

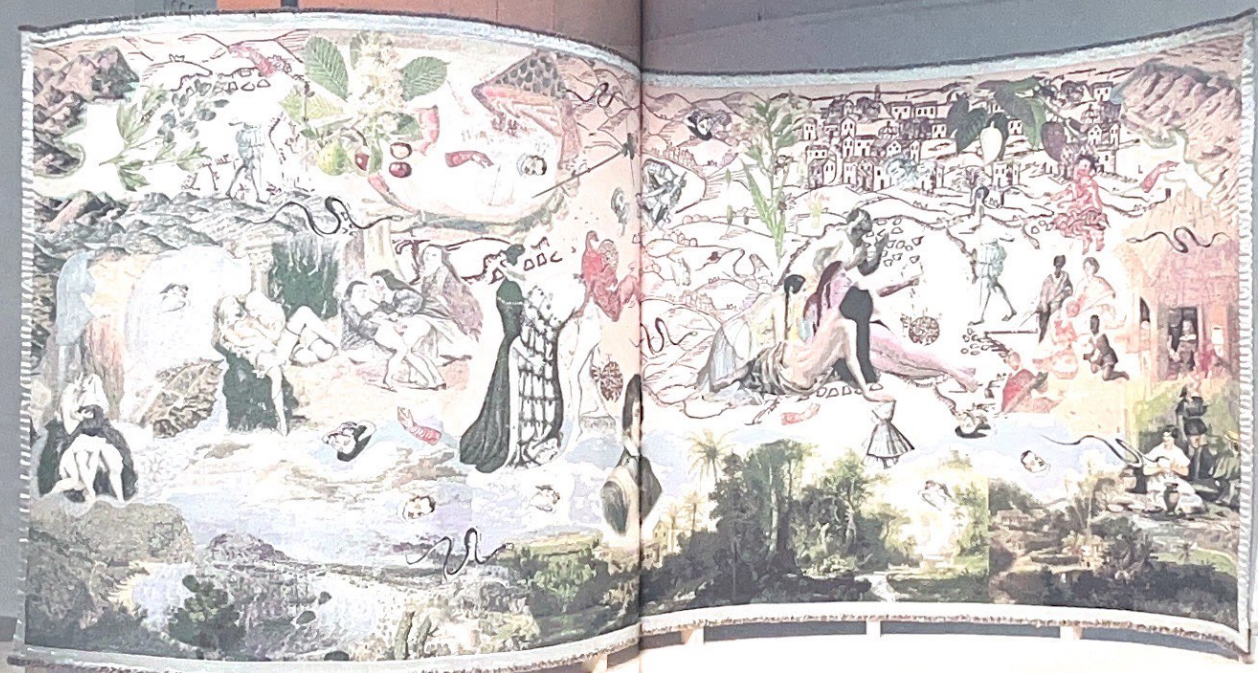
MONSTROUS GLITCHES
AND LOVING INTENSITIES
On the exhibition *Unweaving
the binary code*

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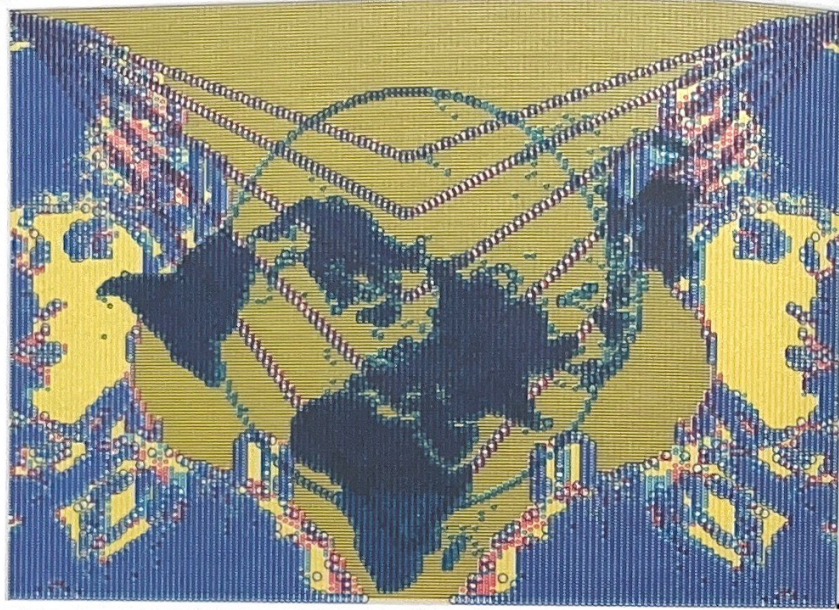
“Is there an alternative to the binary system?” I asked electronic systems researcher Torbjørn Karl Svendsen in an advisory meeting in 2021 during the preparation of the exhibition *Unweaving the binary code*. The binary system—that is, the zeros and ones of digital code that shape his field of expertise, but also the reductionist divide between male and female genders in Western cultures, between nature and culture, between organic and technologic, between us and them, as well as numerous other dichotomies. I long for ways of troubling or glitching these divides, as they too often cause damaging oppositions that produce static hierarchies and result in various modes of oppression.

