

Textile Narratives: Rhythmic Tactile Architectures

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Abstract

The work investigates the reinterpretation of ancient textile practices, examining the development of visually and tactile architectures that incorporate coding and rhythmic elements. It aims to recode textile configurations by using traditional techniques to create hybrid storytelling textiles. By intertwining multiple narratives within soft architecture, a story of environmental disaster unfolds, showcasing the intersection of computational methods and environmental storytelling. Additionally, it highlights the convergence of traditional practices with contemporary computational methods, expanding the horizons of textiles and providing a platform for diverse voices and cultural perspectives to be woven into a tapestry of storytelling tectonics.

1 Gathering narratives from the burnt forest.

Cultural Significance of Textiles in Storytelling

Textiles have played a significant role in conveying narratives throughout various historical periods. One of the examples can be seen in ancient Greece, where they understood and used the transformative power of textiles. People have effectively shared stories, made connections, and preserved cultural values through successive generations by using patterns and myths (Barber 1992). Greek mythology showcased ample examples of weavers, fibers, patterns, and looms being utilized to communicate untold stories and amplify the voices of women during significant events. Female characters, such as Philomena, skillfully incorporated their personal narratives of suffering and betrayal into the fabric, utilizing textiles as a means of seeking justice and raising awareness about the injustices they experienced (Kruger 1994 p.66). In a similar way, the weaving techniques employed by Penelope and Arachne served as a means of conveying notions of defiance,



2 Rhythmic pixels.

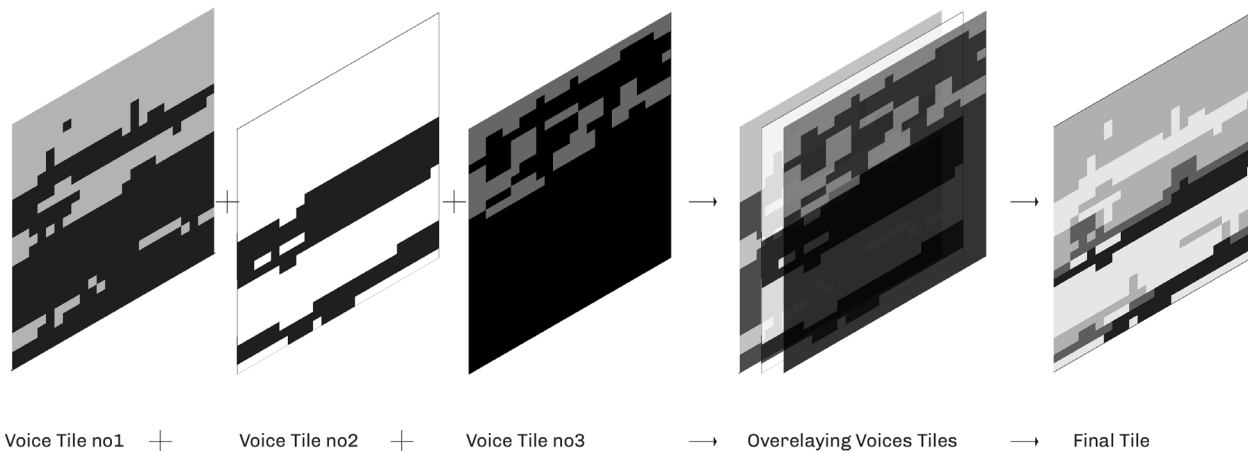
autonomy, and dissatisfaction with divine authority (Kruger 1994 p.98 -106). In addition to mythology, research has demonstrated that textiles have incorporated not just mythical narratives, but also historical events, social contexts, and notable individuals into their woven fabric (Barber 1992). This intricate fusion of myth and reality reinforces the profound connection between textiles, storytelling, and the preservation of cultural memory.

Interweaving Rhythm and Code

The relationship between patterns, storytelling, and fabric in textile creation has been widely explored (Nosch 2014 p. 92). Studies have emphasized the interplay between narrative, song, rhythm, pattern, and textile fabrication (Tuck 2009; Nosch 2014). An example of this can be observed in the practices of weavers coming from Northern India and Central Asia, who skillfully integrate rhythmic chants into their textile production, seamlessly interweaving them with the art of storytelling (Tuck 2006; Howells 2015, p. 67). Woven patterns were synthesized through repetitive phrases, considering the interrelationship between elements (Tuck 2006).

One example of a cloth that exhibits these qualities is the Navajo saddle blankets, which include a weaving method that is deeply rooted in rhythmic songs and prayers. Those familiar with the songs and prayers can visually discern the rhythmic variations interwoven into the blankets, amplifying their significance (Willink 1996 p.70). Weavers who have examined these pieces possess the ability to recognize and appreciate the rhythmic patterns intricately integrated within the fabric (Willink 1996 p.70). Additionally, Navajo weavers employ weaving to create a sense of place, establish balance and order from disorder, and explore the fusion of mythological and historical associations. They maintain a close connection with their environment and draw inspiration and techniques from neighboring cultures. Notably, variation is intentionally embraced in Navajo textiles, as none are perfectly symmetrical or identical.

