cultural relationships.

Interlaced captures how artists often purposefully use film or moving images and textiles as forms of political communication. All are texts; they carry metaphor and meaning, languages and knowledges that speak to and build communities, and evolve with change and new technologies. As carriers of meaning, they can communicate power and expand the breadth of voices that protest against suppression. As Alla unpacks in *Interlaced*, textiles and moving-image forms and ideas in the hands of artists are paths of imagination and narrative, able to ultimately break free from past categorisations and transform disciplinary histories with sensitive or subversive acts.

On behalf of GBAG|LLC, I extend deep thanks to Alla for sharing her knowledge and bringing the artists' works together, to translate how textile and animation forms and vocabularies are never neutral but provide opportunities for critical thought and innovations in forming new visual languages through their correspondences. We are appreciative of the additional resources that Alla has bought to *Interlaced* through the Animate Materials Workshop, and the time that she has spent in Ngāmotu developing the exhibition. We also extend a deep appreciation to each of the artists and lenders for their participation, and especially to Sione Faletau and Vaimaila Urale for creating ambitious new commissions for the Len Lye Centre.

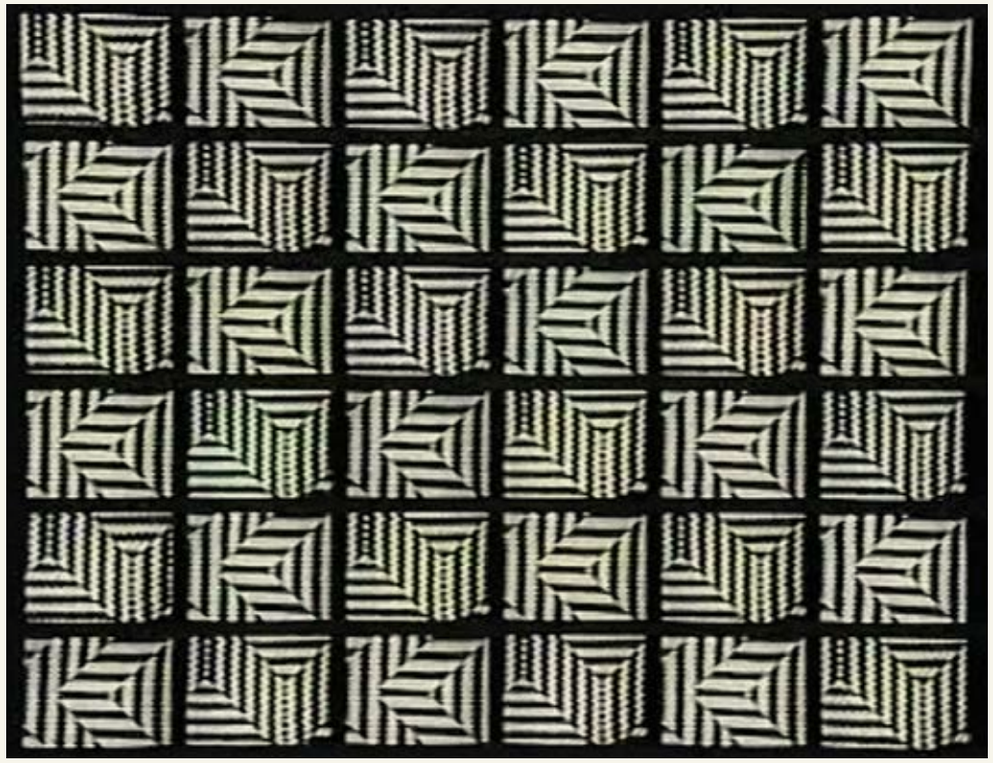
Special thanks to Anna Briers, Curator Len Lye and Contemporary Art, and Megan Denz, Assistant Curator Len Lye, for their care in delivering all aspects of *Interlaced*, from working with the artists and caring for their works to collaborating with Alla on all facets of the exhibition and publication, ensuring its successful presentation and realisation with designer Tana Mitchell.

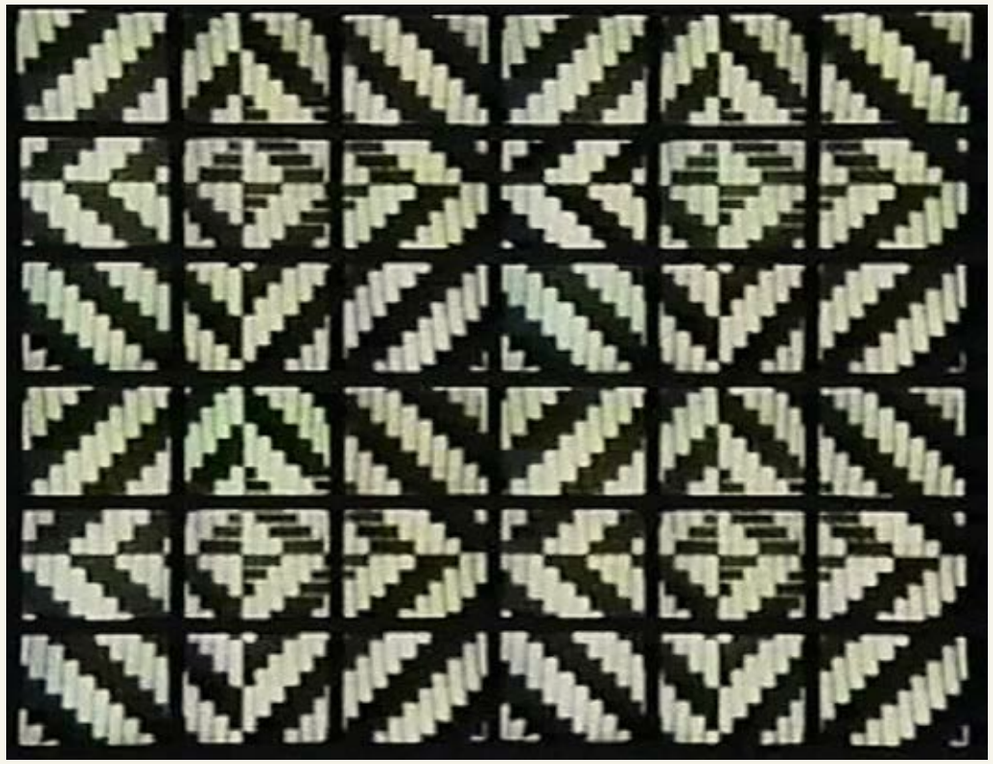
My appreciation to the Gallery and Cultural Experiences team members for their considerable work realising this exhibition for audiences, and to the previous Len Lye Curator, Paul Brobbel, who initially invited Alla to propose this project. Thanks also to Craigs, *Interlaced* Exhibition Partner, for your generous support, and to Clelands, the Gallery's Construction Partner, for ongoing support through the Govett-Brewster Foundation. Through everyone's collective efforts and collaboration, the works and ideas introduced by Alla Gadassik in *Interlaced* offer new meaning to those who experience them.

Zara Stanhope,

Director Cultural Enterprises
Govett-Brewster Art Gallery | Len Lye Centre,
Puke Ariki Museum, Libraries

ALLA GADASSIK
Interlaced





Fabrics wrap human bodies from birth to burial, forming a woven envelope for the beginning and end of incarnate life. Many cultural traditions embrace textile materials and metaphors — threads, veils, nets and cloaks — to describe the spiritual and cultural fibres that animate living beings and create continuity across generational and metaphysical divides. Following the work of Samoan poet Albert Wendt, theorist Albert Refiti describes the shared universe of Polynesian cosmologies as an expansive "textile vessel", in which

> our bodies, our beings are woven flesh whose strands are ancestors, land, community, family. Because we are woven from the flesh of the others, our body belongs to the ancestors; we are a locus of an ancestral impulsive being.[01]

The practice of Māori weaving manifests this creative impulse by winding aho (weft strands) through the field of whenu (warp strands).[02] The first row of weft, the aho tapu (sacred thread), is the ancestor who establishes the spirit of a pattern, which subsequent lines will iterate, adjoining past and present, as each row concludes to make way for its descendant. The weaver herself embodies a strand in an open and generative process, as her attentive energy transforms materials to breathe new life into inherited techniques and designs.[03]

Whakapapa, the Māori word used to describe the structure of layering in weaving, also describes the layering of genealogies (ancestry, inherited knowledge and practice) that enfolds and defines every individual.[04] Relationships between different layers (different generations and extended circles of kinship) can be recited in a linear sequence, but as in weaving, the most significant patterns come alive when their relationships are experienced all at once in dynamic complexity. Lisa Reihana's 1991 multiscreen installation *Tauira*, described by the artist as a work of video fibre art, models this principle by visually interlacing the signals of thirty-six individual monitors into a unified wall of animated patterns that come alive through their interconnectedness.[05] Weaving recorded images and synthesised electronic waveforms into composite patterns that reference Māori tukutuku latticework and finger-woven whāriki mats, Reihana embeds moving images into a textile media genealogy.[06]

Like weavings, animated moving images depend on sequentially layered patterns to form a unified whole. One second of movement in an animated sequence is composed of multiple discrete images, each following the contours of its predecessors while inserting an increment of variation and change into the interval between the frames. If the expanding series of image-ancestors and image-descendants is too exact in its repetition, the sequence will appear frozen in space and time. Conversely, too wide a gulf between adjacent neighbours produces an overwhelming and nearly illegible sensory array. However, when the relationship between visual similarity and difference is balanced and set into rhythmic motion, the collective of multiple frames is suddenly experienced, all at once, as an animated gesture or event.

01 Albert Refiti, "Woven Flesh," *Interstices: Journal of Architecture and Related Arts* 6, no. 6 (2005): 55, https://doi.org/10.24135/ijara.v0i0.311

02 In accordance with institutional style, this text does not italicise Māori, other Pacific languages and other Indigenous languages.

03 Donna Campbell, "Ngā Kura a Hineteiwaiwa: The Embodiment of Mana Wahine in Māori Fibre Arts" (PhD dissertation, University of Waikato, 2019).

04 Nēpia Mahuika, "A Brief History of Whakapapa: Māori Approaches to Genealogy," *Genealogy* 3, no. 2 (2019): 32, https://doi.org/10.3390/genealogy3020032

05 Maud Page, "Interdigitating Reihanamations: Lisa Reihana's Video Weavings," *ArtAsiaPacific*, no. 21 (1999): 40–43.

06 *Tauira* was a site-specific work made for a thirty-six-monitor video wall, subsequently adapted into a single-channel SVHS video. First exhibited at the Interdigitate Videowall Festival (Aotea Centre, 1991), the video was included in the exhibition of contemporary Māori weaving *Pū Manawa: A Celebration of Whatu, Raranga and Tāniko* (Museum of New Zealand Te Papa Tongarewa, 1993). *Tauira* is a conceptual touchstone for the textile whakapapa of animation that informs *Interlaced*.

← Lisa Reihana, *Tauira*, 1991. still frames from single-channel video, standard definition (SD), 4:3, colour, stereo sound, 5:24 min. © the artist and courtesy of Auckland Art Gallery Toi o Tāmaki.

Interlaced: Animation & Textiles explores the rich material, conceptual and aesthetic relationships between these two artforms. Developed for the Len Lye Centre, the exhibition brings together animated works fashioned from textile materials and processes with fibre works inspired by the visual transformations of animation. Braiding analogue and digital media, the exhibition's title recalls computer scientist Heinz Zemanek's claim that the interlacing of two threads in a weaving is a digital point.[07] Featured artists explore ways of embroidering with projected light, quilting celluloid films and weaving digital tapestries. Working with organic and synthetic materials, they embrace textiles as a tactile medium laden with material and cultural history.

Interlaced is indebted to the past decade of ambitious survey exhibitions that have definitively countered the endemic exclusion of textiles from modern and contemporary art discourse. Some of these exhibitions centre fabric as a fundamental material and conceptual substrate of twentieth-century modernism and abstract art.[08] Others underscore the importance of weaving, netting, beading and other textile practices to anticolonial and Indigenous art histories.[09] By turning attention to the fabric of moving-image media, *Interlaced* recognises that the same factors that historically diminished the critical reception of textile arts have also shaped a parallel destiny for animation. Like textiles, animation is often excluded or consigned to the margins of contemporary art institutions as a decorative, folkloric and quaintly primitive mode of audiovisual production best suited to unsophisticated audiences. When animated films and videos do make their way into museum and gallery spaces, descriptions often take great pains to avoid naming them as animation in favour of terms like absolute film, handmade cinema, synthetic moving images and other inventive efforts to tether them to more respected artistic lineages. Finding inspiration and resolve in the blossoming field of contemporary textile theory and criticism, *Interlaced* aims for a similar shift in the recognition and reception of animation.[10]

The exhibition and this accompanying essay explore animated fabric as a technology of enchantment ("Enchanting Cloth"), consider the textile qualities of analogue and digital media ("Fabric of Celluloid" and "Woven Algorithms"), recognise the parallel feminised labour sustaining both animation and textile production ("Embroidered Cycles"), and underscore a shared interest in animated patterns across both artforms ("Migrating Patterns"). The work of renowned experimental filmmaker Len Lye (1901–1980) plays a connective role across these themes. *Interlaced* makes a case for the influence of Te Moana-nui-a-Kiwa (Pacific Ocean) and European textile traditions on Lye's innovative animation techniques.[11] Placing animation in these textile lineages means paying close attention to the materiality of media production and display, recognising the gendered labour of media production, and loosening the binds of Eurocentric histories that shape the circulation of animated images.

07 Heinz Zemanek, "Computer Prehistory and History in Central Europe," *American Federation of Information Processing Societies (AFIPS) Conference Proceedings*, no. 45 (1976): 16.

08 These include the landmark *Art & Textiles: Fabric as Material and Concept in Modern Art from Klimt to the Present* (first mounted at the Kunstmuseum Wolfsburg, 2013), and the more recent *Woven Histories: Textiles and Modern Abstraction* (first mounted at the Los Angeles County Museum of Art, 2023).

09 Recent exhibitions include *Unweaving the Binary Code* (Kunsthall Trondheim, 2022), *Radical Stitch* (first mounted at the MacKenzie Art Gallery, 2022) *and Unravel: The Power and Politics of Textiles in Art* (first mounted at the Barbican Art Centre, 2024).

10 Giuliana Bruno's *Surface: Matters of Aesthetics, Materiality, and Media* (University of Chicago Press, 2014), which relates media surfaces to textiles, was an important theoretical reference for this exhibition.

11 'Moana' is a shared term for the Pacific Ocean, or Great Ocean, among many island nations. Te Moana-nui-a-Kiwa is the Māori name for the Moana as a place of shared ancestry and cultural interconnectivity.





→ Lisa Reihana, *Tauira*, 1991. still frames from single-channel video, standard definition (SD), 4:3, colour, stereo sound, 5:24 min. © the artist and courtesy of Auckland Art Gallery Toi o Tāmaki.

Enchanting Cloth



← Pathé studio, ***Loïe Fuller***, 1905. filmstrip.

12 Tom Gunning, "Loïe Fuller and the Art of Motion: Body, Light, Electricity, and the Origins of Cinema," in *Camera Obscura, Camera Lucida: Essays in Honor of Annette Michelson*, ed. Richard Allen and Malcolm Turvey (Amsterdam University Press, 2003), 84–85.

13 These connections are teased out in the generously illustrated essay collection *Birds of Paradise: Costume as Cinematic Spectacle*, ed. Marketa Uhlirova (Koenig Books, 2013).

At the turn of the twentieth century, Parisian audiences and tourists flocked to the Folies Bergère cabaret theatre to see the spectacular stage performances of American dancer Louise (Loïe) Fuller. Draping her body in hundreds of yards of delicate silk that she manipulated like a kinetic screen, Fuller created fluid abstract forms reminiscent of swirling clouds, blooming orchids and fluttering butterflies. These striking visual effects were amplified by beams of coloured light and patterns that assistants projected onto the billowing fabric. An elevated glass podium lit from below gave the impression of a floating apparition burning in the darkened theatre like a supernatural flame. Subverting the typical cabaret dance by turning attention away from her voluptuous figure to the curves of voluminous silk, the artist transformed her body into an engine for phantasmagoric projections:

> a hidden yet evident source of rhythm, an imagined attraction glimpsed through veils, the active manipulator of the fabric, and a site for the projection of images and colors — a screen manifesting otherwise immaterial visual delights.[12]

The height of Fuller's popularity coincided with the emergence of another illuminated screen of immaterial visual delights — the cinema. Early film innovators, such as the Lumière brothers, Thomas Edison, Georges Méliès and Alice Guy-Blaché, found in the dancer's electrifying multimedia performances a model for the new medium. Nascent film studios began to replicate Fuller's hypnotic stage shows, particularly her famous Serpentine Dance, by recording her imitators and then hand-tinting or stencilling dyes onto individual film prints frame by frame. The Lumières's *Danse Serpentine I* and *II* (1897–99), Gaumont studio's *Danse Serpentine* (1900) and Pathé studio's misleadingly titled *Loie Fuller* (1905) are just three of many attempts to simulate the dancer's visual metamorphoses and projected colour displays through hand-painted moving images. In each variation, as the dancer lifts and twirls the fabric in serpentine arcs, bold hues of magenta, gold and emerald saturate the moving panels with a mesmerising rainbow of synthetic colour. To enhance the sense of an otherworldly apparition, some films used stop-motion photography to depict the dancer arriving as a winged creature and departing like dissolving gauze.

Loïe Fuller's performances were modern, electrified adaptations of traditional skirt and veil dances that can be traced back centuries to many parts of the world. Such dances animate fabric — often decorated with painted, stitched or beaded designs — by using the whirling rotation and swaying limbs of the human body. The audience is entranced by the rippling rhythms and shapeshifting forms produced by patterned cloth set into motion. Early films depicting the Serpentine Dance sought to evoke a similar feeling of awe and enchantment with the flickering surface of the screen. Completing the adaptation from stage to cinema, these moving images were projected onto fabric screens of woven linen, cotton or silk.[13]

There is a palpable attraction and physicality in the ways that

garments can twist and fold, cinch the curves of a figure or strategically alter its contours. There is also a hypnotic energy in the repetitions and mutations of decorative patterns adorning fabric surfaces, particularly when they move with a gentle breeze or twirl of the body. Art anthropologist Alfred Gell famously calls decorative patterns a technique of perceptual enchantment. He notes that patterned surfaces are often described as 'animated' with their own spirit:

> This idiom reflects the fact that the motifs in decorative art often do seem to be engaged in a mazy dance in which our eyes become readily lost. … Decoration makes objects come alive in a non-representational way.[14]

The entrancing animacy of patterns, Gell argues, stems from principles of movement and variation that guide the relationships between adjacent forms: "The root of a pattern is the motif, which enters into relationships with neighbouring motifs, relations which animate the index as a whole."[15] For example, gradually rotating a triangular shape around one angle produces the manulua, which is an important motif with different cultural meanings across the Pacific.[16] A different manipulation of the same triangle, such as reflecting it across horizontal and vertical folds, produces the lozenge (diamond) pattern. Simpler patterns can be further replicated to create increasingly intricate compositions. The chequered harlequin and criss-crossing argyle patterns are expanded variations of the diamond. Kilim rug designs frequently feature recursively scaled diamonds, as if the figures are expanding or radiating outward. In other words, decorative patterns are shaped by forces of reproduction and transformation, such as ascent and descent or expansion and contraction. When our eyes glide over a patterned surface or it moves before us, the underlying relationships between adjacent figures suddenly become more apparent, and the surface comes alive. Gell describes this experience of optical enchantment as a pleasurable frustration of being "drawn into the pattern and held inside it."[17]

Animation is especially adept at capturing the beguiling movements of decorated fabrics, because the interplay of reproduction and variation that informs textile patterns is the same principle that informs movement in animation. An animated moving image similarly depends on establishing dynamic relationships between neighbouring motifs — in this case, the graphic relationships of continuity and transformation between adjacent frames. In photographed (live-action) cinema, the relationship between frames in a sequence is largely determined by what occurs in front of the camera, whereas animators must craft movement by embedding change between the frames, in the manner of a pattern maker. Appreciating this important connection, artists have often turned to textiles as a source for animated movement and as a model for the process of animation.

After experimenting with batik resist-dyeing in his early films, avant-garde artist Harry Smith (1923–1991) composed *Film No.15* (c. 1965–66) by

14 Alfred Gell, *Art and Agency: An Anthropological Theory* (Clarendon Press, 1998), 77–78.
15 Gell, *Art and Agency*, 76.
16 The motif has varying names in different dialects, and I am using the Tongan name instead of the term 'vane swastika' sometimes used in anthropological texts.
17 Gell, *Art and Agency*, 80.

animating Seminole patchwork panels. Seminole patchwork was developed by women of the Seminole and Miccosukee Nations in the United States following the introduction of the hand-cranked sewing machine during cultural and economic exchange with European settlers. Designed to creatively utilise repurposed garments and fabric offcuts, the patchwork is fashioned from brightly coloured bands. The bands are repeatedly sewn together, cut apart at different angles and reassembled to create intricate zigzags, diamonds and rectangles. Smith studied and collected over a thousand pieces of Seminole patchwork as part of his lifelong interest in Indigenous material culture. He composed *Film No.15* primarily of static close-ups of individual patchwork pieces, many of which feature the distinctive Seminole cross motif in various configurations and colour arrangements. As shots of individual motifs are cut apart and reassembled in accelerating rhythm, the patterns begin to flicker and overlap, creating the optical effect of strobing and vibrating figures.

Film No.15 is not only a visual ethnographic study of patchwork designs, but also an experiment in applying patchwork principles to animation. Offering occasional glimpses of densely worked stitches and frayed hems on the inverse side of the patchwork panels, Smith makes a connection between the meticulous craftwork of sewing fabric and editing analogue films. Jodie Mack's film *Point de Gaze* (2012) similarly employs animation to study the intricate patterns of Belgian lace and to explore filmmaking as a form of lacework. Point de Gaze lace was developed as a luxury fabric in nineteenth-century Europe and is recognisable by its elaborate floral designs set against an exquisitely crafted mesh ground. The garden and wildflower motifs typically appear in raised relief, giving the lace a voluminous depth. Named after the French word for gauze, this lacework was prized for its delicate, transparent and airy quality. Using the technique of replacement animation, Mack gathers numerous samples of lace and stitches together snapshots of botanical motifs that recur within and among the panels. Occasionally the panels are also layered, so that the netting of one lacy layer acts as a veil, providing glimpses of other layers underneath. When animated, the lacework transforms the entire screen into a synthetic garden that blooms, bursts and imprints on the spectator's retina like optical gauze.

In contrast to Smith's and Mack's rapid juxtapositions of recurring fabric motifs, Ishu Patel's *Bead Game* (1977) is a single unfolding tapestry composed of thousands of colourful seed beads. The film's material approach was shaped by Patel's visit to the Canadian Arctic (present-day Nunavut), where he watched Inuit women beading elaborate designs onto sealskin clothing. He decided to shift from traditional drawn animation to a process based in manipulating beads, where "lines could be broken, re-attached, scattered, grow and shrink."[18] In *Bead Game*, the beads transform into elemental particles that undergo a series of visual metamorphoses, depicting the trajectory of planetary evolution from competing primordial organisms to modern political strife. The film's cautionary portrait of human conflict was influenced by nuclear bomb testing in India, and its shapeshifting images recall the beading designs from Patel's birthplace province of Gujarat. By rearranging and scattering beads, the

18 Nikita Banerjee, "Interview with Ishu Patel," *Animation Reporter*, no. 16 (April 2009): 14.

artist depicts evolution as a continuous process of collision and mutation, as the beads transform into atoms that radiate on screen with the energy of light.

The knowledge embedded in artisanal textiles, from their intricate fabrication techniques to the meaning of specific motifs and patterns, is often transmitted across generations through family and mentorship ties. When these ties are disrupted, vital material expertise and cultural memory begin to fade. This sentiment guides Lindsay McIntyre's film *seeing her* (2020), in which the artist connects with her Inuit maternal lineage through an inherited amauti (women's parka) sewn and beaded by her great-grandmother Kumaa'naaq. Taking up analogue filmmaking as a form of handcraft, McIntyre tenderly studied the amauti's beaded patterns with her camera, hand-processed the celluloid frames and strung together the filmed images into shimmering sequences. *seeing her* is a piercing rejoinder to ethnographic and experimental films that record and animate Indigenous textiles in search of universal forms and mystical revelations. McIntyre shares their interest in graphic abstraction and transfixing patterns, but she never loses sight of the irreducible, tangible connection between the material and the woman who made and wore it.