The exhibition *Unweaving the binary code*, which I am curating with Katrine Elise Pedersen, explores the code used in digital computers alongside the warp and weft components of weaving. The exhibiting artists, each in their own way, both cite and search for ways to transcend those and other binaries. While the histories and operational principles of coding and weaving seem unlike, they are closely connected. **Pearla Pigao’s** tapestries made from metallic string and sonically activated through an algorithm embody this interrelation, whereas **Charlotte Johannesson’s** feminist psychedelic plotter prints and textiles are made by utilizing the binary system inherent to both computer graphics and weaving.

Weaving is traditionally considered a feminized activity and has, as such, been valued and remunerated less than other forms of labor, whereas computers are, still to this date, largely masculinized. Throughout Western art history, weaving has been belittled as a craft and diminished in comparison to art. Legendary artist Hannah Ryggen (1894–1970), who lived and worked in Ørland across the fjord from Trondheim, was one of the most inspiring voices questioning this divide between art and craft. It was with her



Mercedes Azpilicueta, *The Lieutenant-Nun is Passing: An Autobiography of Katalina, Antonio, Alfonso and More*, 2021. Jacquard tapestry (merino wool, cotton, metallic yarn), 160×400 cm.



Charlotte Johannesson, *Save us*, 1981–1986.
Original plotter print, 23,5 × 31,5 cm (unframed).

uncompromisingly feminist, antifascist, innovative tapestries that the idea for the exhibition began. From today's perspective and with the works of Ryggen and eleven contemporary artists, *Unweaving the binary code* asks what imaginaries we can conjure that undo dyadic divides for more complex, interwoven, and equitable relations.

Ada

During nine months in 1842–43, mathematician Ada Lovelace (1815–1852) developed what would become the very first computer program. Lovelace, like many women at the time, had been bedridden for much of her childhood and teenage years. She used that time to read and study, becoming one of the most promising mathematicians of her time. In Victorian England, it was thought that it was reading that made women sick, but historians today suggest that women often feigned sickness to have time and space to read at a moment when they were largely excluded from higher education. Needless to say that mathematics, science, and technology were hardly considered women's domains. And yet, Lovelace developed a world-changing concept—code—from within precisely those fields.

Ten years prior to her groundbreaking invention, in 1833, Lovelace had joined her mother to attend the presentation of a new machine created by inventor and engineer Charles Babbage. Called the Difference Engine, the apparatus was a mechanical calculator able to perform series of calculations with various variables, extract roots, raise numbers to the second and third powers, and store data for later retrieval.¹ Most people attending the presentation are said to have looked at the object in bewilderment, while Lovelace, even though she was only a teenager, understood the significance and beauty of the invention. She began working with Babbage shortly after this encounter.

A decade later, Lovelace annotated an article that military engineer Luigi Menabrea had written in response to Babbage's newest invention, the Analytical Engine. This machine was a further development from the Difference Engine, designed to perform arithmetic operations based on punch cards. Lovelace's speculative discovery was her understanding of the potential of the apparatus—an early computer—to go beyond arithmetic calculations. She realized that Babbage's use of punch cards bore semblance to the cards utilized in Jacquard looms. In her annotations to Menabrea's article, she wrote: "the Analytical Engine weaves algebraic patterns just as the Jacquard loom weaves flowers and leaves."² First conceived in 1801, the Jacquard loom allowed weavers to automatize the creation of elaborate patterns. The punch cards enabled the creation of complex combinations of warp and weft by working



Installation view of the exhibition *Unweaving the binary code*—Hannah Ryggen Triennale at Kunsthall Trondheim, showing works by Pearla Pigao and Mercedes Azpilicueta.