Within the contemporary practices of textile design and fabrication, there exists a clear link between textile patterns and the digital realm. This connection is evident due to the ability to translate each individual knot into a



3 Overlaying voice tiles.

digital environment (Popescu et al. 2018). By combining the physical and digital worlds, and using rhythm as a basic building block for making patterns, traditional practices can be re-coded and expanded using modern computational methods.

Creating a Storytelling Cloth through the Multiplicity of Voices

To investigate the translation and recording of rhythms and patterns as a means of storytelling and data synthesis in a contemporary context, a narrative of ecological crisis was deliberately selected as a starting point. The primary context of this study revolved around the devastating wildfires that occurred in the Mediterranean region in the summer of 2021 (Figure 1). The aim of the prototype was to incorporate, express, and translate multiple voices and storylines into one cloth, exploring the intricate interconnection and dynamics of the multiple involved agents. The cloth becomes a testing ground for looking into storing, retelling, and expressing multiple narratives.

To document the events of the summer of 2021, three distinct voices were chosen: one narrated through a computer, conveying the factual aspects; another as a self-recorded voice, recounting the experiential elements while visiting the site; and a third as a non-human voice, symbolizing the trees. The process of designing and manufacturing the multi-voice fabric involves the following steps:

a) Recording and translating the voices:

To facilitate the translation from rhythm to pattern to fabrication, Houdini (a 3D animation software application) is used as the computational tool. Sentences are recorded and translated into grid patterns, with each voice having

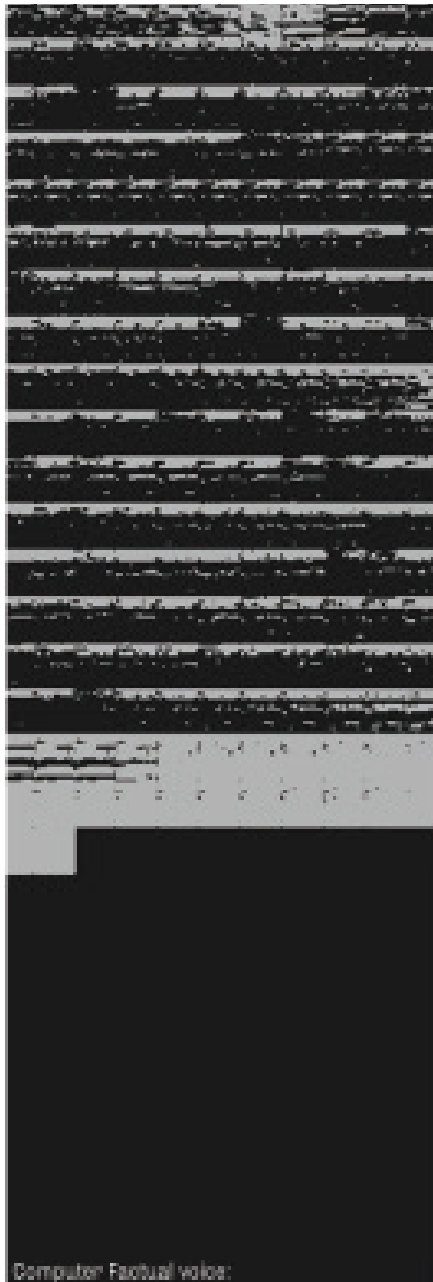
its own unique pattern (Figure 2). The rhythmic pattern is visualized using extracted stilts (Karastathi 2022), and patterns are overlaid to create the final storytelling cloth (Figure 3 and 4).

b) Fabrication from pattern to cloth:

In order for the knitting machine's software to interpret the visual representation, it is converted into a bitmap format, where each pixel represents a single stitch. The final prototype is manufactured by Kniterate, a medium-sized computerized knitting machine (Figure 5,6, and 7).

