

TAPEST[O]RY: AN INTERACTIVE TAPESTRY TO RAISE AWARENESS OF MARINE NOISE POLLUTION

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ABSTRACT

Through the years, the tapestry technique has been used for utilitarian purposes and to tell stories. In our artwork, we took inspiration from this ancient craft and the need to reconnect with our senses. This piece invites visitors to touch, feel, and listen. Tapest[o]ry is a living tapestry that listens and responds with a narrative representing the sea's natural "murmurs" and harmful anthropogenic sounds.

The tapestry is turned into an interactive artwork by combining layers of wool, crochet, and felt intertwined with hidden conductive threads.

Through storytelling and audience interaction, Tapest[o]ry hopes to awaken empathy for the invisible chaos in our oceans and invite reflection on how we, too, are part of this delicate rhythm.

AUTHORS Tapestry; interactive art installations; tangible interfaces; marine biodiversity awareness;

KEYWORDS noise pollution; e-textiles; conductive electronics; capacitive sensors.

CSS

•Human-centered computing~Interaction design~Interaction design process and

CONCEPTS methods~Interface design prototyping •Applied computing~Arts and humanities~Media arts

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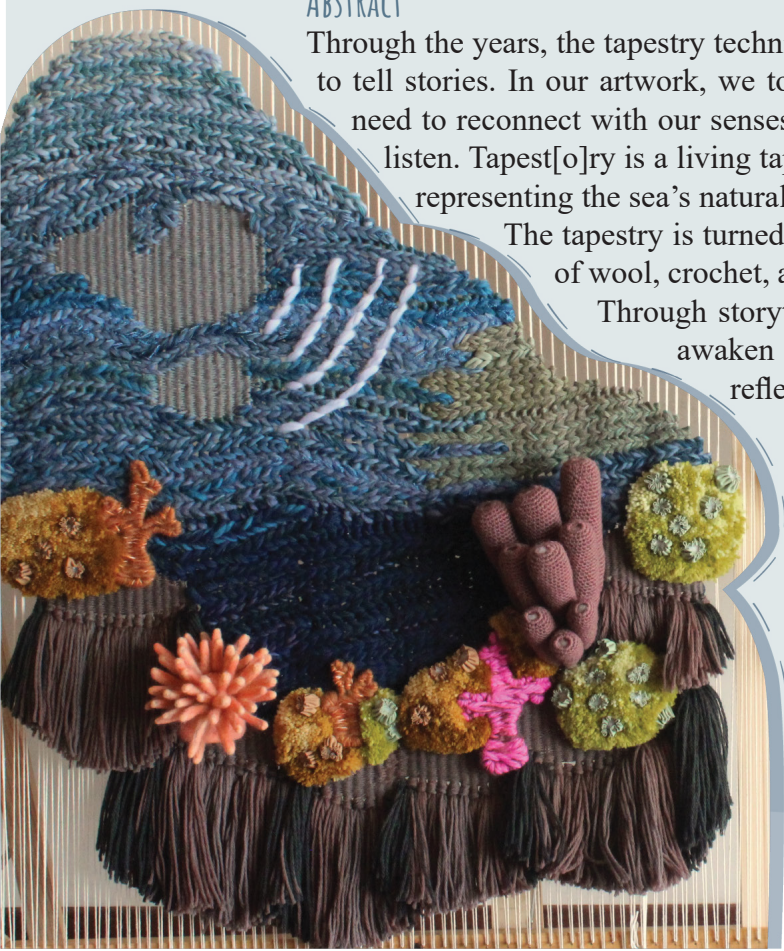
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OUR MOTIVATION

Tapestry has long been a medium for storytelling, serving both functional and artistic purposes — whether as insulation, decoration, or a contemplative art piece. Historically, woven tapestries have depicted biblical, mythological, and classical stories, offering narratives that educate and engage viewers[7][10]. Through the years, tapestry has evolved into a reflective art form, inviting contemplation through its elaborate craft and layered meanings[9].

In our artwork, we seek to revive the storytelling tradition of tapestry while incorporating interactive technology, transforming it into an interface for embodied engagement. Unlike traditional exhibitions, where artworks remain untouchable, contemporary art increasingly embraces interactivity, inviting audiences to participate in the experience[9]. Our project explores this shift, positioning tapestry as an interactive interface that encourages physical interaction as an instrument of engagement and exploration.