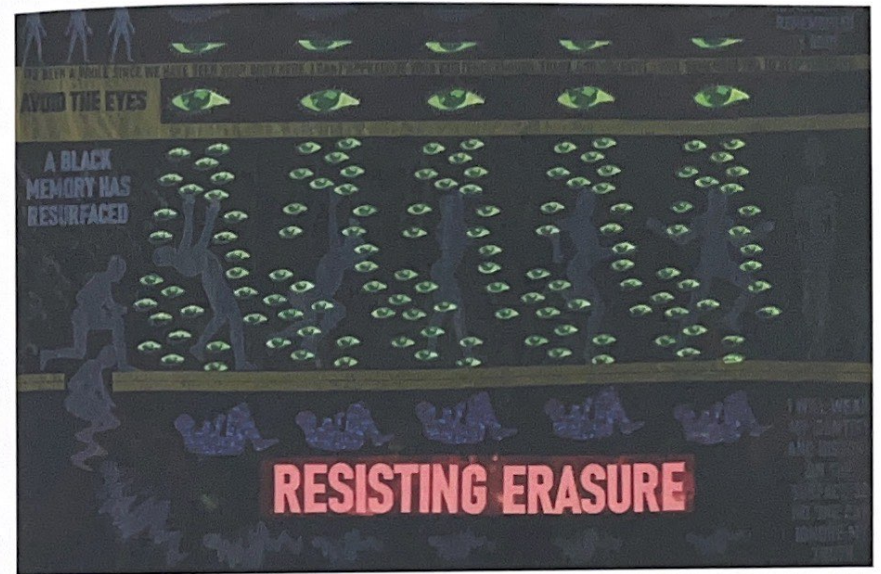
Tabitha Nikolai, *Ineffable Glossolalia*, 2017.
Virtual environment made in Unity game engine.

with simple commands composed of hole or no-hole, zero or one. The Jacquard loom revolutionized the textile industry, and Lovelace's translation of the weaving mechanisms to a computer program would change our world forever. Lovelace's footnotes become the base for the binary code still used in computing today. She rewrote history quite literally from the margins.

"A woman who weaves"

In the exhibition, Ann Lislegaard celebrates Lovelace's legacy in the form of a video depicting an animated spider weaving the mathematician's name, projected onto various mirror columns. Yet, to this date, Lovelace's pioneering position in relation to Babbage's inventions continues to be contentious, likely because she was a woman. Weaving, too is a technology with a history tied to hierarchical divisions of gender. In her study of weaving and gender in the Bauhaus (1919–1933), art historian T'ai Smith shows how textile work was looked upon derogatorily due to various intersecting reasons. Weaving, which was considered to be strictly a craft—not art—was thought of as belonging to the domestic sphere of the home. Crafts were considered amateurish forms of manual pastimes, usually performed by women. They were valued less than work performed by men, which was wage labor and industrial work aided by machines—all tropes of masculinity. Craft was relegated to the domestic realm as devoid of thought and without ends. Indeed, Smith quotes Bauhaus artist Oskar Schlemmer who wrote: "Where there is wool, there is a woman who weaves, if only to pass the time."³

The gender binary propped up in weaving contains various complexities. Shortly after the Jacquard loom was first introduced, and decades before Lovelace's groundbreaking invention, a secret organization of English textile workers, the Luddites, destroyed the machinery in factories in fear of their labor being replaced by mechanized work, with a peak of region-wide rebellions occurring between 1811–1816. The Luddites' sentiments were connected to a societal fear of alienation and de-individualization through the acceleration of modernity experienced at the time. Established identities were perceived to be under threat. The mechanization of labor threw questions of agency into high relief. If the machine takes over work, it seems that the human—a category at the time and to an extent still today legally and culturally largely exclusive to white Western males—and *his* assertion of will onto the world comes under attack. Labor historian Kathleen Canning writes: "The textile industry posed unique dangers to masculine identity, [...] the mechanized textile mills symbolized 'the problem of female competition in capitalism': they were the first



Danielle Brathwaite-Shirley,
THE FIRST TRANS THOUGHT, 2021.
Tapestry and moving image.

factories to make male workers superfluous, to 'cast the *Familienväter* [*fathers of families*] into the streets.'⁴ The binaries encompassing art and craft, men and women, active and passive, subject and object, are bound up in numerous anxieties, including that of wage labor in capitalism.