Textile traditions, frequently developed and sustained by women, play an important role in communicating social and political belonging. Jordan Wong's *Mom's Clothes* (2018) turns to clothing to reflect on cultural expectations and gender ideals evoked by different fabrics. Made with hand-dyed textiles and clothes sourced from the animator's mother, acquaintances and thrift shops, *Mom's Clothes* offers a moving autobiographical portrait of the proverbial queer closet. Using under-the-camera animation, Wong magnifies repeating graphic motifs and assembles them into buzzing, whirling surfaces that mimic the nervous energy of budding intimacies and avoided family conversations. As Wong's voice regretfully confesses to years of muted outfits and dampened feelings, the fabrics fulfil his desire for queer acceptance with bursts of flamboyant patterns and saturated colours. *Mom's Clothes* draws on queer fashion stereotypes — fierce animal prints and sparkling rainbow glitter — before shifting to subtler references in its appeal to broaden the cultural palette of the queer wardrobe.

The role of clothing in affirming political belonging is also emphasised in Ng'endo Mukii's *Mtindo* (2016), an animated poem to contemporary African fashion. The film's voiceover narration addresses fabric as a maternal figure that envelops and nurtures the body:

> Cover me, breathe for my pores, sweating into you.
> Like a mother, unacknowledged, you wrap me quietly /
> without expectation.

The voice accompanies filmed images of a strutting dancer, whose arms gracefully extend a waving panel of cloth, while she sways behind the veil of a beaded headdress. A contemporary reimagining of a Serpentine Dance film, *Mtindo* covers the dancing body with vibrant patterns evoking plumage and foliage. The film's

graphic style visually mimics the multi-folded symmetrical compositions and layered colour-bleeds of West African resist-dyed textiles. Digitally mirrored images create the effect of a folded, dyed and then unfolded screen. Software blending effects, which determine how separate layers interact with one another, allow their varying hues and luminosities to digitally 'bleed' into each other like liquid dyes. In *Mtindo* the artist embraces saturated and patterned fabric, including the fabric of digital animation, as a secondary skin that mediates and complements the many shades of black bodies, folding them into new arrangements of chromatic belonging.

The animation of fabric returns the moving-image screen to its origins in patterned cloth. The screen ceases to be a flat rectangle of projected immaterial light or a smooth plastic display and becomes a textured fabric capable of enchanting the spectator. Silky, gauzy and sequinned images dance seductively on its illuminated surface, drawing viewers into fields of visual transformation and holding them inside.



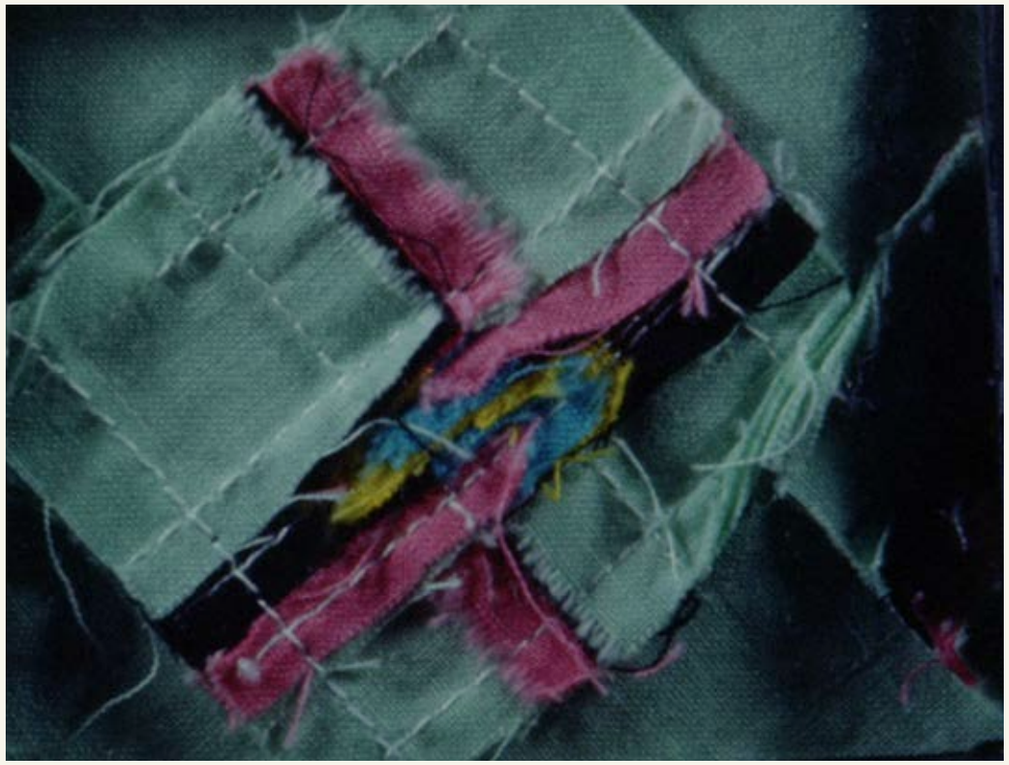






← ↑ Studio Gaumont, *Danse Serpentine*, 1900. film stills.





← ↑ Harry Smith, *Untitled Seminole Patchwork (Film No.15)*, c. 1965–66. installation view and film stills.



↑ Jodie Mack, *Point de Gaze*, 2012. filmstrips.

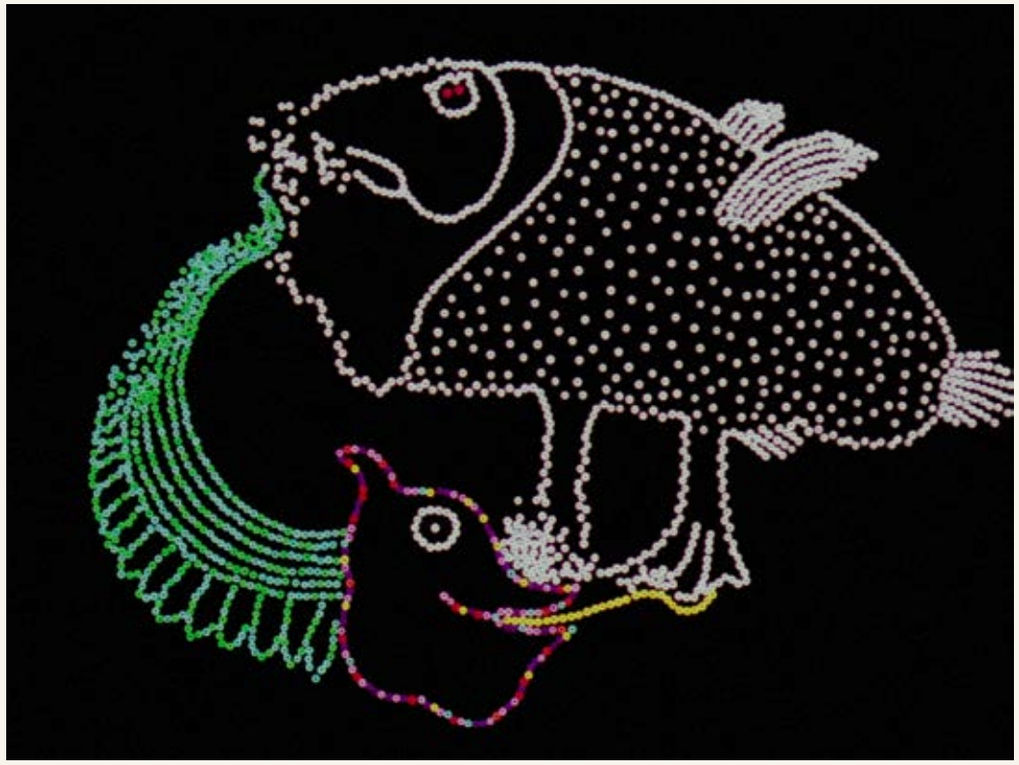






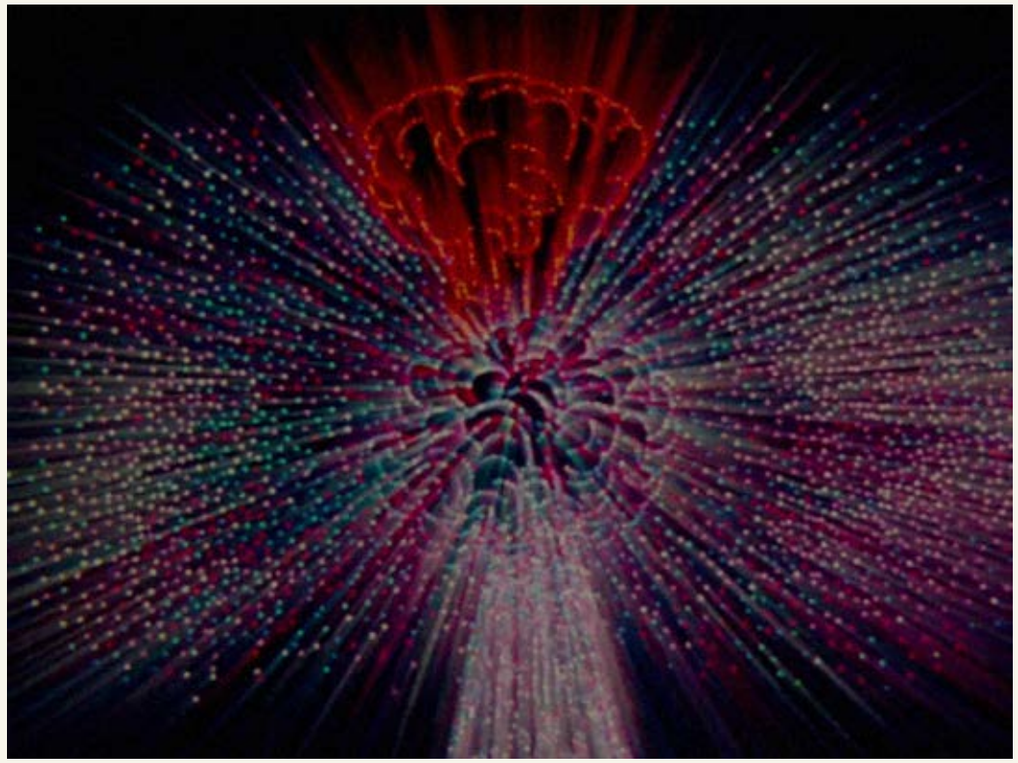


← ↑ Jordan Wong, *Mom's Clothes*, 2018. film stills.

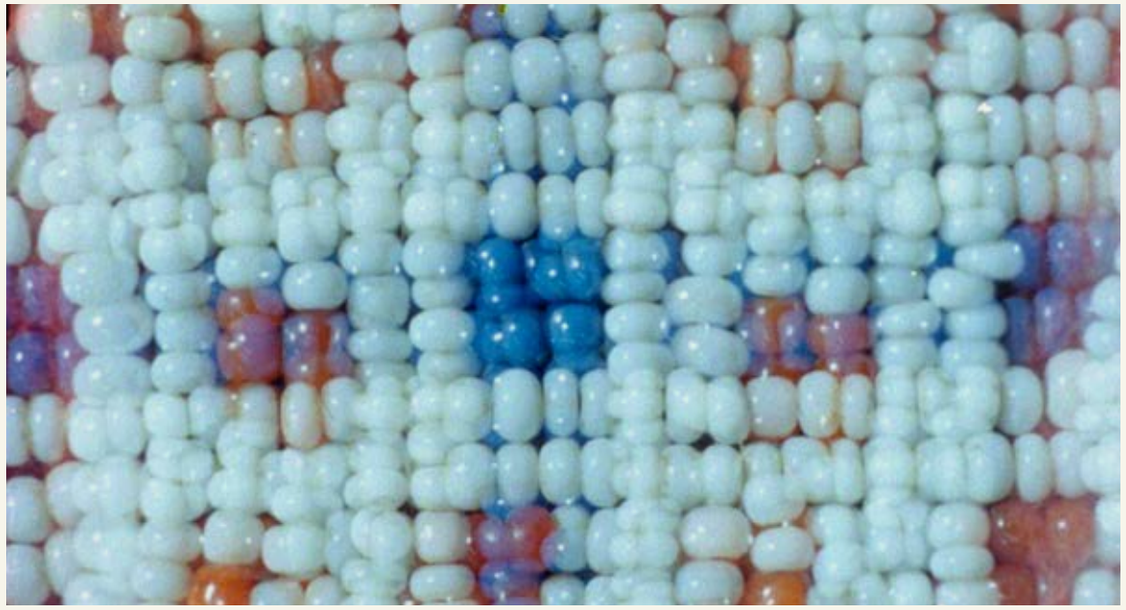






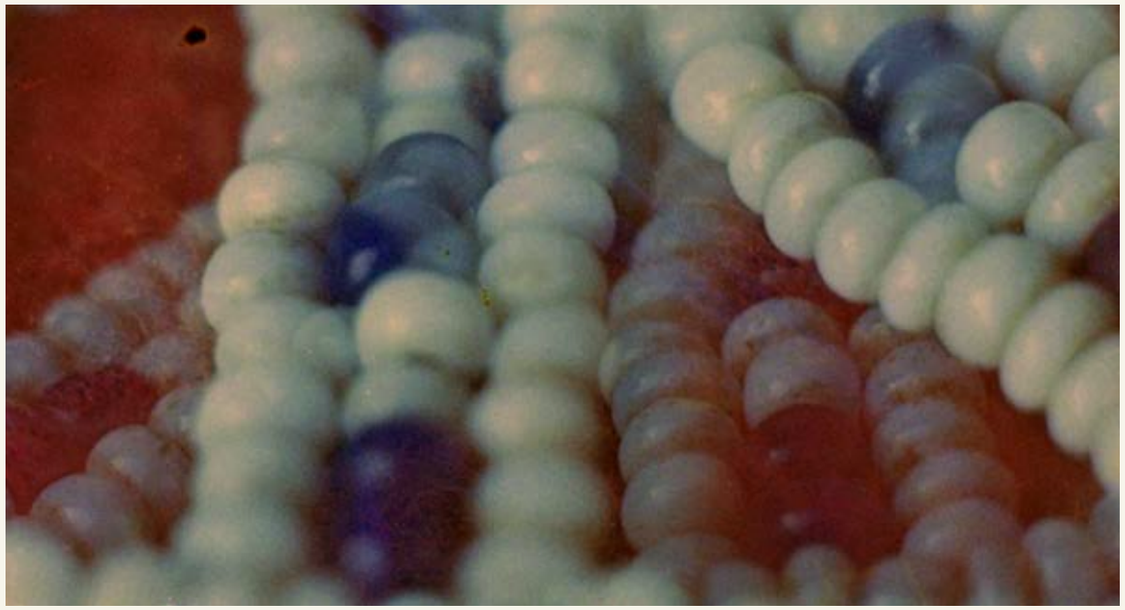


← ↑ Ishu Patel, *Bead Game*, 1977. film stills.









← ↑ Lindsay McIntyre, *seeing her*, 2020. film stills.

↑ Lindsay McIntyre, *seeing her*, 2020. film still.

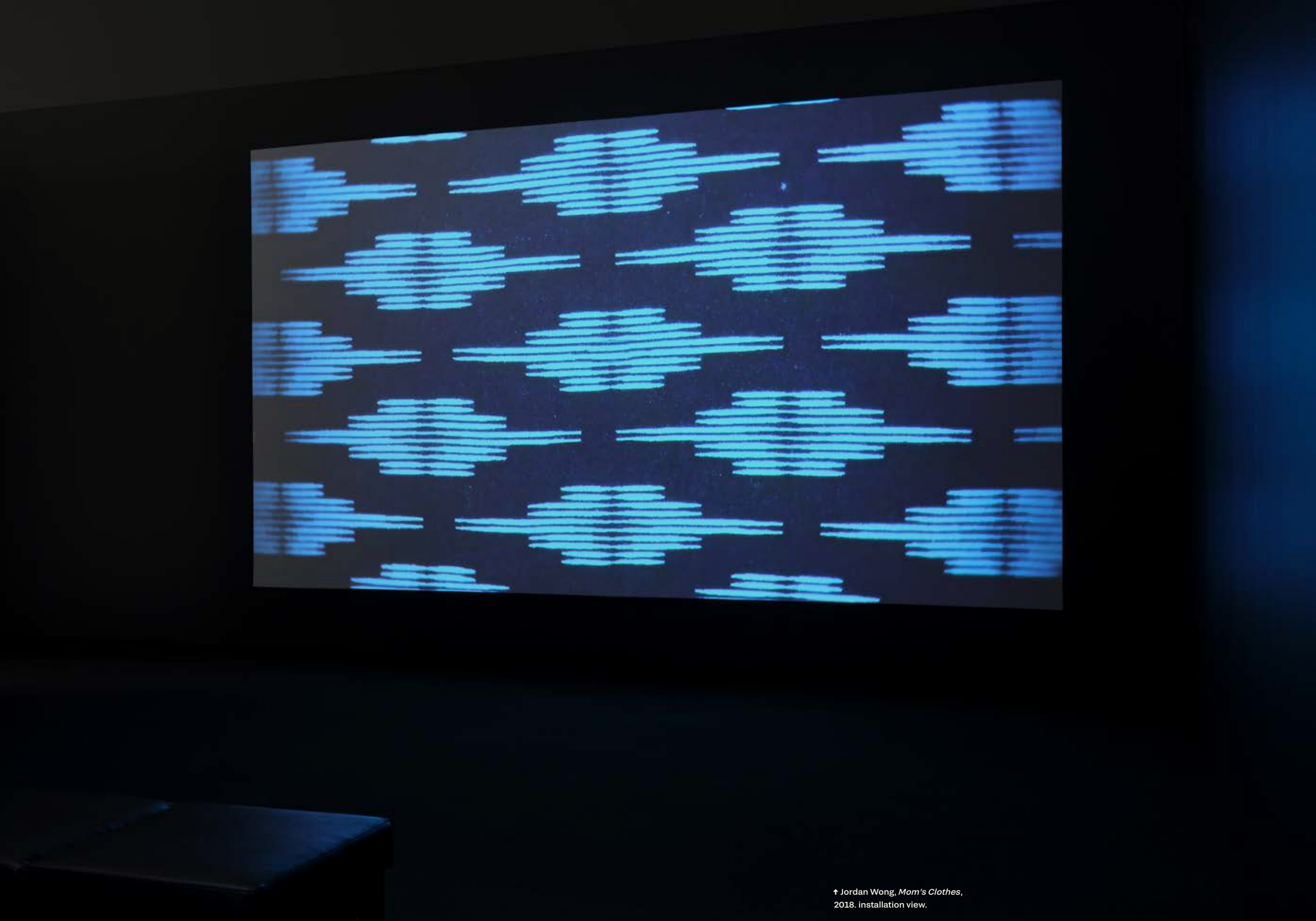






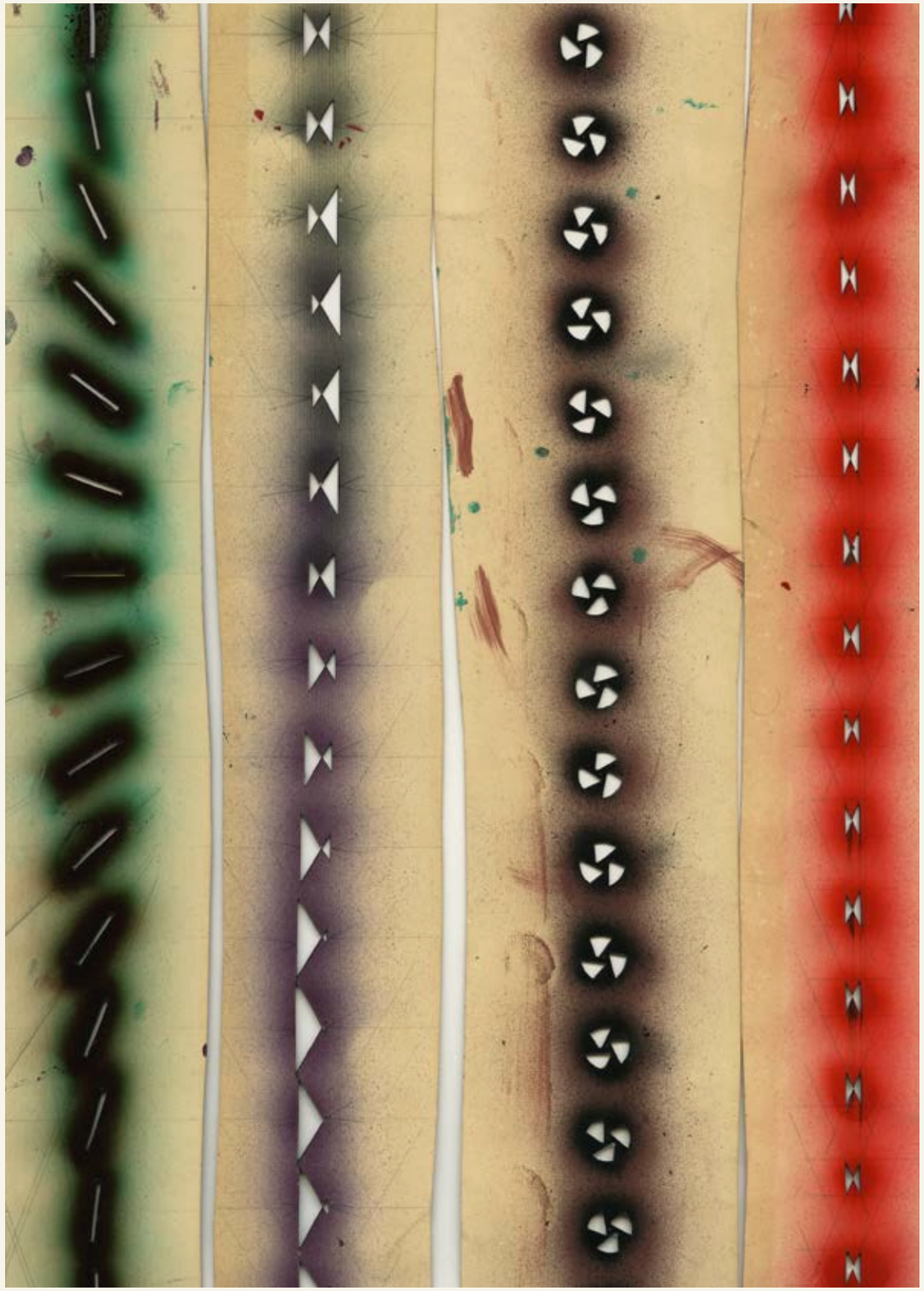


← ↑ Ng'endo Mukii, *Mtindo*, 2016. film stills.



↑ Jordan Wong, *Mom's Clothes*, 2018. installation view.

Fabric of Celluloid



19 Deac Rossell, "Exploding Teeth, Unbreakable Sheets, and Continuous Casting: Nitrocellulose, from Guncotton to Early Cinema," in *This Film Is Dangerous: A Celebration of Nitrate*, ed. Roger Smither and Catherine A. Surowiec (FIAF, 2002), 37–50.

20 Lenny Lipton, *The Cinema in Flux: The Evolution of Motion Picture Technology from the Magic Lantern to the Digital Era* (Springer, 2021).

21 Early projections of Serpentine Dance films held the risk of bursting into actual flames, due to the highly combustible nitrate used in celluloid.

22 Len Lye, *Happy Moments*, ed. Roger Horrocks (Holloway Press, 2002), 31–32.

23 Roger Horrocks, *Len Lye: A Biography* (Auckland University Press, 2001), 109.

24 Cassie McGettigan, "Joyce Clissold's Footprints," https://casswebsite.org/blog/2020/3/14/joyce-clissolds-footprints

25 "Len Lye — The English Disney," *Sunday Referee*, 10 November 1935.