Tapestry encompasses the idea from writer/poetess Sofia Mello Bryner of the ocean as a “space of knowledge and balance”[1] where marine noise pollution directly disrupts this balance and interferes with the “ancient rhythms / That sustain the Earth’s breathing”[3], particularly affecting cetaceans who heavily rely on sound

Cetaceans, such as whales, are particularly vulnerable to anthropogenic noise pollution[8]. They rely on high-pitched sounds to communicate across long distances, but the intense sounds from shipping, industrial activities, and other human interventions often overpower these signals, disrupting marine ecosystems. Regardless of these challenges, whales play a vital ecological and cultural role[5]. They are also natural carbon sequestrators, storing significant amounts of carbon in their bodies. When they die, their bodies sink to the ocean floor, effectively removing carbon dioxide from the atmosphere and helping to mitigate climate change[8].

This artwork motivation emerges at the intersection of tapestry as a tangible interface[4], the maker movement, and contemporary environmental art. It draws inspiration from artists like Vanessa Barragão[2], who highlights marine ecosystems through textile art, and Alexandra Kehayoglou[6], who weaves landscapes to emphasise environmental change. By



*“The sea murmurs and listens,
Guarding the secrets of the world.
Only it knows the ancient rhythms
That sustain the Earth’s breathing.”*

- Sophia de Mello Breyner Andresen [3]

embedding capacitive technology into woven fabric, we seek to blur the boundaries between the physical and digital, transforming tapestry into an interactive medium that engages users and raises awareness of critical environmental issues.

Tapest[o]ry embodies the “urgent need for ecological awareness and preservation of bodies of water”[1] by using the tactile and auditory senses to communicate the detrimental impact of human-generated noise on marine life. This interactive tapestry is an artistic expression and a research artefact, demonstrating how textiles can function as dynamic, responsive interfaces. By inviting users to touch, interact, and contribute to the narrative continuity, we aim to create a personal and thought-provoking experience.

THE TAPEST[O]RY ARTWORK

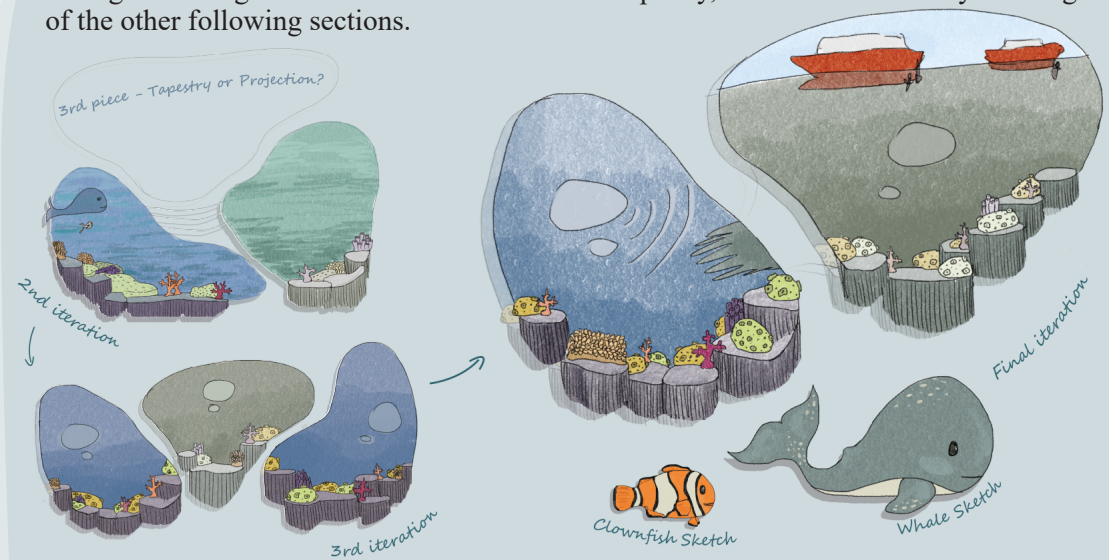
Tapest[o]ry is an immersive, tactile tapestry where threads and textures become conduits for storytelling, inviting reflection on the delicate soundscape of our oceans. The piece comprises three woven panels adorned with crochet, fabric manipulations, and sculptural wool forms wrapped around wire to unfold a visual journey. Two tapestry panels represent the serenity of an untouched ocean — a sanctuary for marine life and our characters. The third meant to reveal human intrusion cluttered with noise and imbalance.