Craft trouble

The question of agency is not only at stake in the mechanization of labor through the Jacquard loom, but also in the ongoing tension between art and craft. In the twentieth century, during the Bauhaus and continuing throughout Hannah Ryggen's time, painting was considered the medium of individualistic expression of a rich interior life with true depth. Weaving, on the other hand, was thought of as a craft that because of the intermediary of the loom apparently lacked a clear subject, or an "I". Even though she didn't produce her weavings mechanically, Ryggen, too, was affected by this devaluation. In accordance with older Norwegian textile artist Frida Hansen, she denounced the divide between art and craft:

Just as a painter confronts a blank canvas, I believe the weaver ought to sit at the loom, without patterns, without other aids. Just as the painter creates from imagination on the canvas, I want the weaver to create the tapestry directly from imagination. Only then can weaving be art!⁵

While Ryggen considered her tapestries to bridge the divide between art and craft, the quote elucidates the biases of her time, including her own, and the struggle for weaving to be recognized as art.

T'ai Smith connects this hierarchy to notions of Western freedom. The European conception of freedom depends on a direct and linear relationship between the body, the intellect, and the tool (the brush). The agency of the weaver is put into question because the tapestry is created by the mechanics of the apparatus. The loom renders labor abstract and the maker passive—feminizing and othering the weaver in multiple ways. Weaving, and in particular mechanized weaving, puts into question values of human freedom—values that have been reserved for a few at the cost of women and racialized people. Those rendered passive are depreciated, pushed to the backgrounding sphere of the domestic, or belonging to "primitive" nature as opposed to culture. These backgrounds are both denigrated and at the same time necessary as a scene against which masculinized, patriarchal, and colonial agency can unfold. And yet, in great contradiction, that which was mourned as being lost during the Bauhaus and well into Ryggen's time were "female" values such as the

traditional family, notions of motherly nurturing, humanist principles in society, and natural or organic processes as opposed to industrialization.

Various artists in the exhibition complicate these simplistic oppositions. In Marilou Schultz's tapestries, she combines Navajo weaving patterns and techniques with digital phenomena such as the index charts of the stock market, rendering the divides between traditional and technological obsolete. Vaimaila Urale fuses precolonial Samoan art forms and ASCII code to create large-scale textile works that explore mark making as a form of storytelling open to multiple interpretations. Thania Petersen's tapestry *Al Hurra* (2019) appears to be dissolving, or burning, at the bottom. Part of a Muslim minority living in South Africa, she celebrates influential women who fearlessly defy various modes of categorization. Mercedes Azpilicueta's jacquard tapestry speculatively narrates the voyages of a contested historical figure, the Basque nun Catalina de Erauso. In the early 1600s, Erauso adopted several male identities to travel to the New World where s/he became a merciless conquistador while living as a man with the blessing of the Pope. Rather than dissolving the contradictions of what from today's perspective reads as progressive gender politics and Erauso's role in colonial violence, Azpilicueta asks us to consider their unresolved, entangled coexistence. Highlighting the agency of nonhumans, Himali Singh Soin's *Mountain, pixelated in the water* (2021) is a monumental silk-cotton tapestry depicting the soundwaves of ice crystals. Delicately woven, the textile incorporates the glitches of the Ikat dyeing technique used in Indonesia and India. The threads composing the elongated tapestry are dyed in symbolic colors such as indigo, gesturing to histories of trade, whereas the visualization of ice crystals smashing into each other and melting connects the forces of globalization with climate change.

Anxieties of zero

Anxieties expressed in binaries permeate history. In her treatise of Ada Lovelace, cultural theorist Sadie Plant shows that the introduction of algebra, invented by Indian mathematician and astronomer Brahmagupta, and arithmetic, developed by Persian mathematician, astronomer, and geographer Muhammad ibn Musa al-Khwarizmi, in the seventh and eighth centuries, respectively, produced great apprehensiveness in the Western world. Algebra, unlike the Roman numerals then still forming the base of mathematics in Europe, enabled expressing complex numbers through just ten digits (0, 1, 2, ... 9). The great invention of algebra was the flexibility and simplification offered by articulating values by combining a number's position with its specific value.