26 I discuss the animated stencils in more detail in Alla Gadassik, "Trade Tattoos: Len Lye's Animation Stencils and Readymade Movement," in *The Long Dream of Waking: New Perspectives on Len Lye*, ed. Paul Brobbel, Wystan Curnow and Roger Horrocks (Canterbury University Press, 2017), 184–203.

← Len Lye, filmmaking stencils, 1930s. image courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.

For much of the twentieth century, moving images were recorded and exhibited on celluloid — a plastic material made with cellulose, originally derived from cotton. Celluloid had many applications, including waterproofing fabric and fortifying shirt collars, but its most prominent use was as a flexible and transparent substrate for photo-sensitive emulsion that enabled motion pictures.[19] Auguste Lumière's revolutionary *Cinématographe* device adapted the claw mechanism of a sewing machine to drive celluloid film through a camera or projector at a rapid intermittent pace. This connection shaped the language of analogue (celluloid-based) cinema, with 'ribbons' of film unwinding from 'spools' as they 'thread' through the projector.[20] Occasional misalignments during projection sometimes reveal the celluloid ribbon's perforations and horizontal frame intervals, like stray hems or fringes of an ill-fitting garment.[21] The rhythmic clattering sound of a rolling film projector is an echo of the sewing machine's staccato, as the device steadily clicks through the ribbon.

The textile qualities of celluloid come to the fore in Len Lye's direct-animation films, which dispensed with the film camera and embraced celluloid reels as if strips of fabric for painting, dyeing and stencilling patterns that pulse with their own energy when animated on screen. Instead of using the filmstrip as a long photographic plate for capturing discrete snapshots of movement, Lye treated it as a pliant decorative canvas. This approach to celluloid may have been inspired by his enduring interest in textile materials. As a young artist living in Aotearoa New Zealand, Lye was entranced by the lines and folds of moving garments. Studying the clothes of walking passers-by, he loosely sketched criss-crossing pleats and swaying hems. Following these exercises, he wrote that he had "more samples of clothes in motion in [his] sketchbook than a second-hand clothes dealer had hanging up static in his shop."[22]

After Lye relocated to London to pursue filmmaking, his first workspace was adjacent to Footprints Studio, a textile workshop founded on Arts and Crafts principles in opposition to industrial mass-manufacture.[23] At the peak of its popularity in the 1930s, Footprints employed a staff of nearly fifty women who dyed, block printed and sewed limited-edition fabrics and garments.[24] Lye tried his hand at making textiles, including designing curtain patterns and making batiks.[25] A more generative connection, however, appeared in his turn to camera-less animation. Beginning with his 1935 films *A Colour Box* and *Kaleidoscope*, Lye developed methods of filmmaking that echoed textile dyeing and printing. He dragged combs and bristles through wet lacquer paint on celluloid to produce panels of wiggling waves and lattices. He also stamped and stencilled patterns onto celluloid and reused the same motifs in different hues and arrangements to create multiple variations. Working with panels of cardboard or metal, Lye cut or etched sequences of transforming shapes, whose size and spacing matched the standard measurements of frames on a filmstrip. Having created a library of ready-made patterns, the artist could airbrush them onto celluloid to make intricate tapestries of floating and spinning figures. Aligning with the ethos of the Footprints Studio, Lye's influential direct animation modified industrial methods of mass-manufactured moving images and appealed to filmmaking as decorative craftsmanship.[26]

Whereas many of his peers devoted to abstract animation carefully planned and controlled their compositions, Lye developed a more exploratory process of testing studies that could be stitched together and synchronised with companion soundtracks. He hung the strips of painted and printed celluloid in the studio like samples of clothes in motion ready to be integrated into an ensemble. Eventually, Lye embraced the textile substrate of celluloid by directly impressing gauze, mesh, beads and fabrics with a broad weave onto 16mm filmstrips, before exposing these layered ribbons to light. This technique, which he called "shadow-casting", produced photogram sequences that amplified the materials' warp and weft. To make the film *Color Cry* (1952–53), Lye selected many of these sequences and paired them with a wailing blues harmonica track by Sonny Terry. Animated on screen, the textiles hum and buzz with tensile and frenetic energy. Cotton threads intertwine with errant fibres trapped in gelatin emulsion, and perforated edges of a celluloid ribbon zigzag along the edge like the ladder stitch of a sewing machine. For Lye, the film's pulsating polka dots and twisting ribbons embodied the fleshy tissue of muscle sinews and blood vessels.[27]

In the early twenty-first century, as the commercial film industry has divested from analogue media in favour of electronic and digital processes, celluloid has become an emblematic material of artisanal filmmaking. Pursuing and expanding the fundamental relationship between analogue filmmaking and textile production, contemporary artists have followed a similar pathway to Len Lye in using

27 Horrocks, *Len Lye: A Biography*, 308.

↓ Len Lye at film bench, c. 1950s. photograph, 25.5 × 35.5cm. © and courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.



28 Izabella Pruska-Oldenhof, "The Art of Bodily Sensations: Artist's Nude Self-Representation and Poetics of Revolt in the Age of Technological Proliferation" (PhD dissertation, York University, 2008).
29 Izabella Pruska-Oldenhof, correspondence with the author, 10 September 2024.

the fabric of celluloid to craft alternative genealogies of cinema patterned on sewn ribbons, quilts and tapestries.

Izabella Pruska-Oldenhof's film tapestries *Echo* (2007) and *The Garden of Earthly Delights* (2008) develop a sensual cinema based in *écriture féminine*, or feminine mark-making.[28] *Echo* recalls the artist's Polish birthplace and childhood memories of growing up in a natural landscape. *The Garden of Earthly Delights* focuses on the transformative potential of erotic energy. Each one is a dual work, comprised of a celluloid panel (a film tapestry) and a companion film (a tapestry film). For the celluloid panels, the artist wove mats from unexposed film ribbons, on which she lay to create direct photogram impressions of her body. The contours of her silhouette were then used as a travelling matte to edit a companion film on the same theme. A travelling matte is an editing technique that relies on silhouette outlines of one filmed layer to occlude or reveal parts of another layer. Pruska-Oldenhof's celluloid self-portraits therefore determine the shape and rhythm of the films, as different shots are dissolved into each other in a sea of rapid superimpositions following the contours of the artist's figure.

The companion film to *The Garden of Earthly Delights* panel braids together blurred glimpses of lovemaking with flickering impressions of insects, aquatic organisms, wildflower fields, and sinuous strands of plant and animal fibre. The unfolding, ecstatic scene is both coquettishly explicit and delicately masked, as figures are abstracted by long-exposure photography, stop-motion animation and unruly gestures of impassioned filming. The artist's body is alternately revealed, concealed and veiled by other bodies, creating a visceral portrait of corporeal metamorphosis. Parting lips transform into unfurling petals and lashes intertwine with dandelion parachutes; her curves are wrapped in dragonfly veins and breasts spiral into seashell spires. Microscopic hairs, seeds and pollen dust are magnified and refracted through glass, creating an opalescent and dreamlike "interweaving of the human flesh with the flesh of the world."[29] The bodies of insects and plants that appear in the film are threaded into the celluloid mat to produce a dense tapestry that is illuminated to cast a shimmering projection of woven celluloid and organic fibre.

Pursuing a different approach to *écriture féminine*, Kelly Egan's film quilts develop a model of feminist cinema grounded in domestic labour and craft. Egan's *c: won eyed jail* (2005) is assembled from ribbons of salvaged 35mm motion-picture strips and photographic negatives, which are sewn together by hand into a large quilt featuring a central morning star and four expanding eight-pointed stars. *Athyrium Filix-Femina (for Anna Atkins)* (2016) uses a camera-less cyanotype process to capture impressions of plant leaves and stalks directly on celluloid, combining the animated images with found footage of a young girl into a cascading diamond and Irish chain quilt. Each quilt is subsequently reprinted to make a new film based on the quilt's surface as the editing pattern. Disrupting established distinctions between the open-ended and frequently collaborative labour of film editing and the mythical status of a completed authoritative cut of a film, Kelly Egan writes:

> [T]he interrelationship between the film quilts and the projected films at once erases and reveals the impossibility of an original because the work exists in a space between the forms. Yet, there is an embodied sense to the projected film that draws the viewer back to the quilt, outside of the linear, literary interpretation favoured in film studies and beyond traditional forms of montage or the simple interplay between two different shots.[30]

30 Kelly Egan, "Towards a *cinéma féminine*: Quilting as a Form of Feminist Discourse," *Écrans*, no. 17 (2022): 224.

Athyrium Filix-Femina (for Anna Atkins) relies on the same diamond composition to determine the film quilt's spatial montage and the filmed quilt's temporal montage. However, each member of the duo activates different sensory dimensions of celluloid materials and image patterns. Sequences of clear celluloid are brilliantly white on film, as the projector's beam illuminates the surface of the screen. Mounted in the gallery, the same clear patches of celluloid turn into transparent plastic windows. As a quilt, the work hangs silent and permits a close viewing of every frame and stitch of its construction. As a film running through a projector, the images accelerate and begin to speak, as the projector's sound drum interprets the margins of the celluloid meant to contain an optical soundtrack. The stitches that bind the pieces together twist and crackle on screen like delicate editing seams about to unravel. Emitting muffled tones and scratching pulses, the quilts transform into coarse audiovisual blankets.

The mutually constitutive interplay between different media formats also informs the film quilt works of Jennifer West. West's expanding *Topo Film Quilts* series, which includes *Orange Haze Film Quilt* and *Screen Debris, Plants and Nets Film Quilt* (both 2023), draws on aesthetics of analogue and digital screens to explore the fragmentary and patchworked landscape of contemporary media consumption. The quilts take up common textile metaphors for digital interactivity, such as stitched monitors and winding message threads, to interrogate the warping and fraying effects of ubiquitous media platforms. The dimensions and graphic patterns of each quilt in the series mimic the aspect ratios of digital monitors and mobile phone screens. The panels are machine sewn from strips of filmed, photogrammed, inked and otherwise hand-processed celluloid. Combining photographed and painted images, each quilt functions like a visual dataset generated in response to a series of prompts, evoking algorithmically curated thumbnail galleries and media playlists.

Orange Haze Film Quilt modifies the classic brick-wall quilting pattern to explore the global circulation of images of climate catastrophes and planetary events. The panel's prominent orange tint is an optical and thematic filter for the celestial hues of volcanic eruptions, fiery sunsets and suffocating skylines of encroaching wildfires. Although some segments feature natural landscapes and organisms, the visible residue of chemical processing and plastic overlays expose the synthetic origins of mediated images of the world. *Screen Debris, Plants and Nets Film Quilt* focuses on the refuse of personal media devices. Echoing the standard nine-piece quilt, the panel's rectangles are patterned after nine laptop monitors with descending spirals of 70mm and

35mm filmstrips. Images of cracked monitors and fishnet stockings were eco-processed with plant materials to form a tense relationship between organic and synthetic material composites. The visible fissures within and among the filmstrips evoke the shattered tempered glass of broken screens and hypnotic swirls of damaged liquid-crystal displays.

The Topo Film Quilts belong to a history of artworks that turn to fabric as a visual and poetic metaphor for the mantle of the Earth and its interconnected geographic and cultural zones. Writing about the enduring appeal of cartographic artworks grounded in textile motifs, Veronica della Dora notes:

> Just as the act of weaving consists in interlacing and binding threads together, so do social and urban fabrics interlace and bind the multiple threads of human lives and their diverse colors. To weave these fabrics is to unite, to entwine, to connect different people and different imaginative scales.[31]

31 Veronica della Dora, *The Mantle of the Earth: Genealogies of a Geographical Metaphor* (University of Chicago Press, 2021), 250.

West's *Topo Film Quilts* depict planetary mantles that are equally seductive and alarming, hinting at a landscape of physical and virtual waste that sustains global interconnectivity. Within that landscape, analogue celluloid film is positioned not as a romantic alternative to digital media, but as an ancestor in a shared lineage of misguided plastic utopianism and chemical waste. As mounted surrogates for





↓ Footprints Studio, Joyce Clissold, Rocky Cave [swatch], c. late 1930s (left), and Small Scherezade [swatch], c. 1920–50 (right).

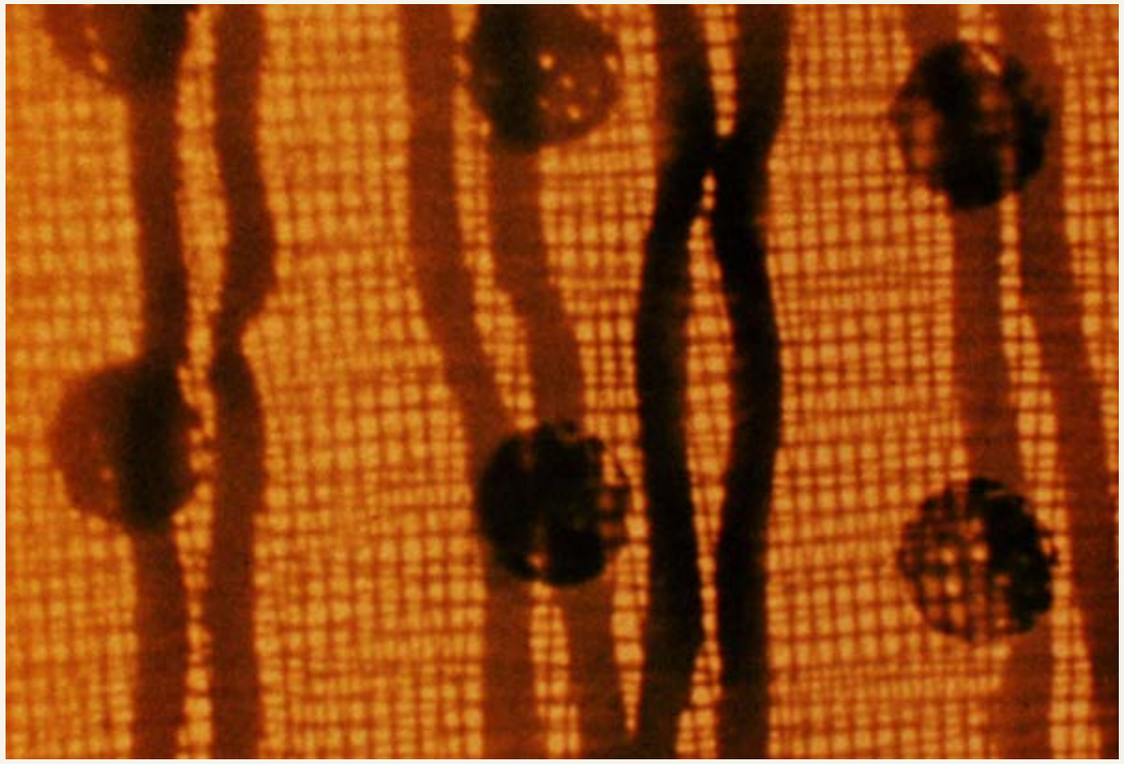
the digital screen, the celluloid quilts also recall a precinematic history of interactive handheld media. Some installations of West's quilts invite spectators to actively illuminate their crafted patterns with handheld flashlights, turning the panels into magic lanterns that project animated images onto architectural surfaces.

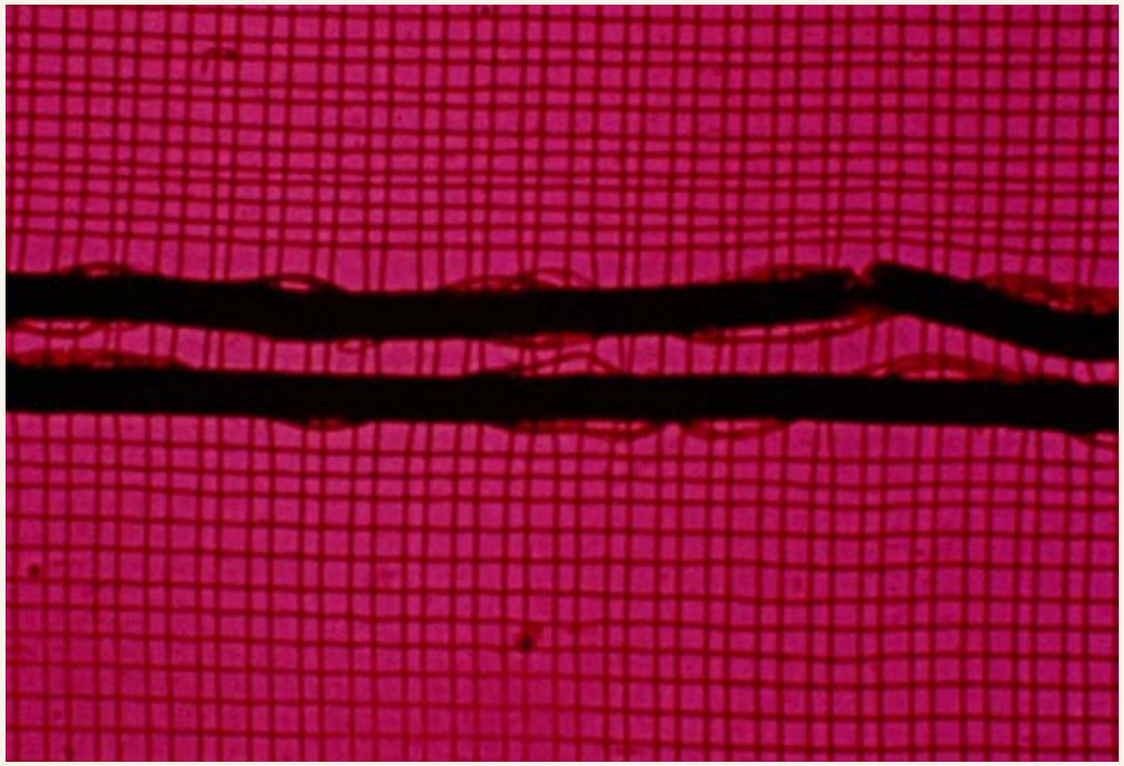
Marguerite Harris's *Sewn Film* (2016–24) wall installations similarly employ celluloid ribbons to weave portals to alternate media histories. Each iteration in the series unspools the length of an abandoned film reel and winds it through hammered nails to form a sculpted spiral pattern. The length of each reel determines the pattern's spatial dimensions, recalling early cinema's convention of measuring duration by the length of shot footage. The reels are embroidered with interweaving rows of stitches, made by running the film through a sewing machine instead of the intended projector. Sinuous lines and zigzags of thread cover the filmed images like a roaming fibrous optical soundtrack. This intervention makes the film too unruly for analogue projection, because the densely textured substrate would get caught in the mechanism. Instead, the spirals are illuminated at an angle to create overlapping compositions of projected frames that superimpose different parts of the reel, disrupting the conventional linear flow of film.

The recursive shape of each pattern in *Sewn Film* is informed by the fractal geometry of West African textiles, such as radiating lozenges and octagonal webs frequently found on clothing and wall decoration. By activating these patterns with perforated celluloid, the artist references the work of ethno-mathematician Ron Eglash, who demonstrated that the sophisticated fractal geometry shared by numerous African design cultures prefigured cybernetic self-organising and nested algorithms. With each wall piece, Harris amplifies the fractal self-replicating motifs of West African patterns as ancestors of computer visualisation.[32] Unspooling Eurocentric timelines of media technology, *Sewn Film* folds cybernetic systems back into the plastic fabric of celluloid and, even earlier, to wound rolls of handcrafted cloth.

Working with the fabric of celluloid long past its industrial obsolescence, contemporary artists who sew, quilt and weave with analogue film refuse chronological media histories that valorise a steady march toward an immersive digital future. Using celluloid as both a surface and a screen, they foster an attentive experience of media spectatorship determined by close viewing. Their work reimagines the physicality, temporality and rhythm of moving images through spatial forms, offering new possibilities of nonlinear and self-determining visions of the world.

32 Ron Eglash, *African Fractals: Modern Computing and Indigenous Design* (Rutgers University Press, 1999).

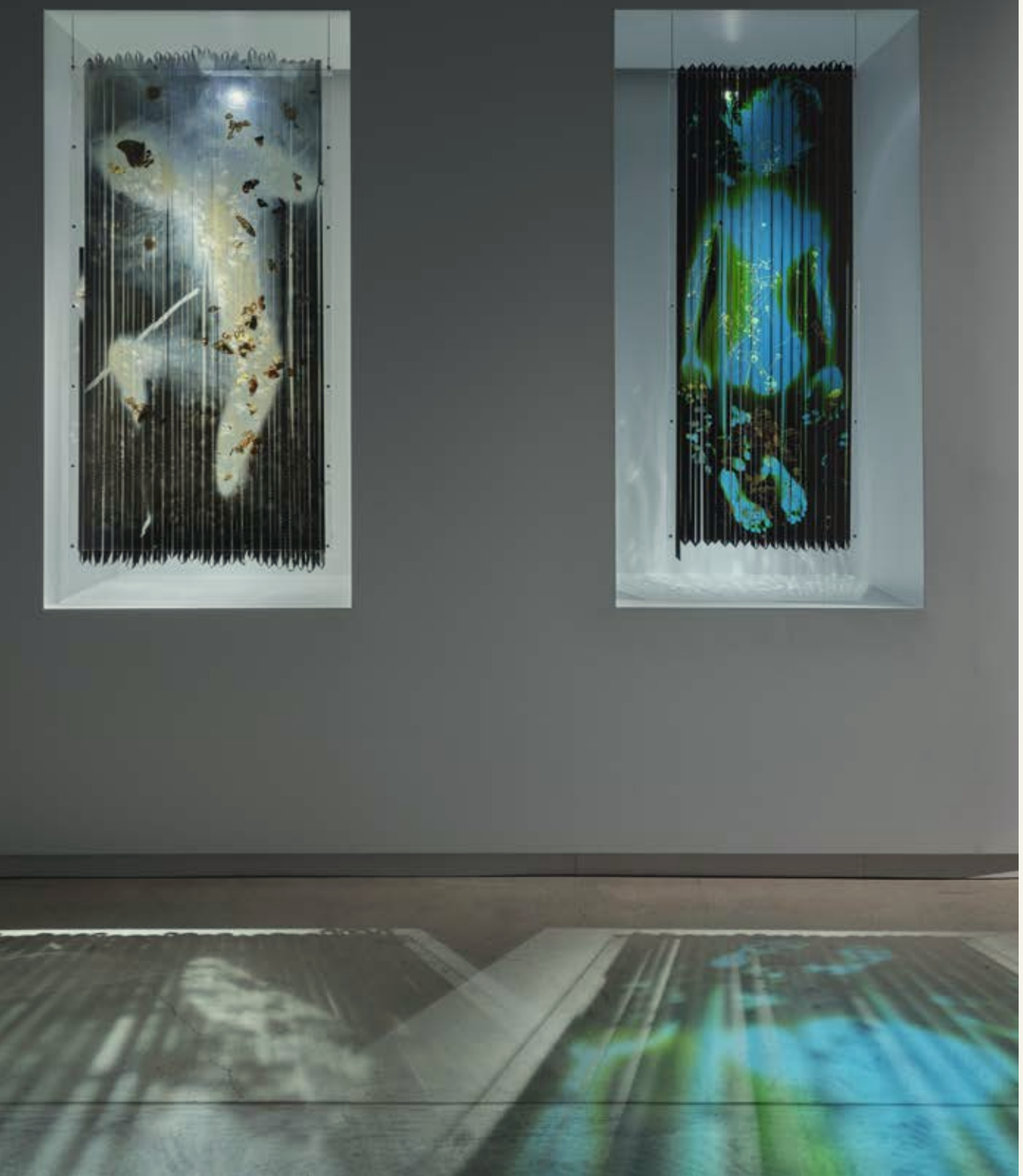


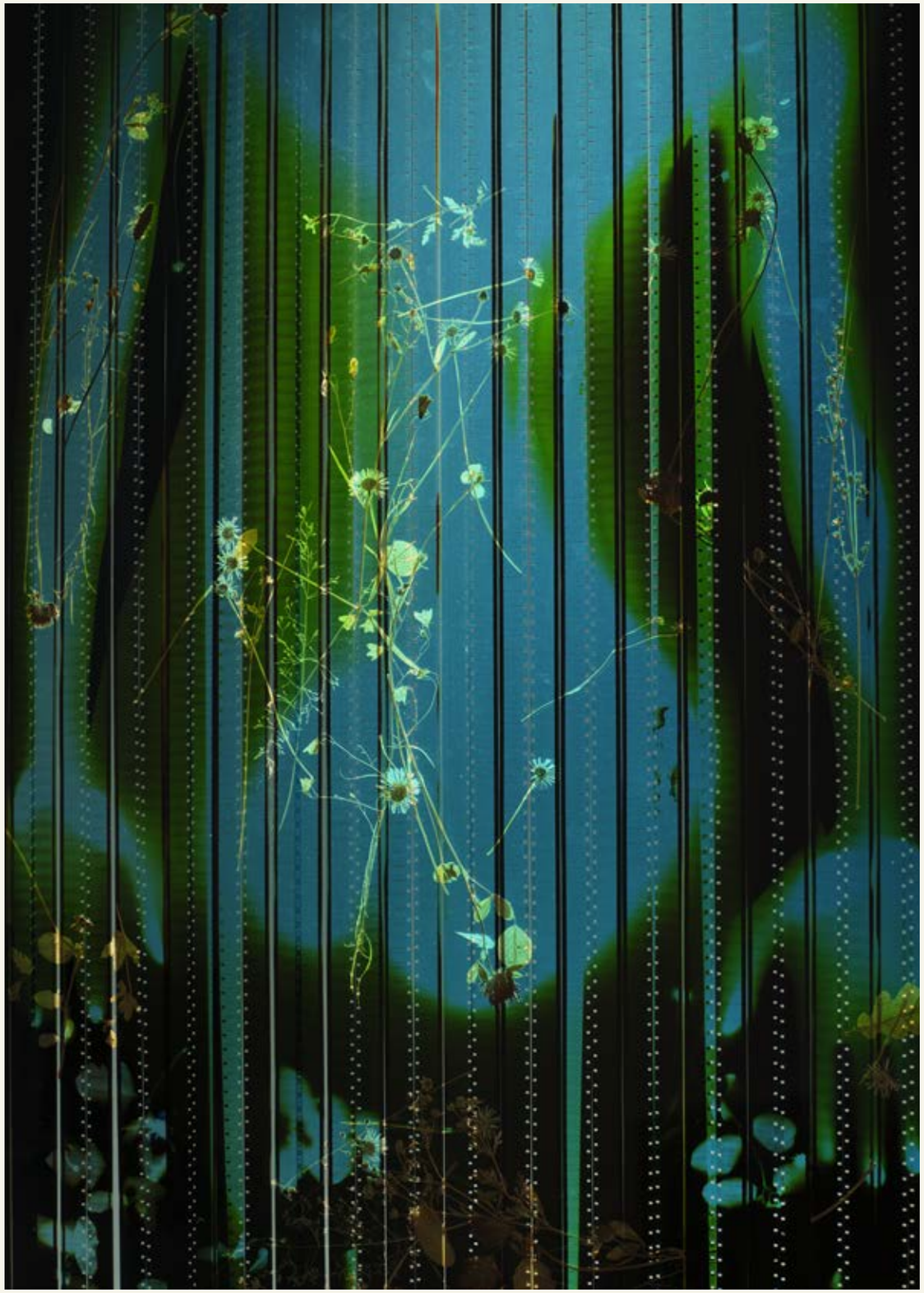


➜ Len Lye, *Color Cry*, 1952–53. film stills.