Within this setting, a whale and a clownfish embark on a sensory voyage between these two realms. Their path is guided by touch and sound: conductive fibres and threads intertwine with the fabric, telling the characters' narratives through a microcontroller that responds to the audience's touch. Magnets hold these delicate characters in place, ready to move as the story unfolds.

The audience becomes both listener and storyteller — shaping the continuity of the narrative through touch, sound, and play. In this way, Tapest[o]ry invites us to feel the weight of human interference in oceanscapes, transforming environmental impact into a dialogue. The wool was sourced sustainably, gifted by community members from forgotten shelves and completed with the support of our local artisanal institute as a collective gesture.

TAPEST[O]RY DESIGN - SKETCHING

We had a very iterative process, where we started by developing several sketches until we managed to design a more coherent visual to this tapestry, while simultaneously thinking of the other following sections.



TAPEST[O]RY DEVELOPMENT



NARRATIVE SYNOPSIS

We developed a narrative that gives voice to the ocean – its balance and disturbance. At its heart, there are two young friends: a cautious whale and an adventurous clownfish. Trusted to navigate the waters between home and school by listening to the ocean's signals, they set off on their first independent journey. But curiosity draws them beyond familiar waters into a part of the ocean overwhelmed by noise – the result of human interference, ship traffic, and mechanical disruption. The whale becomes injured, and both friends lose their way. Their story unfolds through interactive woven panels, and eventually, the two friends rely on human intervention and effort to quiet the ocean's noise (stop the propellers' ships) and find their way home.

Their journey ends on a positive note and reflection on how human decisions shape – and can restore – the rhythm of marine life.

WORLDS

The narrative unfolds between two contrasting worlds:

NATURAL HEALTHY OCEAN

The healthy side of the ocean, where our character reside. It features a pure, safe ocean full of life and vibrant colours.



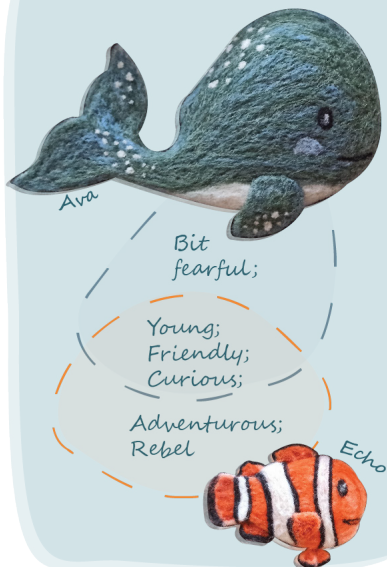
OCEAN WITH HUMAN INTERVENTION

The endangered side of the ocean, marked by human interference, characterised by excessive noise and litter pollution, which endanger the lives of marine species.