This openness freed signs of absolute meaning, destabilizing the established order. In a similar manner, in the exhibition, Allison Parrish's *Nonsense Laboratory* (2021) uses machine learning to shuffle, mangle, and recombine words, rendering language beyond static and untethering words from their established meaning.

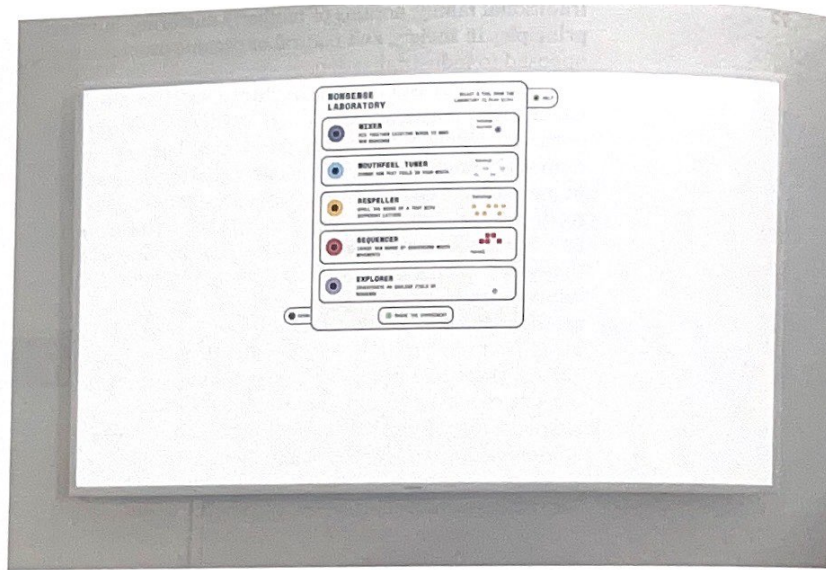
What's more, Western philosophy valued the number one over everything, not least in its insistence on one male god: "To the ancient Greeks, one was everything and anything, first and last, best and good, universal, unified."⁶ Zero, in contrast, represents a state of nothingness, of a fundamental lack. Indeed, the Church opposed the introduction of the number zero, arguing that its supposed absence was a threat to the godly order. Ones, as holistic entities, were conceived as male and propped against zeros, which were devalued as lack and fundamentally female—a view perpetuated by psychoanalysis well into the twentieth century. Interestingly, both Jacquard punch cards and electronic systems turn this binary around. A hole stands for a one and a blank represents a zero. A zero is also something.⁷

Unweaving

Let me here return to the conversation about binary systems in late 2021. Computer science researcher Letizia Jaccheri, who also participated in the advisory meeting, observed that while the binary code is an incredible invention allowing us to simplify and recombine disconnected entities, it is still just a translation. Like any model or rendition, code cannot fully account for the complexities of the world. Any translation must result in omissions, in something getting lost on the way.

But computers are not only digital. In analog computers, or organic systems, the binary as such does not exist. Our brains, unlike computers, send signals that only become effectual if they pass a certain threshold. It is a signal's intensity that makes a synapse fire. Only when the chemical process is strong enough does it trigger a synaptic transmission, and it is only then, after the threshold has been passed, that a signal (versus no signal) appears. In organic computers, and perhaps in all systems, supposedly clear divides between zero and one, between two genders, or between us and them, are auxiliary constructions. In these convincing simplifications, the binary appears as truth, not as a model with limitations.

Synaptic transmissions require intensities to be registered. In computing, glitches are moments of fervor that exceed the path pre-given by code. What, then, can we glean from such catalyzing intensities? Realizing the potential of glitches, curator Legacy Russell writes: "hacking the 'code' of gender, making binaries blurry, becomes our core objective, a revolutionary catalyst."⁸ In our exhibition, artist Tabitha



Allison Parrish, *Nonsense Laboratory*, 2021. Series of online tools, powered by Pincelate, a bespoke code library and machine created by the artist, front-end implementation by Allison Parrish, visuals and user experience by Jenny Goldstick and Tim Szetela, with support from Google Arts & Culture Experiments.