➜➜ Len Lye, *Color Cry*, 1952–53. filmstrips. installation view from *Old Brain, New Media*, Govett-Brewster Art Gallery, 2006.



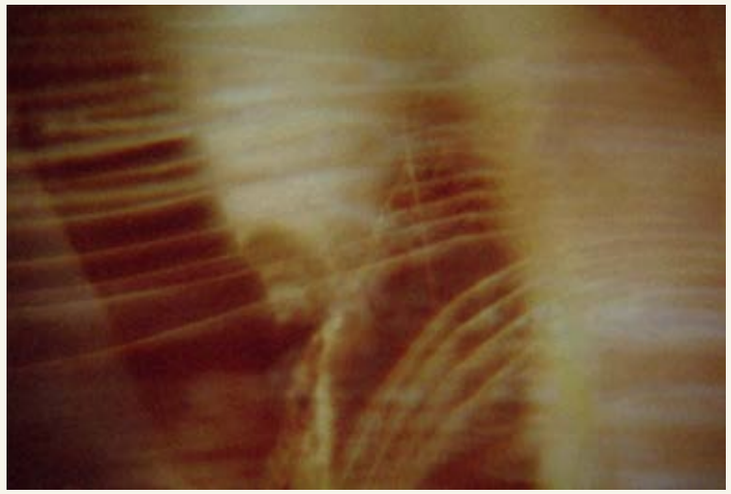




← ↑ Izabella Pruska-Oldenhof, *Garden of Earthly Delights*, 2008 (left), and *Echo*, 2007 (right). installation view and detail.





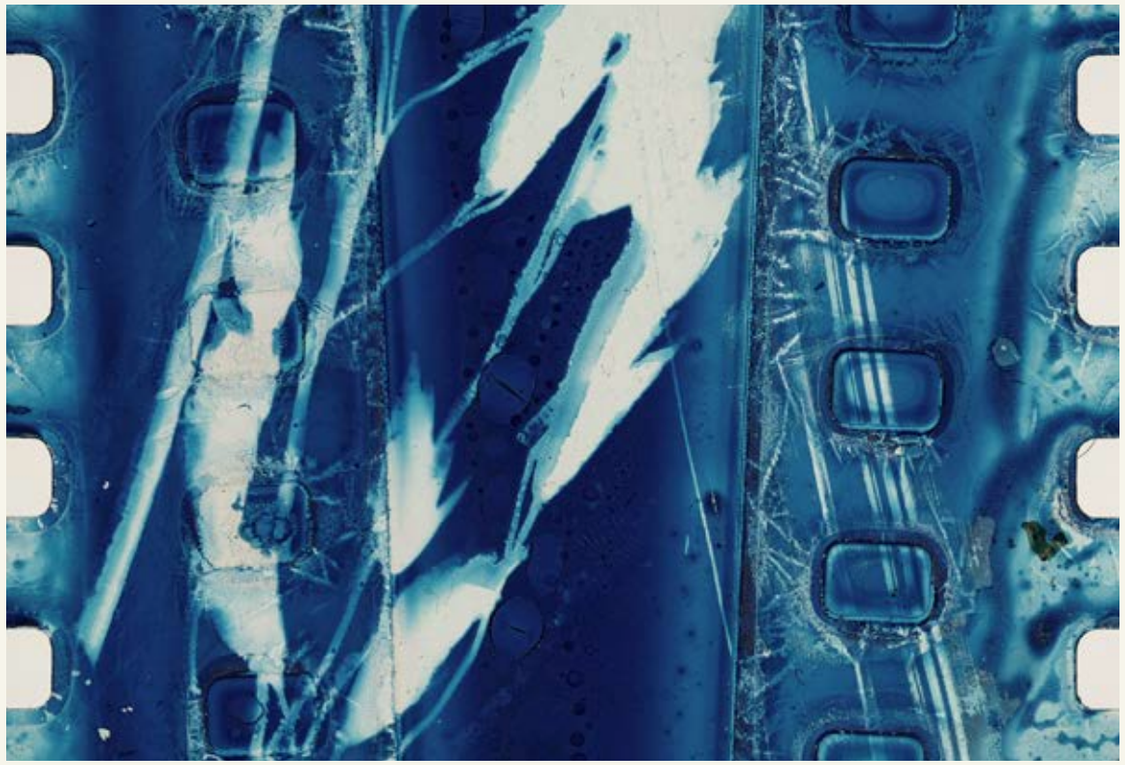


← ↑ Izabella Pruska-Oldenhof, *Garden of Earthly Delights*, 2008. tapestry detail and film stills.



← ↑ Kelly Egan, *c: won eyed jail*, 2005 (detail, and installation view, behind), and *Athyrium Filix-Femina (for Anna Atkins)*, 2016 (installation view, in front).







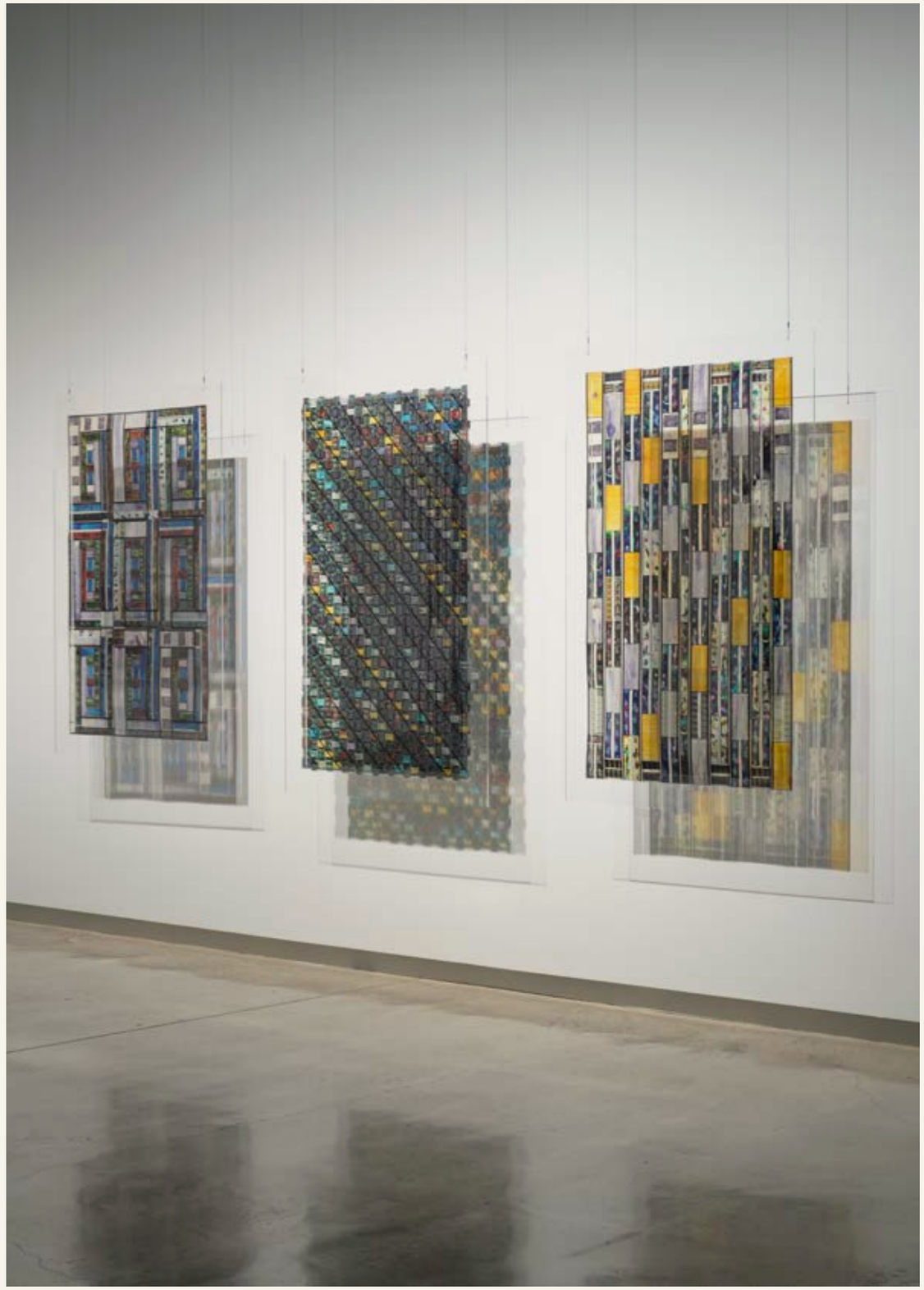


← ↑ Kelly Egan, *Athyrium Filix-Femina (for Anna Atkins)*, 2016. film stills.



↑ Installation view of *Interlaced: Animation & Textiles*, 2024.





← ↑ Jennifer West, *Screen Debris, Plants and Nets Film Quilt*, 2023 (left), *Google Earth Searches to Cave Art Locations*, 2023 (centre), and *Orange Haze Film Quilt*, 2023 (right). detail and installation view.

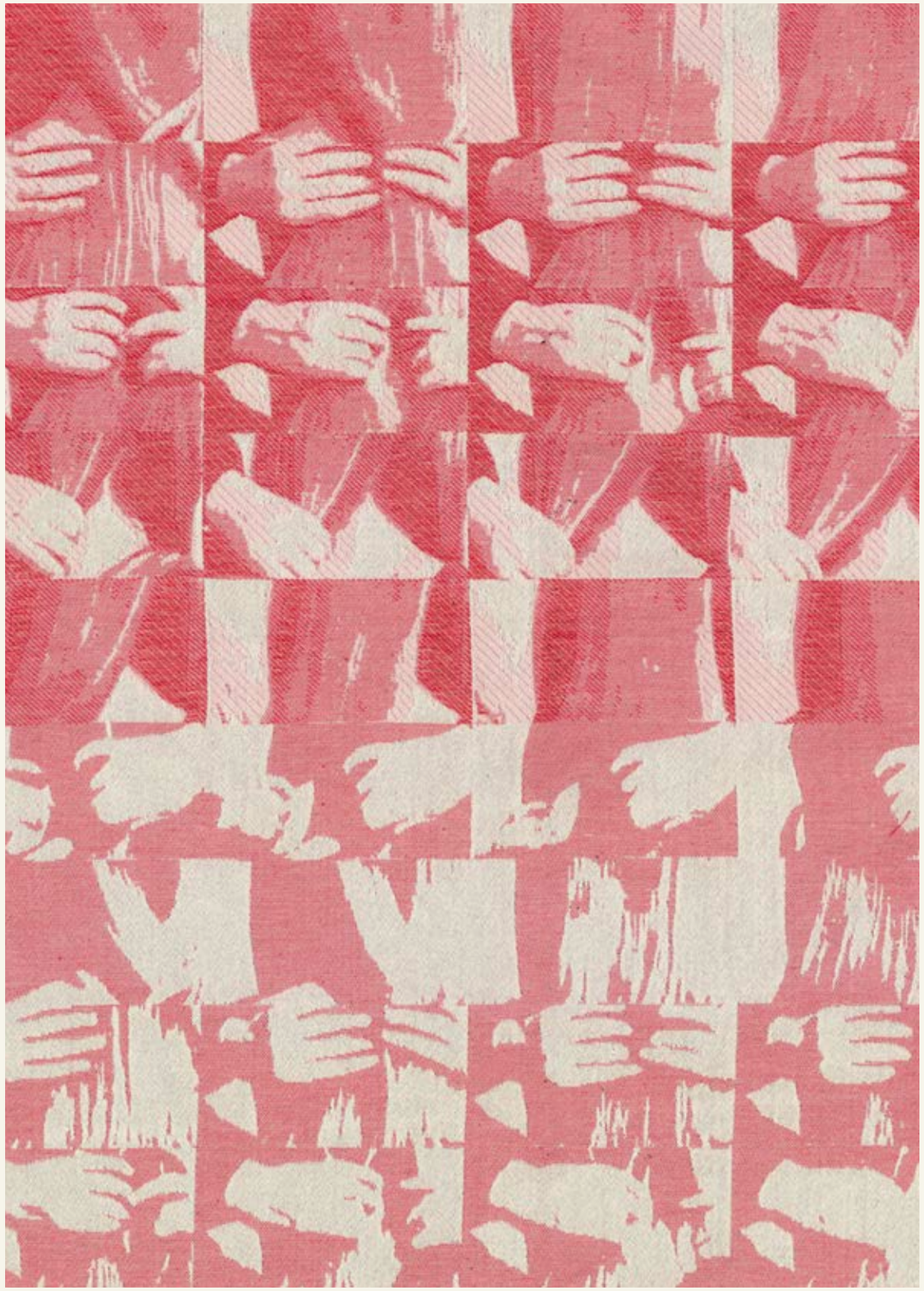


↑ Jennifer West, *Orange Haze Film Quilt* (detail), 2023.



← ↑ Marguerite Harris, *Sewn Film*, 2016–24. detail and installation view.

Woven Algorithms



← Kate Nartker, *Parting* (detail), 2020.

33 Ellen Harlizius-Klück, "Weaving as a Binary Art," *Textile* 15, no. 2 (2017): 176–197.
34 Stephen Monteiro, *The Fabric of Interface: Mobile Media, Design, and Gender* (The MIT Press, 2017), 33.
35 Ada Lovelace, "Translator's Notes to M. Menabrea's Memoir," in *Scientific Memoirs, Selected from the Transactions of Foreign Academies of Science and Learned Societies, and from Foreign Journals*, vol. 3, ed. Richard Taylor (Taylor, 1843), A, 696. Emphasis in the original text.

As with analogue celluloid, digital media formats are historically entwined with textile materials and processes. In 1837 mathematician Charles Babbage developed the framework for what many consider to be the first prototype for the digital computer — a machine capable of storing, retrieving and processing information he called the Analytical Engine. Babbage modelled his computer after the Jacquard loom, which revolutionised textile manufacture by mechanising the storage of weaving patterns and the labour of weaving. Previously, weaving patterns were learned and taught by individual makers, with fabric samples serving as a visual mnemonic device that other weavers could replicate and iterate. In the eighteenth century, following numerous parallel efforts to automate weaving, patterns were translated into algebraic algorithms and stored using symbolic notation, or code.[33]

The Jacquard system conceived of weaving as an unfolding grid of information, and patterns were encoded through binary notation stored in punched paper cards. This binary code corresponded to an upward or downward swing of the loom's warp threads, which determined how the warp and weft would interlace. Expressed as a series of operational instructions — algorithms — intricate patterns were translated into finite series of cards that could be circulated in print and organised in different permutations. Inspired by the creative potential of such weaving blocks, Ada Lovelace — Babbage's peer and fellow mathematician — speculated about programming machines that could retrieve and rearrange cards in variable sequences, allowing for complex operations to be completed with only a few interlocking instructions.[34] Lovelace developed the first speculative software for such a computing machine, famously writing:

> We may say most aptly that the Analytical Engine weaves algebraic patterns just as the Jacquard-loom weaves flowers and leaves.[35]

Following Lovelace's theoretical blueprint a century later, early computing utilised paper punch-cards for information storage and retrieval. The speed and complexity of computing was further expanded in the 1950s with the development of core memory storage, such as "random-access" magnetic-core memories and "non-volatile" core rope memory. Magnetic-core memories were tightly woven grids of copper wire holding carefully strung ferrite beads, which stored and rewrote code in response to electrical currents that changed their direction on the weave. Core rope memories, capable of retaining information even without electrical flow, braided copper wires through different input pathways according to specific patterns representing operational directives. With these technologies, software was physically woven into hardware to form malleable and resilient computing.

The material and cultural relationship between weaving and computing is surfaced in Kate Nartker's woven animations, which pair fibre weavings and digitally animated sequences. *Pattern Practice* (2020) comprises a series of panels that digitally manipulate traditional weave structures such as Swedish lace, shadow

weave and honeycomb. Nartker graphically disassembles the pattern of each structure, uses computer software to manipulate the structure into unexpected combinations, and translates the new arrangement into instructions for a digital Jacquard loom that is used to produce a panel. Each panel experiments with applying filmmaking principles to a digitally mediated weaving process. For example, one panel uses the concept of cross-dissolving between film shots to create a visual metamorphosis between two different weaving patterns. This dissolve is accomplished by programming a gradual inversion between two different layers of a double-warp weave, alternating the warp threads of two intertwined panels to reverse their positions. When the surface of the weaving is reanimated on screen, the moving image evokes the interlacing dissolves of electronic video and the coarseness of digital compression. However, the animation's magnified views of yarn hairs and crimp insist on the screen's fibrous origins.

In 1965, as magnetic-core and core rope memories propelled aerospace engineering and laid the foundations for a future Silicon Valley, textile artist and theorist Anni Albers wrote:

> Just as our clothes are getting lighter and are increasingly geared to movement, so also will it be with other things that are to accompany us. And if these include a work of art that is to sustain our spirits, it may be that we will take along a woven picture as a portable mural, something that can be rolled up for transport.[36]

Today we are surrounded by the woven pictures of portable digital displays. The work of design studio Zeitguised makes visible the textile qualities of digital interfaces and the surface mesh of virtual images. *geist.xyz* (2016) applies the algorithmic principles of handcrafted textiles to procedurally generated surfaces. Virtually modelled objects and surfaces are wrapped in computer-rendered replicas of fabrics. Propelled into movement through digital simulation, these soft-sculptural assemblages evoke sentient furniture and alien garments performing in a sleek showroom.

Employing commercial software with names that evoke Victorian stage magic, such as Marvelous Designer (cloth simulation), Houdini (light and particle effects) and Substance (texture simulation), *geist.xyz* leans into the speculative and metaphysical qualities of procedurally generated materials. The scenes are equally photorealistic and implausible, alternately obeying and defying physical constraints as the elastic cloth stretches and crumples. Focusing on artificial textures of lamé, polyester fur and pleather, *geist.xyz* blurs distinctions between synthetic fabrics and synthesised moving images. Animated knots and pleats coincide with the pixelated surface of the display monitor, ensuring that processing speed and image resolution at the time of viewing visibly shape the perceived elasticity and coarseness of the digital canvas.

Artist Shaheer Zazai employs a more commonplace software interface as a loom for weaving and entangling encoded information. Zazai's *Resident* (2017) is an animated loop that accelerates a lengthy process of typing, colour coding

36 Anni Albers, *On Weaving* (Wesleyan University Press, 1974), 70.

and revising a Microsoft Word document. The rectilinear canvas of the text processor comes to resemble a knotted carpet of diamonds and roses reminiscent of Afghan rug design. The composition turns to carpet weaving as a precedent for navigating image resolution and compression in computer-based media.[37] The animation of the artist's typographic performance also enacts Stephen Monteiro's definition of computer interfaces as real-time weavings:

> Each digital image's material instantiation and visual presence exists as a raster grid of picture elements (pixels) displayed on the screen's patterned weave of diodes. Stored in long strands of binary code, the image is only visible when these strands pass through a microprocessor. Accordingly, every digital image may be understood as a performance of weaving that ends only when the file is closed or the screen is darkened.[38]

Following the graphic vocabulary of Afghan carpets, Zazai's document embeds layers of information into typed characters and formatting functions, which may be interpreted by someone initiated into its symbolic code. However, as the work is rapidly redrafted and revised, *Resident* conveys the impossibility of a smooth translation or definitive reading of its surface. The unravelling and reforming composition mimics the qualities of a digital glitch or software error, embracing the creative energy and political potency of encryption.

Jon Michael Corbett's digitally animated beadwork also loosens the standard weave of computer software and dismantles assumptions of the interface as a linear grid. Combining Indigenous Métis beadwork with computer programming, Corbett develops generative programs grounded in his Métis (Cree/Saulteaux and English) linguistic and cultural principles. This body of work began with software Corbett wrote to translate photographic portraits into notational beadwork patterns. Realising that the software's optimised logic missed essential qualities of beadwork, such as the importance of proceeding through winding pathways at a decelerated meditative pace, Corbett began to alter the program as a way of initiating the software into beadwork culture.[39] *Four Generations* (2015) is the result of a procedural program that animates a composite family portrait of four generations — the artist's grandmother, his father, himself and his son — through a cyclical process of adding and subtracting 34,859 spherical beads that comprise the days of his grandmother's life. Instead of using dominant Cartesian coordinates of computer display (x, y) that begin in the upper-left corner of the digital canvas, Corbett maps the territory of the screen as a spiral, starting with the symbolic centre bead and radiating toward the margins. Linear models of intergenerational inheritance are also replaced with a genealogical spiral. Each generation's code is visibly entwined with others, as the portraits revisit the same familiar faces with renewed bead configurations. Treating the digital screen as a black velvet canvas, *Four Generations* expands its circular pattern in tension with the imposing standard of the rectangular monitor frame.