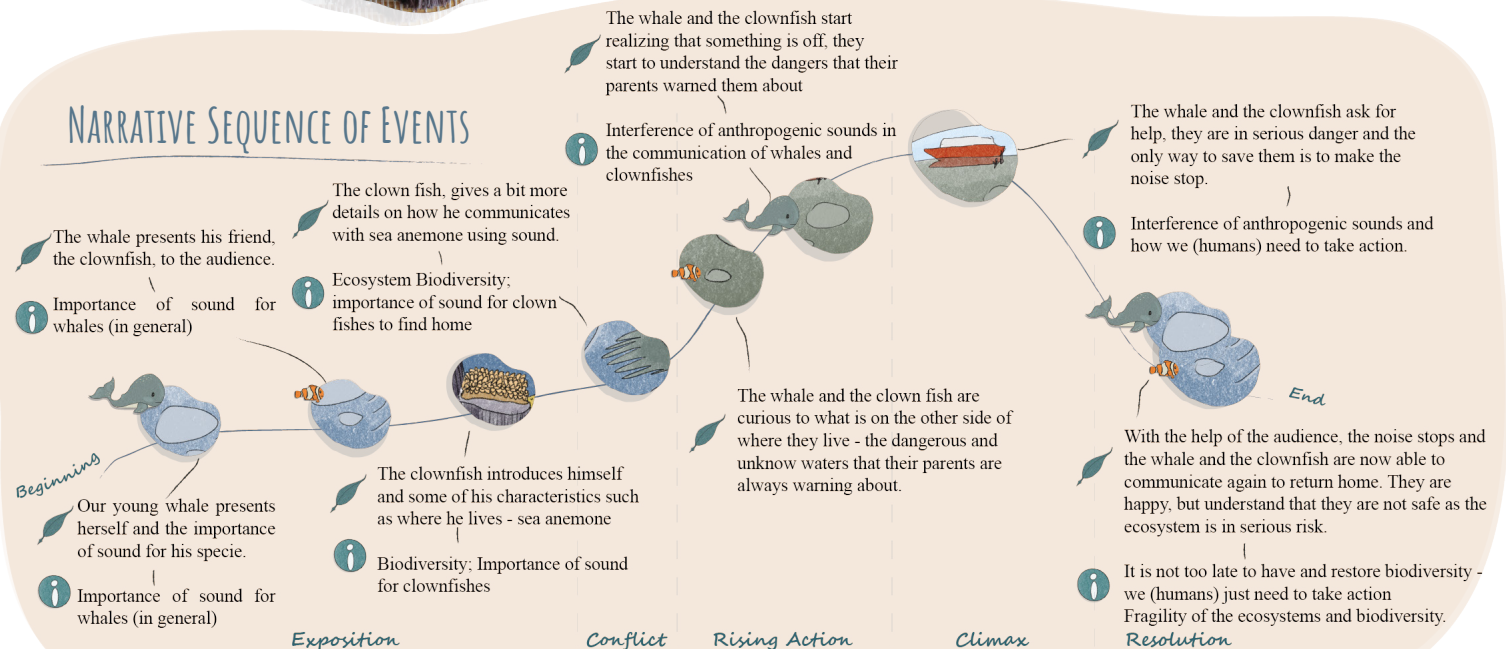


CHARACTERS

Whale & Clownfish



NARRATIVE SEQUENCE OF EVENTS



MEDIA

We decided the best way to display our narrative with the tapestry techniques would be through audio feedback. For this purpose, we used the Bare Conductive Touch Board to allow audio reproduction, enabling the connection of conductive materials to detect touch.

USER JOURNEY

The interaction with this tapestry also required anticipating how the user would interact with it, thinking of which behaviour the user might have during the interaction, and how we could distribute the narrative through the tapestry elements. So, while deciding the narrative events, we planned the interaction spots where the user would interact and what would happen in each. We want the user to explore the tapestry textures using their sensing capabilities to enhance the creation of different sensations through touch, allowing a more cohesive understanding of the narrative.

USER AGENCY TO CONTROL THE NARRATIVE

We gave the user a unique role in the narrative experience. Even though the narrative follows a linear structure, the user has the agency to unveil narrative portions when interacting with the tapestry.

EXPECTED OUTCOME

We expect the interaction with this interactive tapestry will also bring a better understanding of marine life and its dangers, specifically marine noise pollution, making the users reflect on the conceptual theme. In a more significant expectation, we aim for this message to reach the people capable of changing human behaviours in this sector.

EXPECTED INTERACTION

The following illustration represents the expected interaction with the interactive tapestry.



FINAL TAPESTRY AND INTERACTIONS



TAPEST[O]RY REFLECTIONS

The design and creation of Tapest[o]ry became a dialogue between traditional craft and interactive technology – a slow, intentional process of weaving tactile storytelling with sound. Through this, we explored how tapestry can hold texture, colour and urgent narratives, giving voice to the often-unheard disruptions of marine noise pollution. Sustainability guided our decisions as we acquired the wool from our community – materials once set aside, now repurposed – and completed the piece with support from our local artisanal institute. These choices gave the work deeper meaning, transforming forgotten resources into part of the story of regeneration and care.

In the end, Tapest[o]ry invites reflection and conversation. Through touch, sound, and narrative, audiences are encouraged to consider how humans imprint on marine ecosystems and imagine new possibilities for balance and responsibility.

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