Nikolai's video game and installation, *Ineffable Glossolalia* (2017), pivots on her trans experience, which she describes as "in between, in flux, as occupying no fixed position."⁹ Nikolai invites users to navigate a virtual 3D narrative set inside the architecture of the simultaneously progressive—and in its support of eugenics, problematic—German Institut für Sexualwissenschaft (1919–1933), which was targeted by Nazi youth brigades during the book burnings. Glitching gender binaries while centering on Black trans experience, Danielle Brathwaite-Shirley's work combines a large-scale tapestry and motion-capture video game. Here, dichotomies are dissolved, asserting fluidity while demanding a space for and solidarity with Black trans people and their stories.

It was Lovelace's unignorable invention that ushered in the digital age. It was Ryggen's fierce defiance to established categories that secured her place in art history. It is the decolonial resistance to damaging categories of nature and culture, us and them, that is creating paths for a more sustainable future. It is through the uncompromising disavowal of gender binaries, by those who philosopher and curator Paul Preciado affectively calls beautiful "monsters," that we can overcome the heteropatriarchal oppressions producing the psychological and social costs of "anxiety, hallucination, melancholy, depression,"¹⁰ and more.

A tapestry, even if it is composed of threads organized as warp and weft, only comes into existence as a woven entity through bonds that do not exist apart. Cannot be thought apart. Ada Lovelace knew this when she wrote: "All, and everything is naturally related and interconnected. A volume I could write on this subject."¹¹ Hannah Ryggen celebrates this sense of unity and the intensity of love in her work in the exhibition, *Dikt av T. S. Eliot* (1952, *Poem by T. S. Eliot*). These intensities conjured by Ryggen as well as by the artists exhibiting alongside her have the power to produce glitches in established genres and binary divisions. They throw out of joint "handed-down notions of art practice/genre/gender,"¹² as critical studies researcher Sarat Maharaj writes of avantgarde textile practice. Might we, engendering intensive new imaginaries through glitches, not only overturn binaries, but rid ourselves of ostensible divides altogether? Let us unweave the binary system!

⁹ The full Difference Engine would have been room-size, but was never built—the version presented in 1833 was a smaller working model 1/7 the size the full machine would have been.

¹⁰ Luigi Menabrea, *Sketch of the Analytical Engine invented by Charles Babbage* (1843), translated and annotated by Ada Lovelace, Note A.

¹¹ Oskar Schlemmer quoted in Tai Smith, *Bauhaus Weaving Theory*:

From Feminine Craft to Mode of Design (Minneapolis and London: University of Minnesota Press, 2014), xxvii.

¹² Kathleen Canning, *Languages of Labor and Gender: Female Factory Work in Germany, 1850–1914* (Ann Arbor: The University of Michigan Press, 2002), 3–4. Canning quotes Robert Willbrandt, *Die Weber in der Gegenwart* (Jena: Gustav Fischer, 1906), 1; 124.

¹³ Hannah Ryggen quoted and translated from "Kvinner og hjem. Nye veier i vevekunsten. Ikke monster og kopiering, men skapende fantasi," *Adresseavisen*, May 3, 1930, in Marit Paasche, *Hannah Ryggen: Threads of Defiance* (London: Thames and Hudson, 2019), 34.

¹⁴ Sadie Plant, *Zeros + Ones: Digital Women + the New Technoculture* (London: Fourth Estate, 1997), 54.

¹⁵ Feminist philosopher Luce Irigaray

writes: "Women diffuse themselves according to modalities scarcely compatible with the frame work of the ruling symbolics. Which doesn't happen without causing some turbulence, we might even say some whirlwinds, ought to be reconfinned within solid walls of principle, to keep them from spreading to infinity. Otherwise they might even go so far as to disturb that third

agency designated as the real—a transgression and confusion of boundaries that it is important to restore to their proper order." Luce Irigaray, *This Sex Which Is Not One* (Ithaca: Cornell University Press, 1985), 106.

¹⁶ Legacy Russell, *Glitch Feminism: A Manifesto* (London and New York: Verso, 2020), 25.

¹⁷ Tabitha Nikolai, *Ineffable Glossolalia*,

<https://tabithanikolai.com/Ineffable-Glossolalia>.

¹⁸ Paul B. Preciado, *Can the Monster Speak?* (London: Fitzcarraldo Editions, 2021), 53.

¹⁹ Lovelace quoted in Plant, *Zeros + Ones*, 11.

²⁰ Sarat Maharaj, "Arachne's Genre: Towards Inter-Cultural Studies in Textiles," *Journal of Design History* 4, no. 2 (1991), 75–96, 77.