37 Laura Marks discusses Persian carpet weaving and low-resolution digital aesthetics in "Arab Glitch," in *Uncommon Grounds: New Media and Critical Practices in the Middle East and North Africa*, ed. Anthony Downey (I.B. Tauris, 2014), 256–271.

38 Monteiro, *The Fabric of Interface*, 18.

39 Jon Corbett, "ᓲᒥᑐᓂᔨᐦᑭᑲᓂᐦᑳᓐᓂᒣᑲᓂᐦᑳᐣ ᐁᑲᓂᐦᑳᐣ / mâmitoneyihcikanihkân nimîkisistahikêwin ekwa nimitonêyihcikan: My Reflections of Beading with a Computer," *Transmotion* 9, nos. 1 & 2 (2023): 86–109, https://doi.org/10.22024/UniKent/03/tm.1138

Danielle Brathwaite-Shirley's online and gallery-based video games similarly resist normative structures of digital information architecture. Brathwaite-Shirley's interactive multimedia works craft virtual and physical spaces that affirm the histories and experiences of Black and Trans bodies without submitting them to public surveillance and manipulation. The oppressive threat of scrutinising looks and lecherous stares is a pervasive theme that informs the artist's approach to digitally animated bodies and environments. The online game *BLACK TRANS ARCHIVE* (2020) is exemplary of how Brathwaite-Shirley responds to this challenge by embracing the low-resolution aesthetics of 1990s video-game texture mapping and virtual skins. Texture mapping was first developed to achieve graphic realism in computer-generated images by wrapping sculpted digital models in patterned canvases mimicking natural surfaces. However, computer processing and rendering limitations meant that figures and environments were frequently dressed in stuttering and dizzying pixelated patterns. *BLACK TRANS ARCHIVE* embraces the jittery ornamentation of early video games as a strategy of disrupting perspectival coherence and evading visual capture. The game's environments alternate between polygonal volumes enveloped in geometrically patterned swatches and flattened compositions that treat the screen like a quilted surface coming apart at the seams. The sensory integrity of first-person navigation is continually disoriented, as solid panels dissolve into translucent veils and moving figures leave behind trails of replicated echoes.

Brathwaite-Shirley's work creatively co-opts established conventions of digital navigation, access protocols and control interfaces. *THE FIRST TRANS THOUGHT* (2021) repurposes the floor controller mat from a dance platform video game into a device for activating audiovisual projections on an embroidered tapestry. Instead of activating a television or arcade monitor, the triggered controls illuminate different zones of the tapestry's surface to alter its meaning. The aesthetics of digital texture mapping are returned to an analogue fabric surface. As with many of the artist's games, assigned directives to the player that first appear straightforward begin to follow unexpected pathways that frustrate goal orientation. Attention is gradually displaced from directed activity toward the artifice of the interface, including its spatial and sonic atmospheric textures.

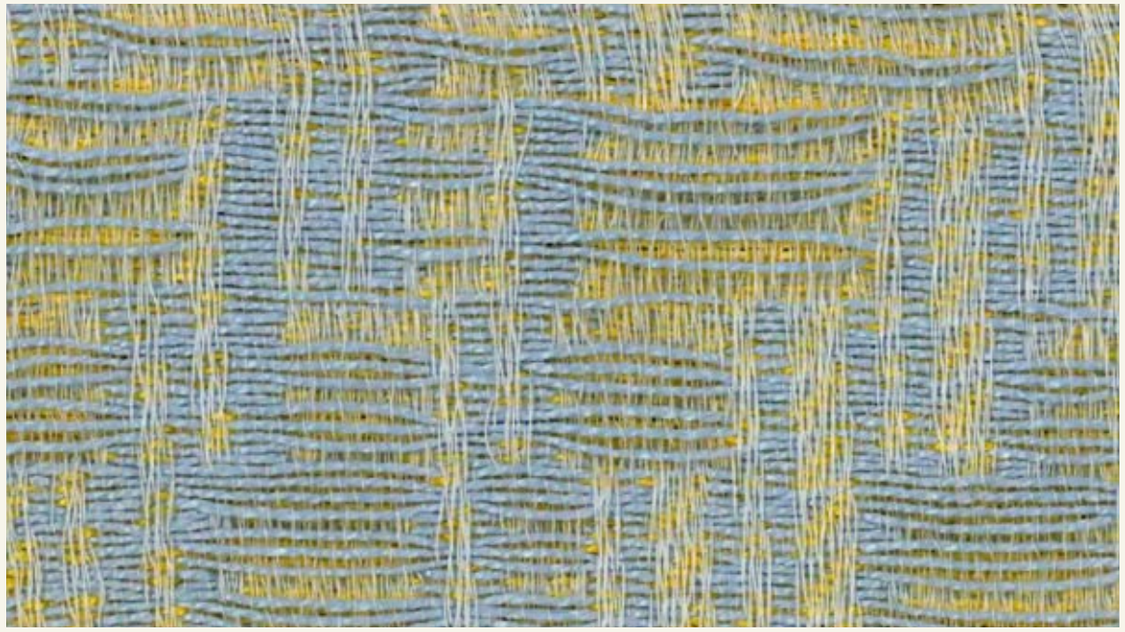
Combining conventions of medieval epic tapestries and dystopian science fiction, *THE FIRST TRANS THOUGHT* depicts an origin story of a persecuted figure awakening and striving for self-determination. The title recalls a thematic motif in Trans narratives of a primal moment or event, when a person awakens to themselves as a Trans subject. Placing an indeterminate player into the role of activating the tapestry, *THE FIRST TRANS THOUGHT* complicates the biblical narrative of spontaneous self-revelation, pointing to the impacts of recurring practices of acceptance or denial on individual and collective identification.

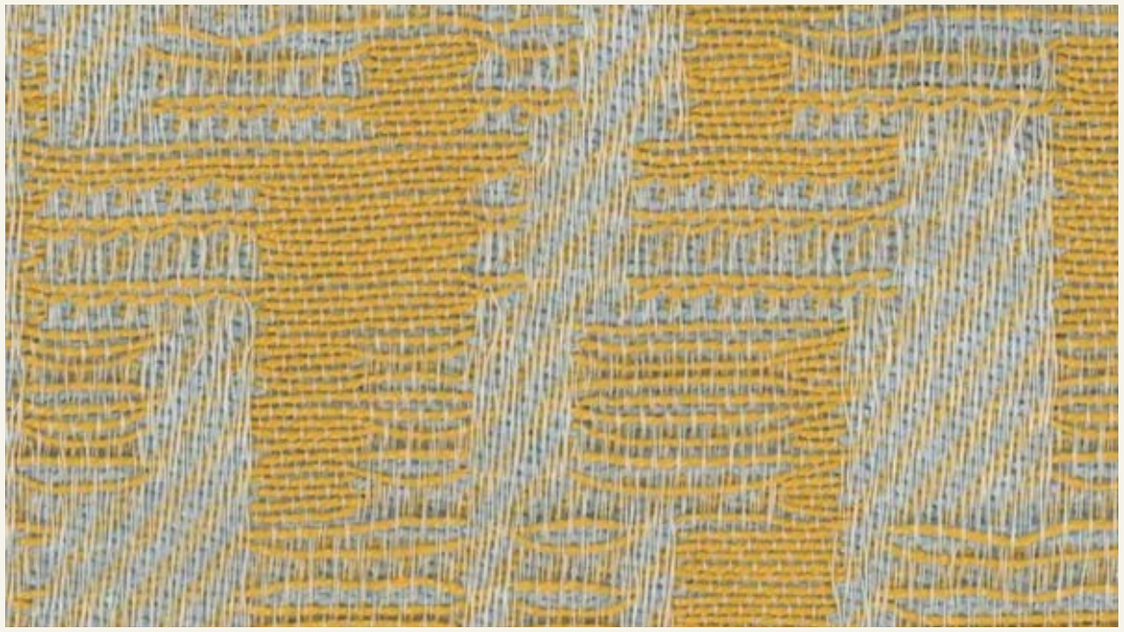
In programming parlance, artists such as Nartker, Studio Zeitguised, Zazai, Corbett and Brathwaite-Shirley develop unruly and playful relationships with computer interfaces, testing the logic of UI/UX (user interface and user

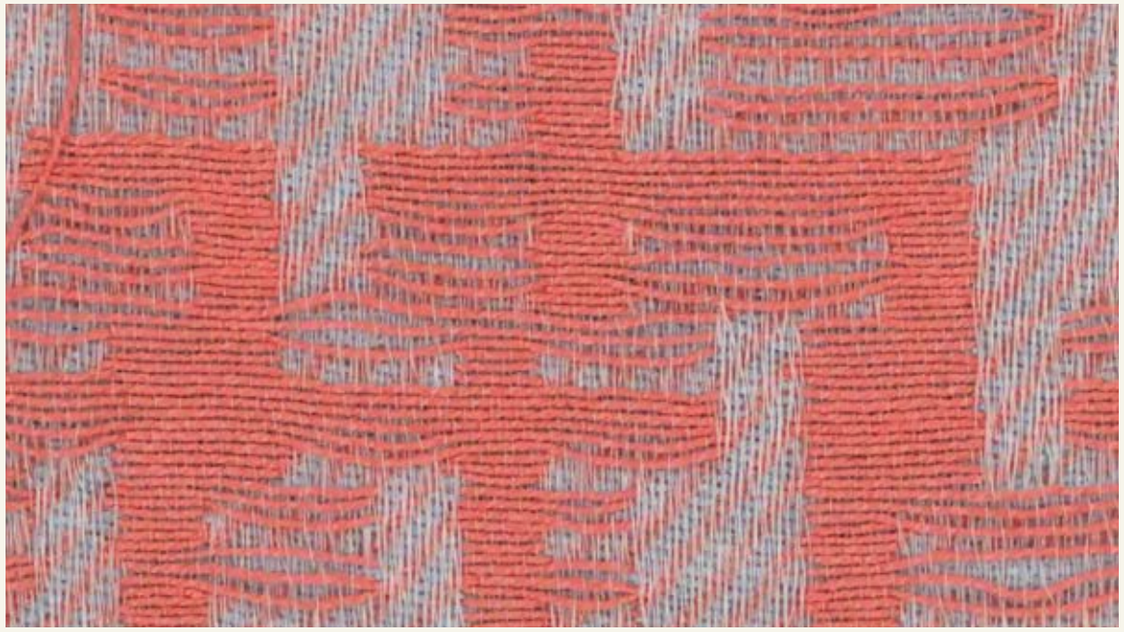
experience) that governs digital media platforms. From industrial digital machinery to first-person video games, they unbox the hidden weave of computer software to rewire the core memories of computing and encode alternative cybernetic pathways.

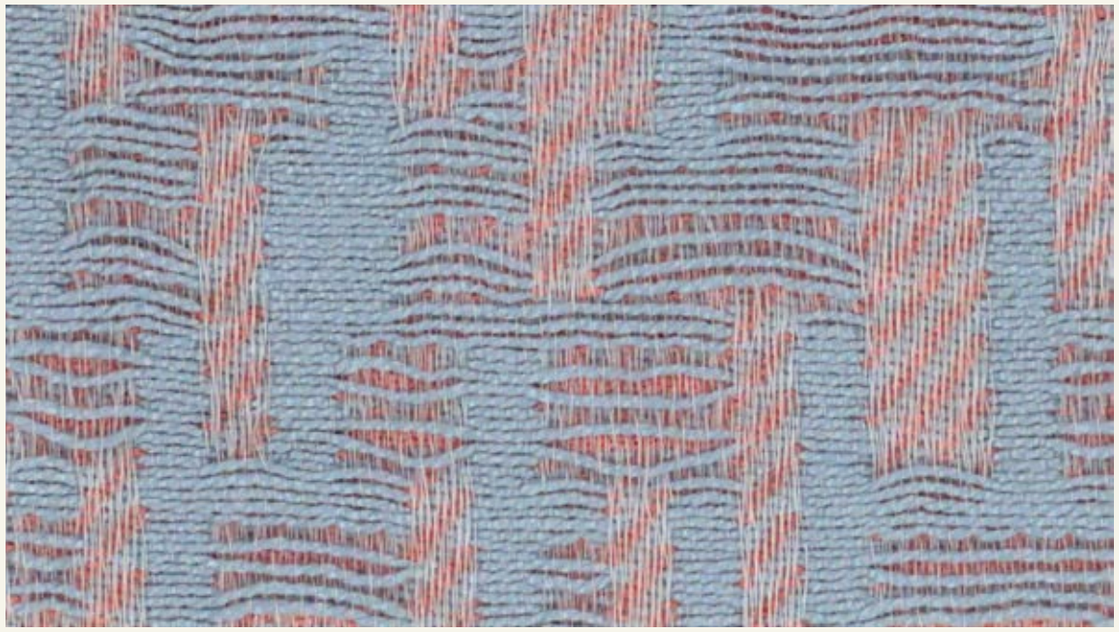
↓ Kate Nartker, ***Pattern Practice***, 2020.











← ↑ Kate Nartker, *Pattern Practice*, 2020. video stills.



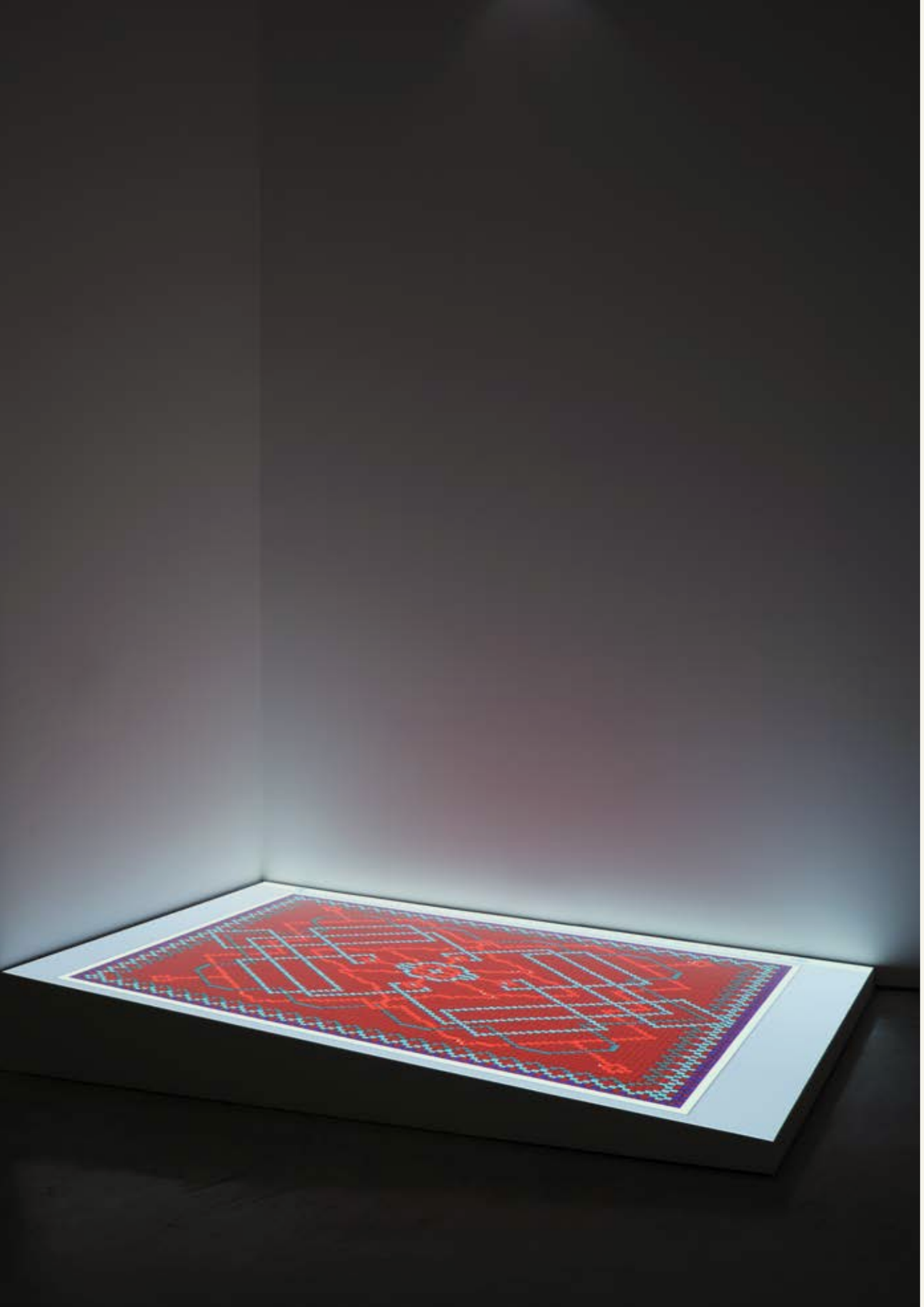
↑ Studio Zeitgüised,
Geist.xyz, 2016. Video still.

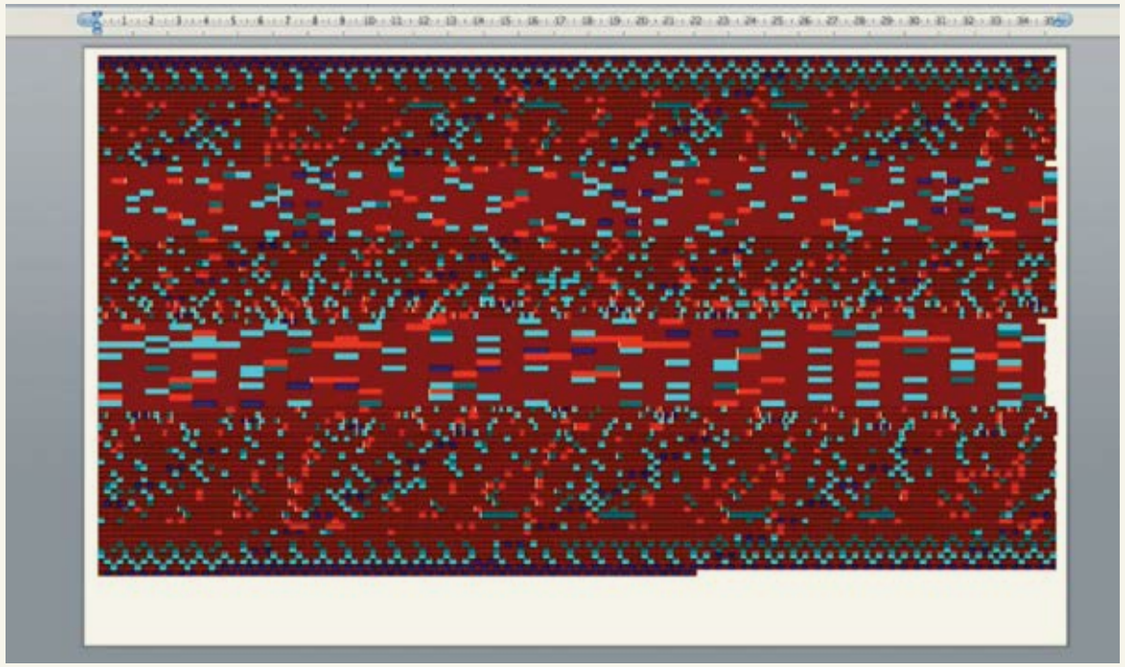


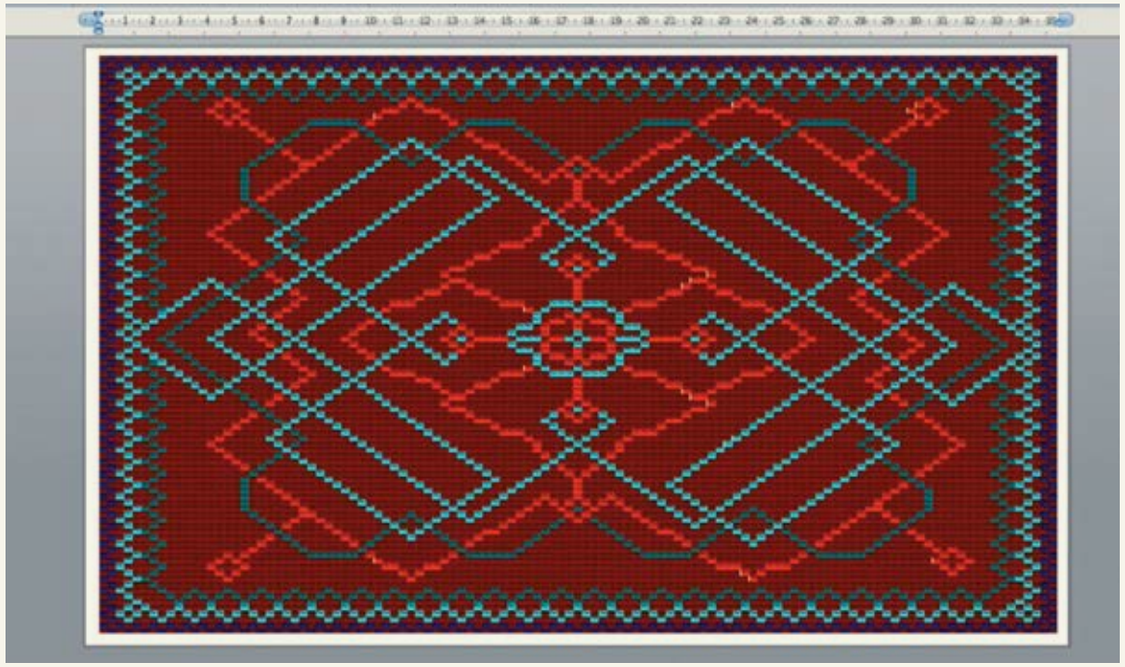




↑ → Studio Zeitguised, *geist.xyz*, 2016.
video stills and installation view.

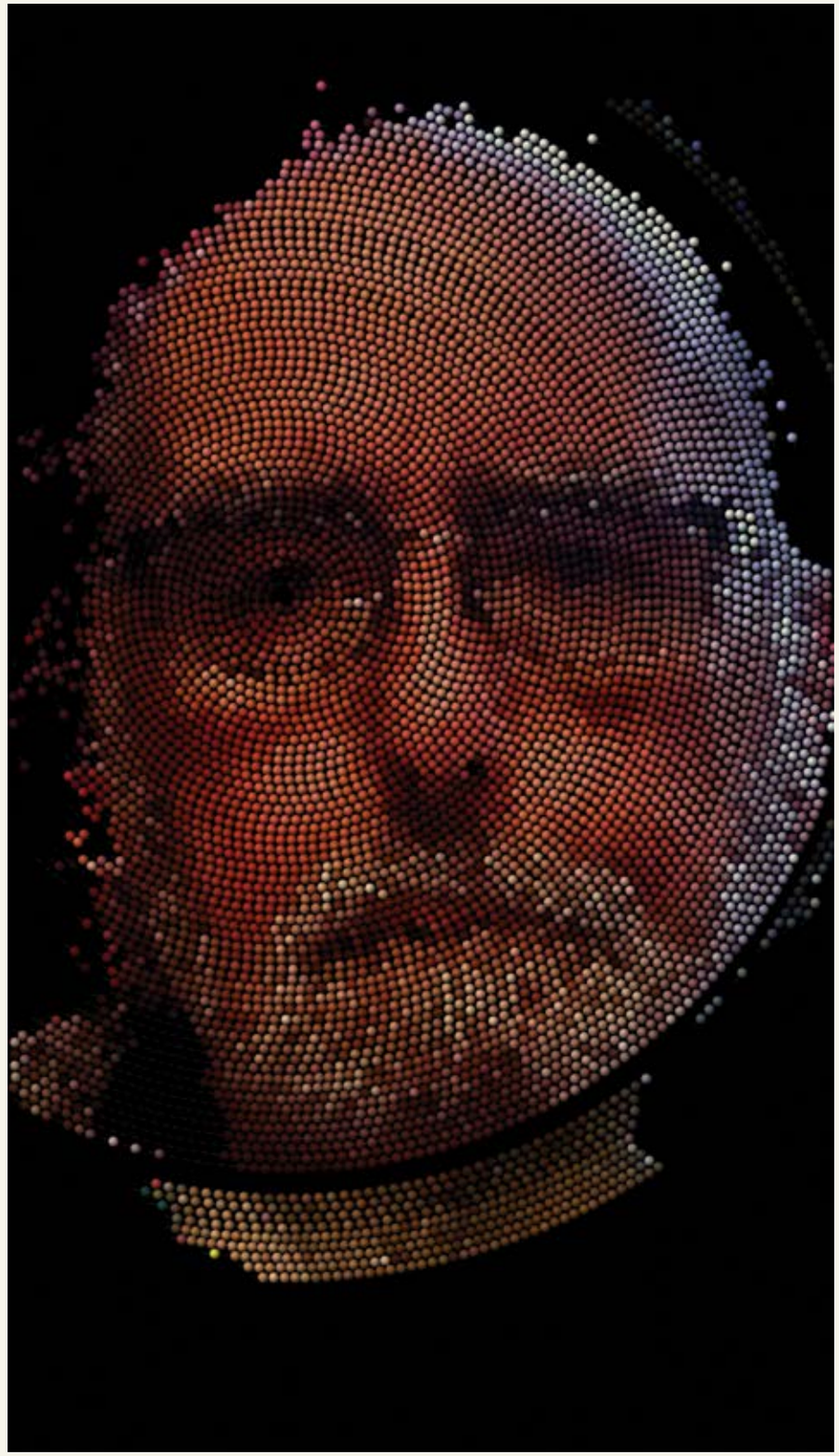






← ↑ Shaheer Zazai, *Resident*, 2017. installation view and video stills.