Conclusions

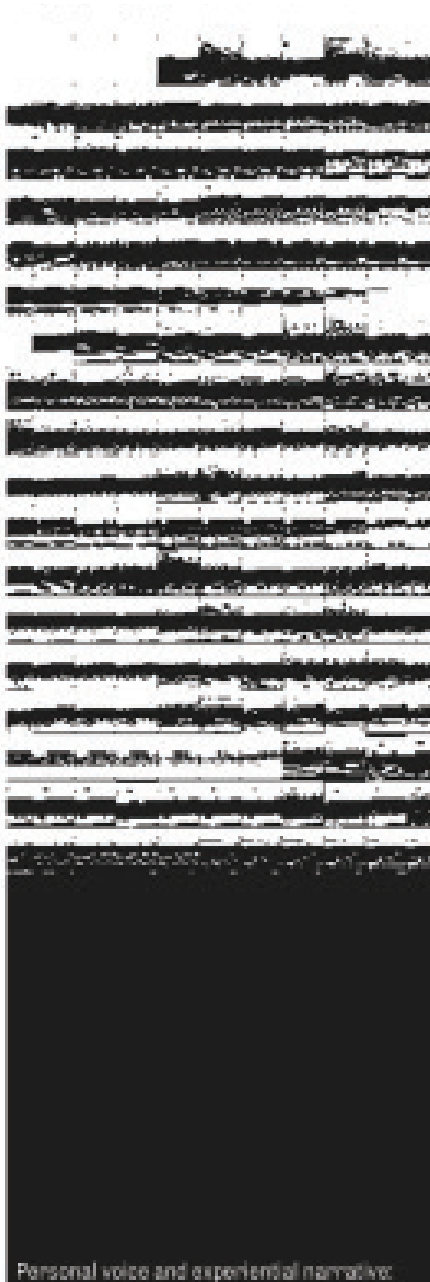
In conclusion, this project exemplifies the potential of computerized knitting to create vibrant story-data cloths that weave together multiple voices and narratives. By infusing the textiles with diverse potentials, and intertwining cultural realities, it reflects the interconnectedness of human experiences. Through the seamless translation of rhythm and pattern into the digital realm, it showcases the convergence of physical and virtual worlds, pushing the boundaries of textile tectonics. This project expands the scope of textile storytelling by offering a platform for the integration of many voices, cultural viewpoints, computational methods, and architectural narratives into soft data-driven narratives.



Computer Facial voice:

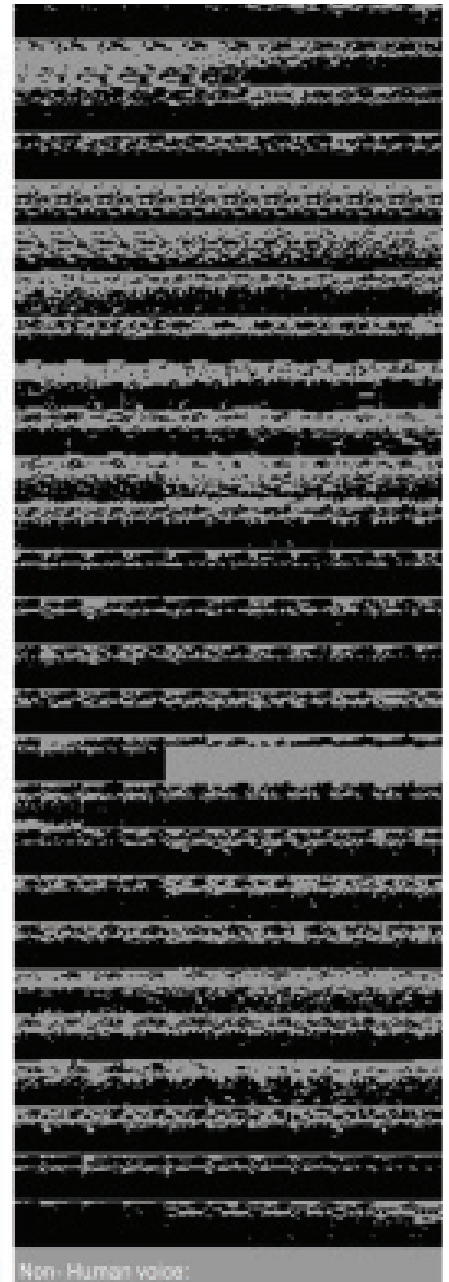
The summer of 2021 has been a catastrophe due to the wildfires raging through the Mediterranean forests. Only in Greece, over a million square meters of area were burned, with most of this burning into ashes within two weeks. The area burned in 2021 is estimated to be 4.5 folds more than the total areas burned during 2009 to 2020.

[ref: European Forest Fire Information System (EFFIS)].



Personal voice and experiential narrative:

The smell precedes the sight
 The air is heavy and dense, and it smells of smoke
 I am alone
 I walk into the forest
 The smell is overwhelming, I can hear my footsteps and the wind
 I pause – I touch the ground
 And then I can hear it
 I am listening to the crackling noises coming from the trees,
 I cannot tell from which trees they are coming from,
 It is symphony of roaring
 I am back to the ground gathering ashes
 My skin turns to the colour of the ashes



Non-Human voice:

Tree crackling voice.

Recorded the sound of the crackling trees in the forest a few days after the fires.



5 Fabrication of the textile with Kniterate.



6 Textile close-up detail.

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7 Knitted narrative cloth (Alberto Fernandez Gonzalez, February 2022).

IMAGE CREDITS

Figure 7: © Alberto Fernandez Gonzalez, February 2022.
All other drawings and images by the author.

Nikoletta Karastathi is an architect, a PhD candidate funded by the LAHP, and a Lecturer at UCL's Bartlett School of Architecture. She has worked as an architect for Napper Architects and Chapman and Taylor, as well as a design tutor at Bristol, Cardiff, Newcastle, and Edinburgh. Nikoletta's work has been exhibited at the London Design Festival, Dutch Design Week, the Baltic Centre for Contemporary Arts, and the Lakeside Arts Center, among others. Her research interests include architecture, textiles, computation, storytelling, and material programmability.