← ↑ Jon Michael Corbett, *Four Generations*, 2015. video stills.





↑ Danielle Brathwaite-Shirley, *WE ARE HERE BECAUSE OF THOSE THAT ARE NOT/ BLACKTRANSARCHIVE.COM*, 2020–22. interactive archive. © and courtesy of the artist. screen-capture frames by the author.



↑ →→ Danielle Brathwaite-Shirley, *THE FIRST TRANS THOUGHT*, 2021. installation view and detail.

YOUR EXISTENCE ENOUGH. THANK GOD YOU EXIST. I WILL REMEMBER YOU TO KEEP YOU ALIVE

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Embroidered Gestures



40 Most recently in Julia Bryan-Wilson's *Fray: Art and Textile Politics* (University of Chicago Press, 2021) and Ferren Gipson's *Women's Work: From Feminine Arts to Feminist Art* (Francis Lincoln, 2022).

41 *O Canada Animation* was made in preparation for Wieland's landmark solo exhibition *True Patriot Love* at the National Gallery of Canada.

42 The role of embroidery in modern discourses of femininity is explored in Rozsika Parker's groundbreaking book *The Subversive Stitch: Embroidery and the Making of the Feminine* (Women's Press, 1984).

43 See Leana Hirschfeld-Kroen, "Weavers of Film: The Girl Operator Mends the Cut," *Feminist Media Histories* 7, no. 3 (2021): 104–134; and Alla Gadassik, "A Skilful Isis: Esfir Shub and the Feminization of Film Editing," in *New Studies in Documentary Film*, ed. Joshua Malitsky (Wiley-Blackwell, 2021), 165–186.

44 See Mary Stark, "Film as Fabric: Connecting Textile Practice and Experimental Filmmaking Through Expanded Cinema Performance" (PhD dissertation, Manchester Metropolitan University, 2020).

← Joyce Wieland holding up her embroidered *O Canada Animation* and sounding out the syllables to the national anthem, 17 February 1971. Photograph, © National Gallery of Canada, Ottawa. York University Libraries, Clara Thomas Archives and Special Collections, Toronto Telegram fonds.

The historical relationship between textile production and feminised labour is well established, as is its impact on the marginalisation of textiles in art criticism and theory.[40] The parallel history of gendered labour in filmmaking, however, is less widely acknowledged in contemporary art discourse. One noteworthy exception is the textile work of acclaimed artist and filmmaker Joyce Wieland, such as *Stuffed Movie* (1966) and *O Canada Animation* (1970), which recall her prior employment at an animation advertising studio.[41] *O Canada Animation* is not, strictly defined, an animated work. The cotton panel features six rows of embroidered mouths that correspond to the shapes made when reciting the Canadian national anthem. This graphic notation references the labour-intensive process of synchronising character lips to dialogue in the production of animated cartoons, where key vowels and consonants correspond to a series of mouth shapes. Shortly after completing *O Canada Animation*, Wieland posed for photographs with the embroidered panel and mimed the anthem to demonstrate the intimate relationship between the hand-stitched images and her body. This gesture asserted the role of feminised creative labour, colloquially termed 'feminine art' or 'women's work', in crafting and reproducing the cultural fabric of national identity. It also brought together the parallel histories of feminised labour in textile and animation production.

Since cinema's early decades, much of the work of manually editing and hand-decorating films was assigned to women. Most aspects of preparing a film that required delicate manual dexterity were defined through the cultural prism of weaving or embroidery, and thereby classified as extensions of traditionally gendered labour.[42] Descriptions of these tasks in popular and industrial publications emphasised socially prescribed 'feminine' attributes such as sedentary stillness, patience, nimble control of the fingers, fidelity to work and a pleasant social disposition.[43] Artist Sabrina Gschwandtner's quilted celluloid canvases visibly illuminate the rhetorical and material role of feminised labour in motion-picture production. *Guy-Blache Serpentine Dance Square* (2021), for example, is hand sewn using a print of an early Serpentine Dance film believed to have been directed by Alice Guy-Blaché (uncredited), cinema's first female director. Gschwandtner's quilted square relates the fabric of celluloid to the billowing skirt of the serpentine dancer and the circuitous spool of a film reel, suturing the contemporary artist into a century of feminist media authorship. However, the coarse black threads that link the filmstrips at irregular seams complicate the notion of singular authorship and insist on making visible the hidden labour of early film editing, where women were envisioned as seamstresses helping directors tailor cinema's materials.[44]

Techniques of colour tinting, toning and stencil-dyeing film were another established feminised practice in cinema's early decades. Before the development of colour-sensitive film emulsion and reliable colour-printing methods, some studios used expensive hand-tinting and stencil-dyeing methods to apply colour to individual prints of black-and-white film. In Pathé studio's Pathécolor stencilling process, each colour required its own layer with cut-outs to match the images on screen. The workshops responsible for colour tinting and stencilling were predominantly staffed by women in facilities modelled after textile mills and garment factories. Materials and

equipment also drew on textile processes such as vat dyeing and bleaching, use of mordants and manual pattern application.[45]

The expense of decorating film surfaces was typically reserved for special effects and exotic settings, which benefited from the surprise and sensual pleasure of saturated colour in an otherwise achromatic medium. Fashion newsreels were one genre that frequently employed stencilled colour to amplify the visual appeal of demonstrated garments and associate them with exotic and opulent destinations. Pathé studio's *Mode Uit Parijs* (*Fashion from Paris*) newsreels demonstrate the value placed on clothing and fabric decor in colour application. The reels feature models posed in lavishly decorated showrooms, using the technical novelty and sumptuous colours of stencilled celluloid to imbue fashion trends with a tantalising aura. Women were not only the subjects and makers of these saturated images, but also their presumed consumers, as fashion newsreels participated in an expanding consumer culture that tethered garments and furnishings to ideals of femininity and desirability. Stencilled and painted films that pushed beyond naturalistic palettes into chromatic vibrancy and graphic abstraction also came to be associated with feminine aesthetics, as women were imagined to be more susceptible to colour's sensuous appeal.[46]

The relationship between delicate craftsmanship and feminised labour shaped decades of animation and digital media production, entrenching deep hierarchical divisions between the 'art' of media ideation and the 'craft' of its material application. The growth of animation studios in the 1920s and 30s was made possible by a clear division of labour between managerial or creative roles and below-the-line workers, such as Walt Disney Studio's famous 'ink and paint girls'. The latter were responsible for repetitive detailed manual tasks, such as cleaning up drawn outlines, inking outlines onto celluloid sheets (cels), painting and preparing the panels for photography. These jobs functioned as a glass ceiling, limiting women's progression into senior creative roles.[47] Early computing similarly established a gendered hierarchy between the work of software development and the labour of embedding computer algorithms into hardware. The first 'computers' were predominantly women, employed to perform calculations and organise punch cards.[48] Magnetic-core memory panels and core rope memories were also woven primarily by women, while manufacturers of processors sought out a racialised female workforce to stitch and solder the infrastructure of computing.[49]

Contemporary media artists and designers who embrace techniques of animated sewing and embroidery frequently contend with these legacies of feminised aesthetics and manual labour. In *Swamped (eye roll)* (2023), Caitlin Thompson reimagines the nineteenth-century French *phénakistoscope* — a handheld device that generates the illusion of movement through spinning — as a traditional handmade medallion quilt. Precinematic animation devices like the *phénakistoscope* were first developed to study the sensory workings of perceptual motion, but their subsequent circulation established them as parlour amusements for women and children.[50] In *Swamped (eye roll)*, Thompson recreates the concentric circles of the device's plates

45 Joshua Yumibe, *Moving Color: Early Film, Mass Culture, Modernism* (Rutgers University Press, 2012).
46 Eirik Frisvold Hanssen, "Symptoms of Desire: Colour, Costume, and Commodities in Fashion Newsreels of the 1910s and 1920s," *Film History* 21, no. 2 (2009): 107–121.
47 A complimentary portrait of Disney's gendered labour practices is provided by Mindy Johnson in *Ink and Paint: The Women of Walt Disney's Animation* (Disney Editions, 2017). A more critically nuanced discussion is offered by Hannah Frank in *Frame by Frame: A Materialist Aesthetics of American Cartoons* (University of California Press, 2019).
48 Jennifer Light, "When Computers Were Women," *Technology and Culture* 40, no. 3 (1999): 455–483.
49 Sadie Plant, *Zeros + Ones: Digital Women + the New Technoculture* (Doubleday, 1997); Lisa Nakamura, "Indigenous Circuits: Navajo Women and the Racialization of Early Electronic Manufacture," *American Quarterly* 66, no. 4 (2014): 919–941.
50 Meredith Bak, *Playful Visions: Optical Toys and the Emergence of Children's Media Culture* (The MIT Press, 2020).

using hand-stitched appliqué on a quilting hoop. When the hoop's rotation swamps a recording camera with serial motifs at a matching rhythm, the animation of an eyeroll is activated. Embracing granny-chic aesthetics of floral pastels and patterns, the composition rolls its eyes at gendered politics of taste discernment that mark domestic crafts, including animation toys, as unsophisticated or old-fashioned amusements.

Aubrey Longley-Cook's *Runaway* (2010) also revisits animation history by reworking Jules Engel's animated film *Accident* (1973) into a series of hand-embroidered hoops and a companion stop-motion animation. Engel's film, which was patterned after Eadweard Muybridge's photographic motion study of a running greyhound, used pencil and eraser to animate a mournful portrait of a gradually disappearing canine figure. In contrast, Longley-Cook's embroidered re-creation presents a dense body composed from hundreds of overlapping stitches — a constructive rejoinder to *Accident*'s destructive impulse. *Runaway* amplifies the meticulous labour of conventional drawn animation by composing every frame of the motion cycle with delicately applied interconnected threads. Longley-Cook's animation strategically allows glimpses of both sides of the embroidered canvas — the neat representational surface and the busy abstraction of threads that sustain it. These behind-the-scenes images reveal the circuitry of careful gestures that generate an animated image and question the conventional hierarchy between the visual polish of completed animation and the tangled underpinnings of its production.



↓ Colouring workshop at Pathé in Vincennes, from Frederick Arthur Ambrose Talbot, *Moving Pictures: How They Are Made and Worked* (J. B. Lippincott Co., 1914), 288.

Hand-stitched and embroidered animation often takes the form of short animated loops, reflecting the harsh economy of labour required to craft each second of film. Commercial animation studios optimise the labour of production by disassembling images into fungible components that can be recycled and repeated to extend a gesture, such as the swinging limbs of a standard animated 'walk cycle'. Responding to this convention, contemporary artists frequently embroider animated 'work cycles' that reflect on the structural assembly and mechanical rhythms of mass-produced images. Design duo Miracle de Mille's hand-stitched and appliquéd loops form seamlessly cyclical gestures that depict human bodies as perpetual-motion machines. In *Human Repeat* (2016) a silhouetted figure is lifted and flipped backwards by its doppelganger, who turns into his predecessor in a recurring pattern of revolution and stagnation, forming a seemingly infinite temporal loop. As with much of contemporary textile animation, *Human Repeat* was made for exhibition on social media platforms, where it is circulated and reactivated by manual clicks in looping cycles of narrowed attention spans.

Huw Messie's *Bizarre Fabrications* (2021) series, also produced and formatted for online circulation, interrogates entrenched distinctions between artisanal and industrial craft. Messie engages the machinery of automated embroidery to reveal the threads that bind human bodies to cycles of capitalist commodity production and circulation. Each embroidered animation relies on procedurally generated frames that visibly suture skeletal figures into churning assembly lines and supply chains. The automated scenes produced through the collaboration between artist, software and hardware recall historian Ellen Harlizius-Klück's remarks that modern weaving looms migrated creative control from generations of women makers to proprietary machinery, transferring algebraic thinking "from the brains of weavers to calculating agents."[51] In Messie's *Bizarre Fabrications* series, manual gestures lose their claims to agency, as bodies and hands are mechanically tethered to extractive and alienating labour patterns.

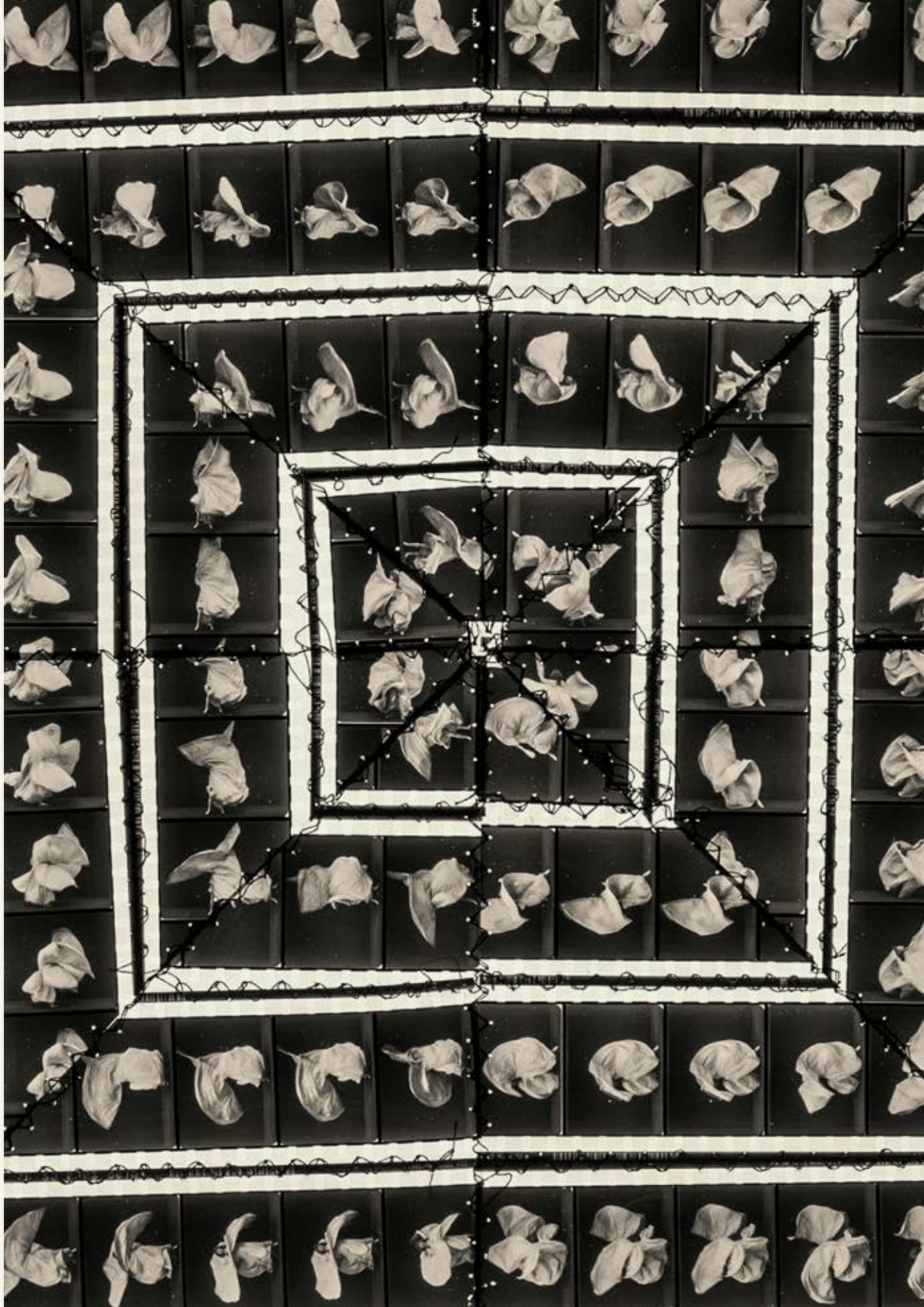
51 Harlizius-Klück, "Weaving as a Binary Art," 192.



→ Pathé frères, *Mode Uit Parijs 2*, 1911–25. film still.

↑ Pathé frères, *Mode Uit Parijs 2*, 1911–25. film still.





↑ → Sabrina Gschwandtner, *Guy-Blache Serpentine Dance Square*, 2021. installation view and detail.





← ↑ Caitlin Thompson, *Swamped (eye roll)*, 2023. installation view and video stills.













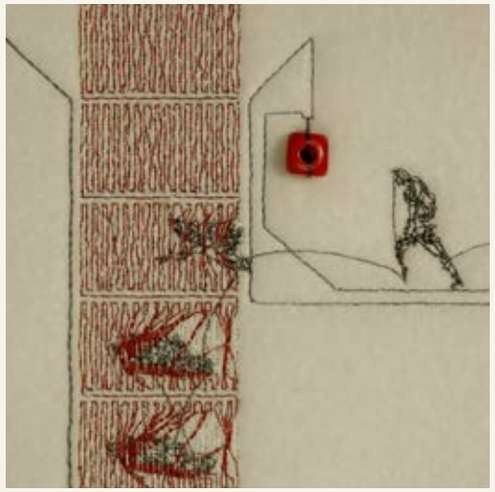
↑ → Aubrey Longley-Cook, *Runaway*, 2010.
video stills and installation view.



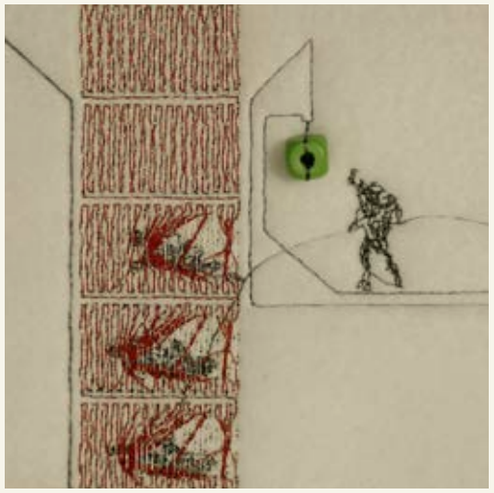




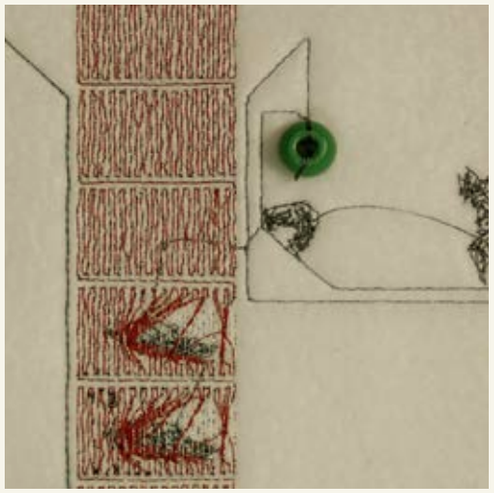
← ↑ Miracle de Mille, *Human Repeat*, 2016. video stills.



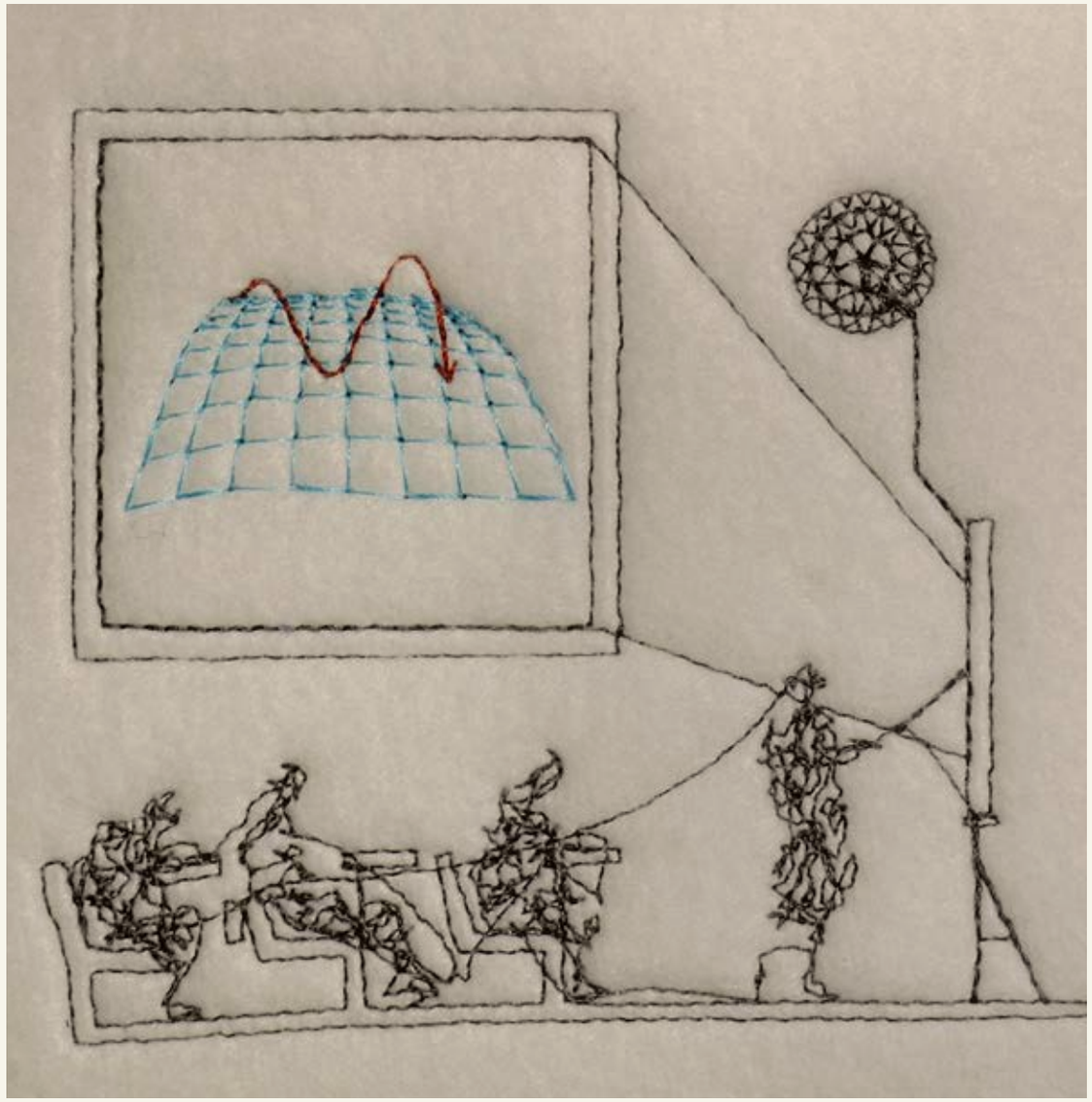












← ↑ Huw Messie, *Bizarre Fabrication Series of Algorithmic Embroidery Animation: Piercing Strand Theory, Self Stowage, Solitary Dependency, Tensioned Attaching*, 2021. video stills.

Migrating Patterns



52 Roger Neich and Mick Pendergrast, *Pacific Tapa* (David Bateman Ltd, 1997).
53 These patterns are introduced in Mary J. Pritchard's frequently cited *Siapo: Bark Cloth Art of Sāmoa* (Council on Culture, Arts and Humanities, 1984). As Pritchard notes in this book, the patterns do not have definitive meanings, and their names indicate a form made "in the manner" of a recognisable plant or organism, rather than an abstracted representation (41).
54 Adrienne L. Kaeppler, "The Structure of Tongan Barkcloth Design: Imagery, Metaphor and Allusion," in *Pacific Art: Persistence, Change and Meaning*, ed. Anita Herle, Nick Stanley, Karen Stevenson and Robert Welsch (University of Hawai'i Press, 2002), 297; Rod Ewins, "Symmetry and Semiotics: The Case of Fijian Barkcloth Figuration," in *Embedded Symmetries: Natural and Cultural*, ed. Dorothy K. Washburn (University of New Mexico Press, 2004), 177.
55 I use 'Pacific' in relationship to Len Lye's work in this text to acknowledge that Lye's understanding and engagement with tapa was more informed by European frameworks than by Moana frameworks.
56 Len Lye, "The Samoan Outlook," *Samoanische Zeitung* 24, no. 37 (12 September 1924): 5.

← Siapo tasina, bark cloth (detail), names unrecorded, undated.

Siapo making connects Samoan material culture to a shared history of barkcloth art in Te Moana-nui-a-Kiwa that includes Tongan ngatu, Fijian masi, Hawaiian kapa and other tapa lineages. Customarily made by women using hand-processed paper mulberry bast and decorated with rubbing boards or freehand painting, barkcloth design draws upon a series of specific motifs that are creatively combined, varied and accented by the makers.[52] For example, the Samoan fa'a'ali'ao motif, named after the spiral ridges of a trochus shell, is recognisable by its zigzagging triangles. The fa'a moa fai is like a banana pod bursting into bloom with nested layers of curving leaves.[53] Some motifs attest to active cross-cultural exchange in Te Moana-nui-a-Kiwa, such as the interlocking vanes called the manulua in Tongan ngatu and bika ni kamiki in Fijian masi.[54] Arranged into patterns, these motifs come alive when a siapo is worn on the body, or used as an architectural screen or ceremonial cloth.

The fa'a'ali'ao makes a startling appearance in Len Lye's direct animation *Kaleidoscope* (1935), where its striated ridges in reds and blacks slice across the screen, occasionally switching colours or doubling to create mirrored reflections. Its toothy contours are joined by the fa'a'aveau motif, which spins around the frame with eight undulating limbs in the manner of a twirling starfish. The manulua enters the frame, as does the more far-flung yin-yang. Lye coated the surface of *Kaleidoscope* with the bright teal of a tropical ocean and added his stencilled patterns in warmer shades of ochre and turmeric, echoing the colours of siapo makers. The film's chromatic palette evokes an aquatic milieu, in which geometric figures swim and collide like underwater organisms. Like the oceanic migration routes that spread the paper mulberry plant and techniques of barkcloth production across Te Moana-nui-a-Kiwa, *Kaleidoscope*'s shimmering surface stages floating encounters between ornamental patterns from different islands and continents. The film also attests to the influence of tapa on Lye's filmmaking methods.

Lye travelled through Te Moana-nui-a-Kiwa (with stops in Fiji, the Cook Islands and Tonga) between 1924 and 1925 to study Pacific art, and he spent months living in a village near Apia as the guest of a Samoan family.[55] During this visit Lye became interested in tapa patterns, which he described in an article published at the time as "wholly original in motif and worthy of a place amongst the foremost patterns ever designed."[56] While many visitors to the region left with bundles of purchased barkcloth made by artisans for the tourist market, Lye carried away with him tapa's graphic vocabulary and sensory effects.[57] After his migration to London, he continued to study barkcloth designs by copying examples he located in museum collections or textbooks. One tapa study paired facsimiles of a Hawaiian kapa and a Samoan siapo with a note to synchronise the "pattern mesh" with sound, identifying barkcloth as a reference source for direct animation.

With *Kaleidoscope*, Lye transplanted graphic motifs from the fibrous layers of stripped and treated bark onto the surface of celluloid. The underlying principles of movement he saw embedded in tapa design, such as the iterative rotation, mirroring and sliding of symmetrical forms, were palpably activated by their

rapid animation on screen. Shortly after he completed this film, Lye was featured in a newspaper article proclaiming him to be the English Walt Disney. The article established Sāmoa as an important part of the animator's origin story, noting that his period of living there was spent studying and memorising decorative patterns that later informed his filmmaking.[58] Translating these patterns to film, the artist was fashioning his own form of animated tapa.

Having benefited from Pacific Island hospitality in the 1920s, does Lye's adoption of tapa design in his animation merit a similar welcome a century later? One way of considering this question is through Tongan scholar 'Okusitino Māhina's writing on the relationship between Moana art and protocols of political and cultural exchange. Political governance throughout the Pacific, which he calls Moana thought, recognises that "all things, in nature, mind, and society, stand in eternal relations of exchange, giving rise to conflict or order."[59] Interpersonal and intercultural tension is part of the dynamic fabric of everyday life. A key role of artistic production, which Māhina calls Moana practice, is to model the creative transformation of conflict into order. For example, inverted figures that produce a symmetrically balanced union, or different colours of string that interlock in a harmonious arrangement, demonstrate the possibility of order achieved from intersecting differences. Māhina notes that symmetrical patterns are fundamental to Moana art, because the value of achieving symmetrical order expresses the value of reciprocal social and cultural exchange.[60]

57 Lye's most detailed reminiscences of this period are included in unpublished manuscripts "Outrigger" and "Tapa" in the Len Lye Archive. Many details of Lye's account are difficult to verify with additional sources, but Roger Horrocks assembles available evidence in *Len Lye: A Biography*, 57–67. Of note is Lye's claim that his extended stay in a Samoan village alarmed the island's New Zealand administrator, as well as Lye's decision to leverage these racial anxieties to secure government funding for his outbound journey.

58 "Len Lye — The English Disney," *The Sunday Referee*, 10 November 1935. Page unavailable.



59 Hūfanga 'Okusitino Māhina, "Tā, Vā, and Moana: Temporality, Spatiality, and Indigeneity," *Pacific Studies* 33, no. 2/3 (2010): 169.

60 Māhina frames the history of colonialism as a fundamentally asymmetrical relationship between Moana and the West. Māhina, "Tā, Vā, and Moana: Temporality, Spatiality, and Indigeneity," 170.

61 Megan Tamati-Quennell made this argument in "The Power and Dynamism of Taonga: Len Lye's Impulse for Indigenous Art," her presentation at an international symposium dedicated to Len Lye's work hosted by Museum Tinguely and the University of Basel, 23–24 October 2019.

62 Léuli Eshrāghi, "Taeao: 'O Māfaufauga o Fa 'āliga Ata ma o Sāuniga mo o Tātou Lumana'i" (PhD dissertation, Monash University, 2019), 103–104. In his own artistic practice, Eshrāghi also uses the term 'siapo viliata'.

63 Air Pacific's use of Fijian tapa patterns in corporate branding in 2012 brought renewed public attention and academic discussion of Moana design patterns as cultural heritage and intellectual property.

← Len Lye with tapa cloth and steel spring (detail), 1946. photograph, 15.8 × 20.8 cm. © and courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.

Accordingly, just as it's possible to gauge whether a design pattern is symmetrical, it's possible to ask whether the pattern of a relationship is symmetrical. There is little doubt that Len Lye valued Pacific visual and material culture. When he posed for a portrait later in life, Lye chose a Fijian masi as his backdrop, visually placing his work within a tapa lineage. Yet it is also true that this relationship was not symmetrical. Like an intrepid ethnographer, Lye defined himself as a modern artist gathering experiences on the margins of European civilisation to benefit and reform the centre. Those lessons he learned through travel and study, he incorporated into his own evolving theory of art — a universal theory based in individuated bodily expression.

Lye envisioned his films as universal works that could unify audiences across all cultures and borders, because they could appeal to ancestral knowledge that all people shared by virtue of their common human genetics. However, his audiovisual tapestries of collected motifs lost the threads of specific place-based and community relationships that informed the artistic lineages he admired.[61] *Kaleidoscope* is symptomatic of this dynamic. The film's production was sponsored by the Imperial Tobacco Company, whose Churchman's cigarette brand appears prominently in the film and ultimately claims the screen. Its presence exposes the uneasy tension between Lye's admiration for Pacific art and his decision to mobilise its symbolism for British imperial and commercial interests.

Without the necessary accompanying connective knowledge and context, resonant patterns can only travel so far before their echoes fade and they lose their ability to communicate across generations. Retracing the trajectories of specific tapa motifs in Lye's animation is one step toward uncloaking their anonymity and acknowledging their journeys from barkcloth to cinema screen. A more substantial shift, however, is to reorient the history of animated barkcloth toward Moana practice. Curator and scholar Léuli Eshrāghi proposes the terms 'siapo pu'e ata' and 'siapo tīfaga' to describe moving images that activate the material and cultural lineage of Samoan barkcloth.[62] For Eshrāghi, a siapo tīfaga should recognise and make visible the animating energy that is already embedded in tapa. While specific iterations will reflect the uniqueness of each artist and medium, the animated barkcloth would reflect the visual sovereignty of distinct communities and cultures, while affirming their material and spiritual interconnectedness across the Great Ocean.[63]

Accentuating the visual sovereignty of Samoan and Tongan patterns, artists Vaimaila Urale and Sione Faletau orient animated textiles toward a Moana media ecology in their new site-specific works commissioned and developed for *Interlaced*. Each artist translates Te Moana-nui-a-Kiwa textile patterns into electronic and digital media, while retaining the patterns' cultural significance and intimate connection to place.

Vaimaila Urale's art practice uses a selective set of typographical ASCII symbols found on all computer keyboards to compose intricate patterns that encode Samoan symbolism informed by tattoo and tapa design. Working with the interface of a text processor, Urale arranges rows of chevron angle brackets < > and diagonal slashes / \ that evoke concentric radiating diamonds, tern trails, oceanic and

celestial forms. These patterns are often developed as site-specific works and realised with materials varying from ink to sand. *O Le Sami Po Uliuli* (2024) is a textile wall installation developed for the Len Lye Centre. The installation comprises 180 cloth tiles that iterate eighteen unique template patterns. This tiled arrangement recalls the siapo system of carefully calculated potu (segments) filled with variably arranged upeti (pattern tablet) designs.[64] While tattoo and tapa patterns are customarily imprinted into the epidermal layers of human and plant bodies, *O Le Sami Po Uliuli* embeds graphic marks into fabric through a sublimation dyeing process. What appears from a distance as a large single canvas is revealed in proximity to be a coordinated multiplicity of sovereign individuals. Pinned next to each other, the fabric tiles breathe collectively on the architectural surface.

O Le Sami Po Uliuli can also be read as materialised digital poetry. The digital symbols that comprise Urale's graphic vocabulary serve communicative functions in computer programming. Forward slashes establish file pathways, and backslashes define shortcuts and line breaks. Angled brackets are used to enclose pieces of code in nested envelopes, demarcating the beginning and end of algorithmic blocks. In Urale's work, the precise words and instructions are not readily visible, but the dynamic gestures — connecting, separating and nesting — remain. The composition's iridescent blue background asserts that space is not an empty void, but a dense screen connected by the interval of the Space bar, the invisible impulse that binds the other symbols together in the realm of the vā. As poet Albert Wendt defines:

> Vā is the space between, the betweenness, not empty space, not space that separates but space that relates, that holds separate entities and things together in the Unity-that-is-All, the space that is context, giving meaning to things.[65]

Titled after the sea darkened by night, *O Le Sami Po Uliuli* looks onto the oceanic horizon and reflects on recurring patterns of reproduction, migration and predation that affect the Moana.

Sione Faletau's digital animation is also attuned to the dynamic spirit and communicative power of Moana patterns. Faletau's media practice translates sonic waveforms into animated visual forms shaped by the design vocabulary of Tongan ngatu and lalava (architectural lashing).[66] Tongan ngatu and lalava traditions were historically divided into separate material categories and gender roles, but they share a material connection in coconut sennit and a formal relationship in their related kupesi (patterns) that appear across both artforms.[67] Frequently referencing astronomical, navigational, environmental and political milestones, kupesi function like mnemonic devices for cultural knowledge and history.[68] They also provide a tangible lineage that entwines the Tongan diaspora across geographic and cultural borders.

With *Peau Lalava o Moana — The Moana that Binds Us* (2024), Faletau binds together visual and sonic perception with the architectural space of the

64 Paul Tauiliili, *The Art of Samoan Siapo* (Pacific Resources for Education and Learning, n.d.), https://www.americanquarterly.org/sites/default/files/Castro%20PDF.pdf

65 Albert Wendt, "Tatauing the Post-Colonial Body," New Zealand Electronic Poetry Centre, https://www.nzepc.auckland.ac.nz/authors/wendt/tatauing.asp. Originally published in *Span* 42–43 (April–October 1996): 15–29.

66 Sione Faletau, "Anga'i Tangata Faka-Tonga: Tongan Masculinity" (PhD dissertation, The University of Auckland, 2020).

67 Kaeppler, "The Structure of Tongan Barkcloth Design: Imagery, Metaphor and Allusion," 291–308.

68 Karen Stevenson, "Lalava-ology: A Pacific Aesthetic," in *Filipe Tohi: Genealogy of Lines — Hohoko ē Tohitohi*, ed. Simon Rees (Govett-Brewster Art Gallery, 2002), 17.

69 'Okusitino Māhina, "Tufunga Lalava: The Tongan Art of Lineal and Spatial Intersection," in *Filipe Tohi: Genealogy of Lines — Hohoko ē Tohitohi*, 5.

70 The concept of artistic practices as living genealogical maps is elaborated in relationship to Māori knowledge systems by Paul Tapsell in his influential essay "The Flight of Pareraututu: An Investigation of Taonga from a Tribal Perspective," *Journal of the Polynesian Society* 106, no. 4 (1997): 365–366.

Len Lye Centre and its surrounding environment. Developed in response to the wavelike exterior contours of the gallery, the ocean soundwaves recorded on the nearby shoreline are translated by Faletau into pulsating kupesi that visually rhyme with the amplitude and timbre of sound. These animated patterns are mapped onto the curvilinear gallery wall, so that the sound and image ricochet off the corners, building recursive audible and visible echoes that perceptually shift when a viewer changes their walking speed or position.

In lalava lashing, two different colours of coconut sennit are used to tightly bind the joints of houses and boats, forming ornamental motifs that hold structures together physically and spiritually. 'Okusitino Māhina describes lalava as an emblematic artform of Moana thought and practice. Lala, he notes, refers to the interlacing of two strands (la / la) across the relational space of the vā. Lalava thus models a creative process, by which the interlacing and binding of disparate forms produces harmonious compositions:

> Art can, thus, be defined as the rhythmic and symmetrical reorganisation of time and space that produces harmony and beauty. A type of ta–va, time–space, transformation, art is formally investigative and functionally therapeutic.[69]

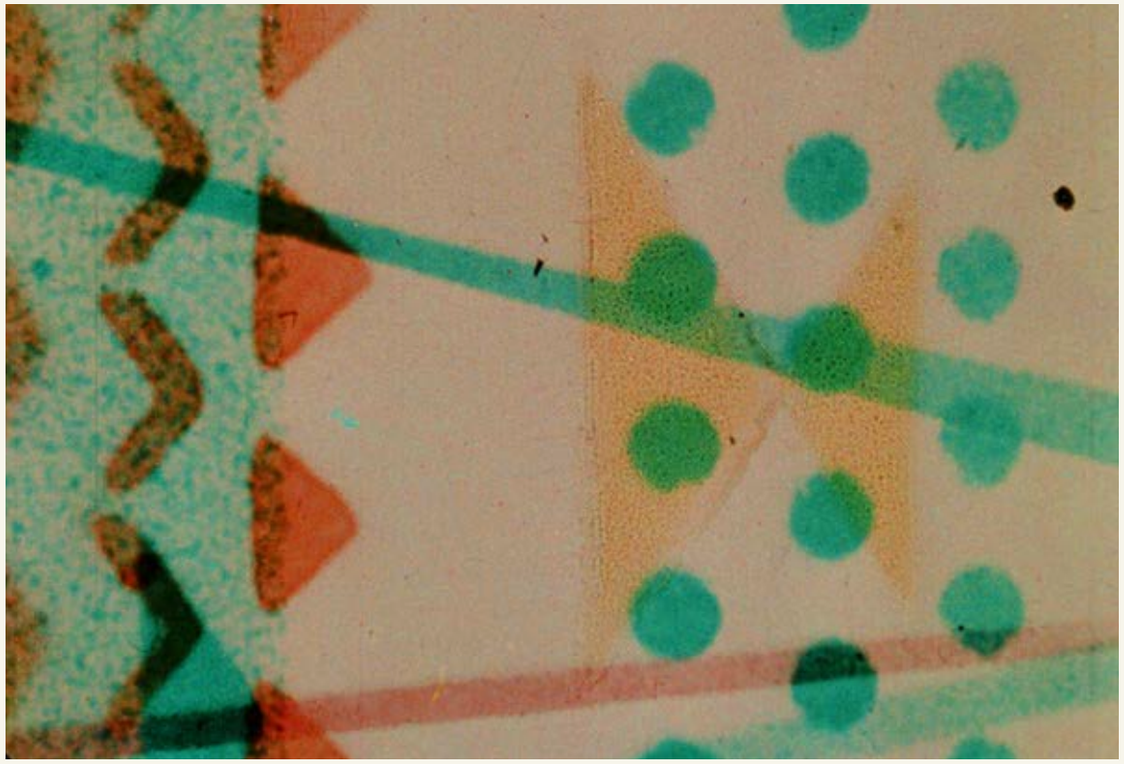
Lalava embodies the belief that cultural and social ties are not inherently given. Like architectural joints, they must be creatively reinforced through a process of active binding. Faletau's *Peau Lalava o Moana — The Moana that Binds Us* responds to this imperative by binding together and organising the rhythms of sound and image, transforming the gallery's concrete surface into a monumental weave of light and sound. The patterns dance with sensory abundance, enveloping visitors and optically warping or bending in accordance with their distinct positions.

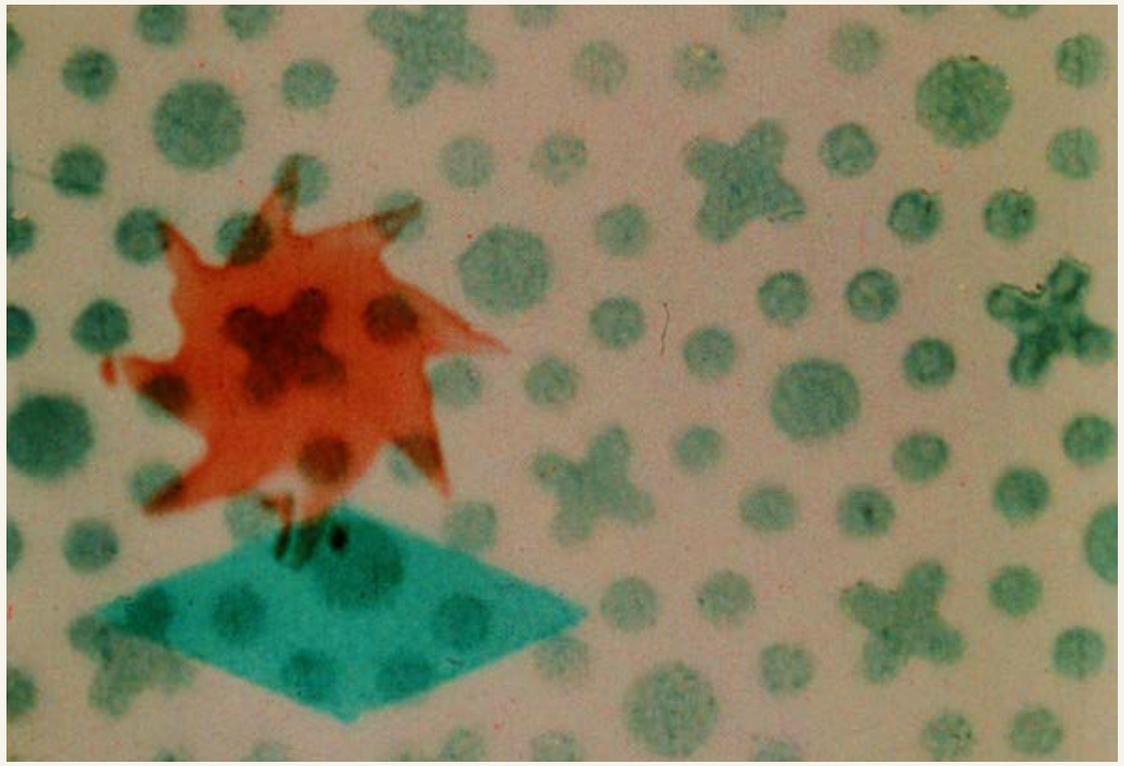
Whereas Urale's *O Le Sami Po Uliuli* cloaks the gallery with a synthetic fabric skin, Faletau's *Peau Lalava o Moana — The Moana that Binds Us* transforms it into a dynamic screen. Both works extend digital lineages of Moana practice, reanimating architectural surfaces with rippling, stretching patterns. In their works, migrating patterns of Te Moana-nui-a-Kiwa come alive — are animated — by strengthening the threads of intergenerational connection and activating their potency as living genealogical maps.[70]





↑ Len Lye, studies of tapa cloth, c. 1934.

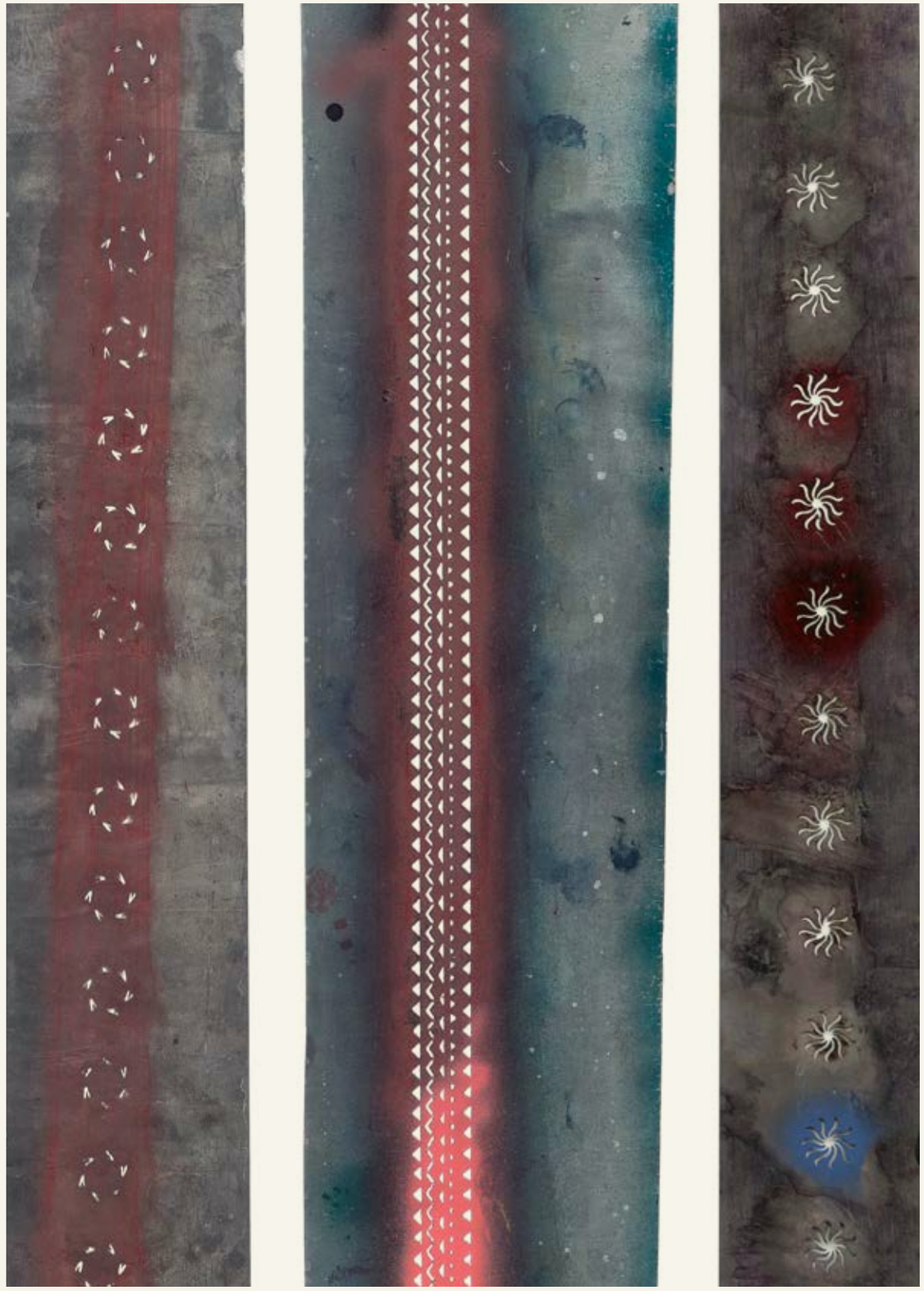




↑ Len Lye, *Kaleidoscope*, 1935. film stills.



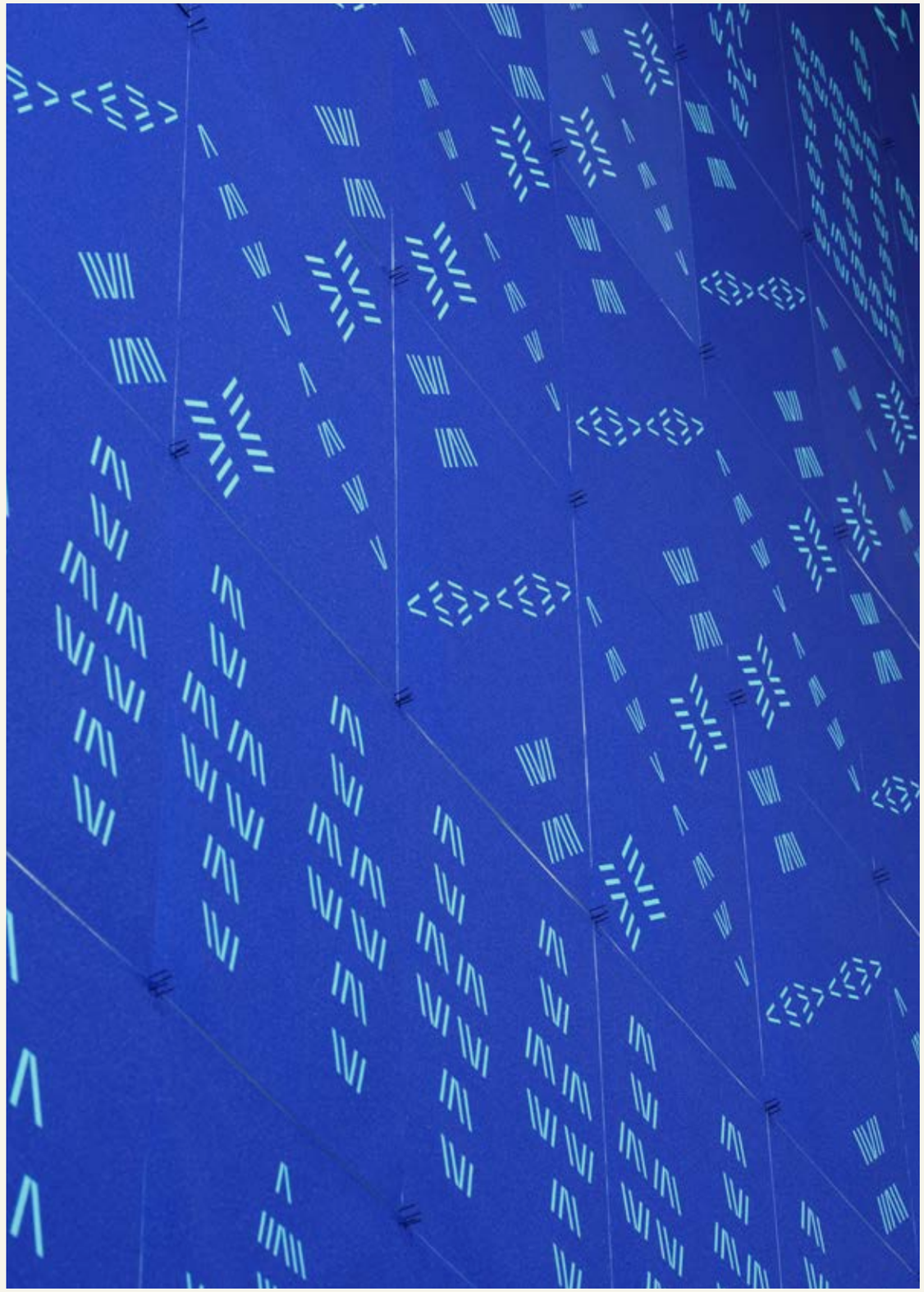
↑ Len Lye, *Kaleidoscope*, 1935. installation view.



↑ Len Lye, stencils from *Kaleidoscope*, 1935.

↑ Siapo 'elei, bark cloth (detail), names unrecorded, undated, 132 × 144cm. courtesy of the Auckland War Memorial Museum Tāmaki Paenga Hira.





← ↑ Vaimaila Urale, *O Le Sami Po Uliuli*, 2024. installation views.



↑ Sione Faletau, *Peau Lalava o Moana — The Moana that Binds Us*, 2024. installation view.









← ↑ Sione Faletau, *Peau Lalava o Moana — The Moana that Binds Us*, 2024. installation views.

Back-and-Forth



← Faig Ahmed, *Hal*, 2016.

Popular histories of animation often trace the artform's origins to cave paintings and shadow puppetry, where figures appear to move of their own accord under flickering illumination. How might our understanding of animation change by proposing a textile genealogy crafted from fibrous tissue — a genealogy tied to dancing veils, weaving samples and patterned barkcloth? Exploring the connections between animation and textiles, *Interlaced* considers animation as an artform that folds, plaits and embroiders moving images to transform media screens into dynamic surfaces of crafted seams and vibrant patterns. Moving in the complementary direction, the exhibition also asserts the animacy of materials, gestures and patterns already embedded in textile media.

The relationship between animation and textiles comes to the fore in the work of Faig Ahmed, whose carpet *Hal* (2016) embodies many of the exhibition's themes. Like many of Ahmed's works, *Hal* deconstructs a traditional Azerbaijani carpet pattern to evoke a moment of dynamic metamorphosis. The ordered composition appears warped and liquified like a manipulable digital surface. Embracing visual elements associated with computer image artefacts, Ahmed establishes the woven carpet as a precedent for aesthetics of digital resolution and compression. *Hal* also invites a consideration of the intergenerational knowledge and gendered manual labour that informs contemporary cultural production. Although the carpet presents the façade of a synthetically generated image, it was handmade by a workshop of skilled women weavers in Azerbaijan. In *Hal*, the material and cultural relationship between animation and textiles is crystallised into a multifaceted surface that can be read in symmetrically inverse directions — a carefully ordered composition is disintegrating into an amorphous spill; and/or pools of colour-coded information are self-organising into a resolved configuration.

A textile genealogy of animation requires turning away from chronological media histories toward pursuing recurring motifs and underlying patterns. Chronological histories favour sequential linear progression, such as progression from analogue to digital media, or progression from 'static' textile surfaces to 'kinetic' animated screens. Interlaced histories, in turn, consider connective threads and back-and-forth relationships, appreciating the textile dimensions of moving-image media and recognising the animated qualities of fabric and cloth.



↑ Installation view of *Interlaced: Animation & Textiles*, 2024.

List of Works

Faig Ahmed, *Hal*, 2016. wool, 196.5 × 165 × 87.5cm. ed. 3/3, Collection of the National Gallery of Victoria, Melbourne. courtesy of the National Gallery of Victoria, Melbourne. *Interlaced* installation view: Sam Hartnett.

Danielle Brathwaite-Shirley, *THE FIRST TRANS THOUGHT*, 2021. machine-embroidered tapestry, projection, sound, 200 × 300cm, 2 min. courtesy of the artist. *Interlaced* installation view and detail image: Sam Hartnett.

Jon Michael Corbett, *Four Generations*, 2015. moving image, silent, 1 hour 30 min. courtesy of the artist and Indigenous Art Collection, Crown-Indigenous Relations and Northern Affairs Canada.

Kelly Egan, *Athyrium Filix-Femina (for Anna Atkins)*, 2016. acetate and polyester film, splicing tape, fishing line, 35mm film, moving image, sound, 228.6 x 182.88cm, 4:18 min. courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

Kelly Egan, *c: won eyed jail*, 2005. acetate and polyester film, splicing tape, thread, fishing line, 35mm film, moving image, sound, 228.6 × 182.88cm, 4:40 min. courtesy of the artist. *Interlaced* installation view and detail image: Sam Hartnett.

Sione Faletau, *Peau Lalava o Moana — The Moana that Binds Us*, 2024. moving image, sound, 5 min. courtesy of the artist. *Interlaced* installation views: Sam Hartnett.

Footprints Studio, Joyce Clissold, Cinema [sample], c. 1920–50. linen, silk chiffon, 20 × 16.2cm; Rocky Cave [swatch], c. late 1930s. silk chiffon, 20 × 19.6cm; Rocky Cave [swatch], c. late 1930s. silk chiffon, 5.5 × 16cm; Large Scherezade [swatch], c. 1920–50. block-printed unbleached linen, 31.5 × 19.5cm; Small Scherezade [swatch], c. 1920–50. silk, linen mix, 12 × 9.5cm; Seabugs [swatch], c. 1930. silk crepe, cotton, silk chiffon, 10 × 14cm; Snake [swatch], c. 1927–32. natural-coloured linen, 33.5 × 15cm; Square and dot design [swatch], c. 1930s–40s. silk, 14 × 20cm; border decorations [printing blocks], c. 1930s–40s. wood, lino, 33.6 × 40cm; tiny block of diamond and hook motif [printing block], c. 1930s–40s. wood, lino, 3.4 × 2.4 × 1.1cm. courtesy of the Central Saint Martins Museum & Study Collection.

Sabrina Gschwandtner, *Guy-Blache Serpentine Dance Square*, 2021. 35mm b/w film, polyester thread, LED, 36.8 × 37 × 8cm. courtesy of the artist and Shoshana Wayne Gallery, Los Angeles. detail image: Ian Byers-Gamber, courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

Marguerite Harris, *Sewn Film*, 2016–24. stitched celluloid, moving-image transfer, dimensions variable. courtesy of the artist. *Interlaced* installation views: Sam Hartnett.

Aubrey Longley-Cook, *Runaway*, 2010. fabric, cotton, wood, moving image, silent, 15.2cm diameter, 2 min. courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

Len Lye, *Color Cry*, 1952–53. colour (Kodachrome), moving image, sound, 3 min. courtesy of the Len Lye Foundation. digital version from material preserved and made available by Ngā Taonga Sound & Vision with the support of Govett-Brewster Art Gallery.

Len Lye, stencil from *Color Cry*, c. 1950s. glass, cellophane, 52 × 13cm. courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.

Len Lye, *Convolution (Ribbon Snake)*, 1965 (2008 reconstruction). plastic bands on metal armature, electric motor, wooden base, 240 × 360 × 4cm. courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.

Len Lye, glass stencil from *Life's Musical Minute*, 1953. glass, beads, tape, 65 × 16.5cm. courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.

Len Lye, *Kaleidoscope*, 1935. colour (Dufaycolour), moving image, sound, 4 min. courtesy of the Len Lye Foundation. digital version from material preserved and made available by Ngā Taonga Sound & Vision with the support of Govett-Brewster Art Gallery. *Interlaced* installation view: Sam Hartnett.

Len Lye, stencils from *Kaleidoscope*, 1935. paint on metal and paper, dimensions variable. courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.

Len Lye, studies of tapa cloth, c. 1934. gouache on paper, each 395 × 495 mm. courtesy of the Len Lye Foundation Collection, Govett-Brewster Art Gallery.

Jodie Mack, *Point de Gaze*, 2012. moving image, silent, 4:45 min. film and image courtesy of the artist.

Lindsay McIntyre, *seeing her*, 2020. moving image, silent, 3:28 min. courtesy of the artist.

Huw Messie, *Bizarre Fabrication Series of Algorithmic Embroidery Animation: Piercing Strand Theory, Self Stowage, Solitary Dependency, Tensioned Attaching*, 2021. moving image, sound, 3:18 min. courtesy of the artist.

Miracle de Mille, *Human Repeat*, 2016. moving image, sound, 6 sec. courtesy of the artists.

Ng'endo Mukii, *Mtindo*, 2016. moving image, sound, 2:40 min. courtesy of the artist.

Kate Nartker, *Parting*, 2020. mercerised cotton, moving image, silent, 84.5 × 115cm, 26 sec. artwork and images courtesy of the artist.

Kate Nartker, *Pattern Practice*, 2020. mercerised cotton, moving image, silent, 77.5 × 105cm, 35 sec. artwork and images courtesy of the artist.

Ishu Patel, *Bead Game*, 1977. moving image, sound, 5:42 min. courtesy of the National Film Board of Canada.

Pathé frères, *Mode Uit Parijs 2*, 1911–25. moving image, silent, 12:35 min. film and images courtesy of the Eye Filmmuseum, Amsterdam.

Pathé studio, *Loïe Fuller*, 1905. moving image, silent, 1:5 min. film and image courtesy of the British Film Institute National Archive.

Izabella Pruska-Oldenhof, *Echo*, 2007. 16mm film, insect and plant material, Plexiglas, moving image, sound, 9:40 min. courtesy of the artist. *Interlaced* installation views and detail: Sam Hartnett.

Izabella Pruska-Oldenhof, *Garden of Earthly Delights*, 2008. 16mm film, insect and plant material, Plexiglas, moving image, silent, 8:16 min. courtesy of the artist. *Interlaced* installation views and detail: Sam Hartnett.

Siapo tasina, bark cloth, names unrecorded, undated, 180 × 147cm. artwork and image courtesy of the Auckland War Memorial Museum Tāmaki Paenga Hira.

Harry Smith, *Untitled Seminole Patchwork (Film No.15)*, c. 1965–66. moving image, silent, 8:58 min. courtesy of the Anthology Film Archives New York. *Interlaced* installation view: Sam Hartnett.

Studio Zeitguised, *geist.xyz*, 2016. moving image, sound, 2:30 min. courtesy of the artists. *Interlaced* installation view: Sam Hartnett.

Caitlin Thompson, *Swamped (eye roll)*, 2023. hand-stitched fussy-cut appliqué, cotton quilt fabric, thread, digital animation, sound, 68 × 68cm, 2 mins. music excerpt "Spirits Entwined" by S. Wurm (M. Tiesenhausen). courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

Vaimaila Urale, *O Le Sami Po Uliuli*, 2024. digital-printed fabric, 620 × 352cm. courtesy of the artist. *Interlaced* installation views: Sam Hartnett.

Jennifer West, *Google Earth Searches to Cave Art Locations — Cave of the Hands and Chauvet Cave*, 2023. 35mm filmstrips, inkjet print on clear film, phytograms, ink, dye, thread, Plexiglas, 134 × 84cm. artwork and images courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

Jennifer West, *Orange Haze Film Quilt*, 2023. 35mm and 70mm filmstrips, inkjet print on clear film, ink, dyes, volcanic ash hand-made dye, permanent marker, moth wing, thread, Plexiglas, 134 × 84cm. artwork and images courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

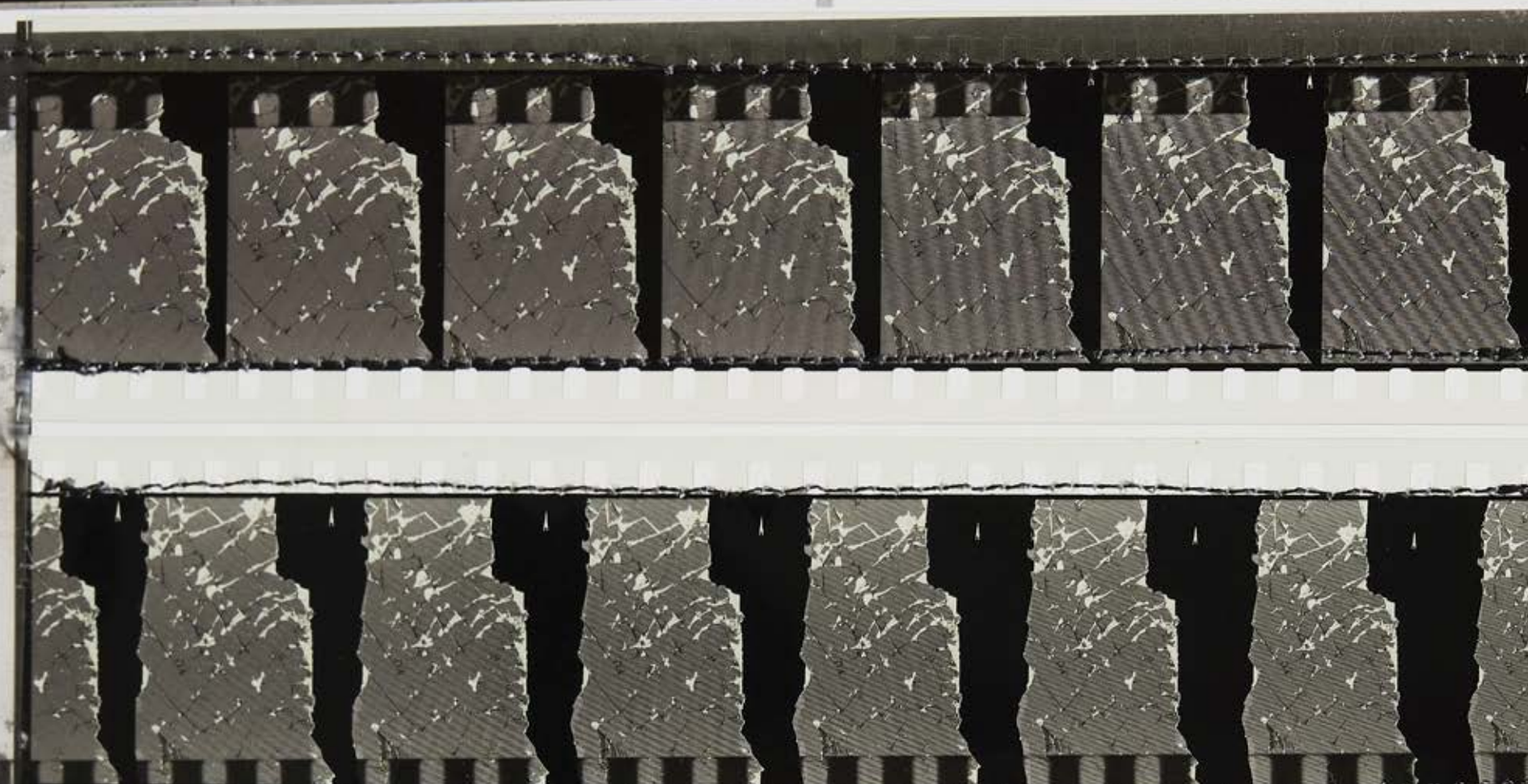
Jennifer West, *Screen Debris, Plants and Nets Film Quilt*, 2023. 35mm and 70mm filmstrips, inkjet print on clear film, phytograms, ink, dye, permanent marker, thread, Plexiglas, 129.54 × 83.82cm. artwork and images courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

Jordan Wong, *Mom's Clothes*, 2018. moving image, sound, 5:35 min. courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

Shaheer Zazai, *Resident*, 2017. moving image, silent, 1:10 min. courtesy of the artist. *Interlaced* installation view: Sam Hartnett.

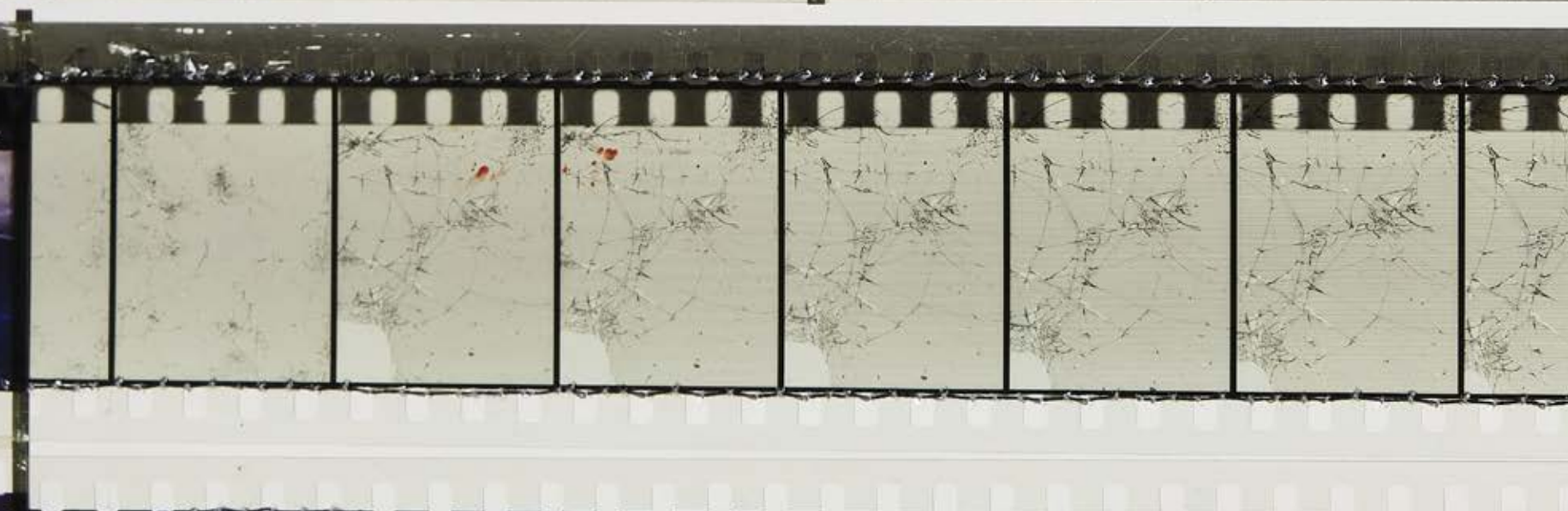












Interlaced: Animation & Textiles explores the layered relationship between these two artforms. This lavishly illustrated book covers more than a century of media art, from early cinema experiments to contemporary algorithmically generated images. Braiding together analogue and digital media, *Interlaced* explores the enduring capacity of textile forms to make visible animating forces and to reanimate intergenerational memory. Published on the occasion of the groundbreaking exhibition at the Govett-Brewster Art Gallery | Len Lye Centre, the book features the work of twenty-four artists who embroider with projected light, quilt celluloid films and weave digital tapestries.

Curator and media scholar Alla Gadassik proposes a textile genealogy of animation tied to dancing veils, weaving samples and patterned barkcloth. The work of renowned filmmaker Len Lye serves as a connective thread in her account of textile traditions and forms that have shaped animation. *Interlaced* explores animated cloth as a technology of enchantment, reveals the fabric of film and digital imaging, contends with feminised labour sustaining textile and media production, and traces globally distinct lineages of animated textiles.

Artists: Faig Ahmed, Danielle Brathwaite-Shirley, Jon Michael Corbett, Kelly Egan, Sione Faletau, Footprints Studio, Sabrina Gschwandtner, Marguerite Harris, Aubrey Longley-Cook, Len Lye, Jodie Mack, Lindsay McIntyre, Huw Messie, Miracle de Mille, Ng'endo Mukii, Kate Nartker, Ishu Patel, Pathé studio, Izabella Pruska-Oldenhof, Harry Smith, Studio Zeitguised, Caitlin Thompson, Vaimaila Urale, Jennifer West, Jordan Wong, Shaheer Zazai.

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