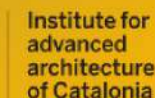


LILA

Maternity Garment

Laura Cholewa
Leah Disney
Nasrin Mehralian





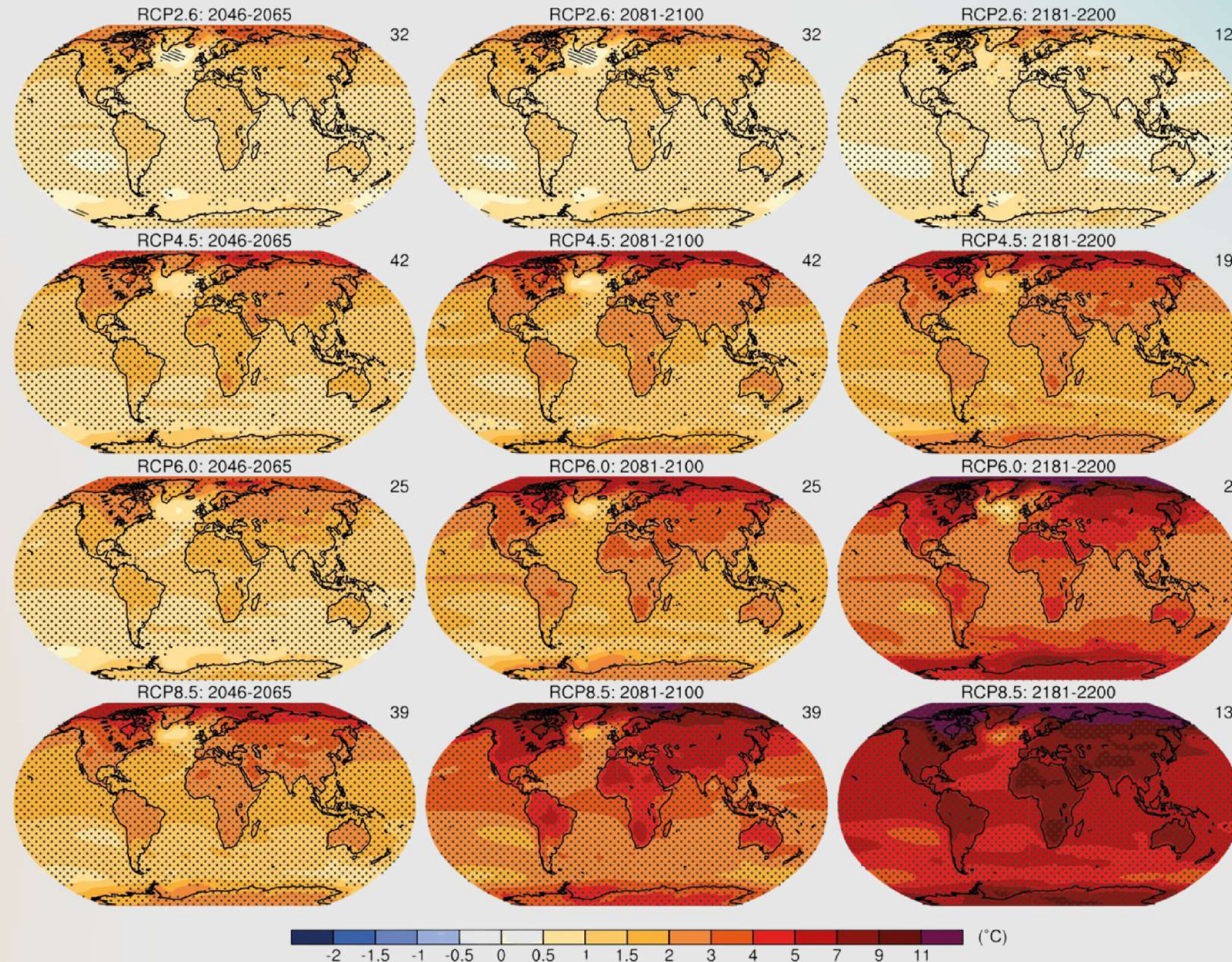
02 - SCENARIO

In the year 2054, due to increasing climate change, temperatures in Barcelona have already reached 40°C in May. Eva is 5 months pregnant, and faces extreme struggles as the temperature is only set to increase from here. Fearing for her unborn baby's health, she cannot continue with her work outside and frequently needs to take time off. This isolation, fatigue, and disruption to her routines make her anxious.

Global Warming is one aspect of climate change, which encompasses broader changes in weather patterns.

03 - State of Art

Annual mean surface air temperature change



5°C

03 - State of Art

800

Number of women who die every day from preventable causes in pregnancy or childbirth

50%

Percent of women in LMICs receive no ultrasound scans today through the full course of their pregnancy

4.7B

Number of patients lacking access to medical ultrasound

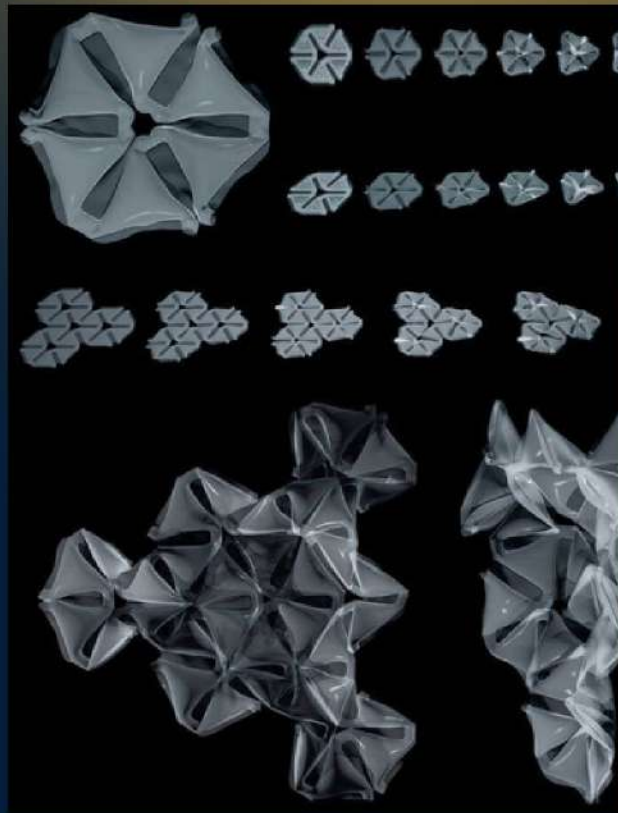
In 2016, WHO added a single ultrasound scan before 24 weeks of pregnancy to its list of recommended interventions for routine antenatal care.

How can we design a garment that monitors the health of both the fetus and the pregnant woman? The garment needs to fit snugly against the body, maintaining contact with the belly, but also accommodate daily growth during the pregnancy. Using 3D printing technologies, the fabric is able to contract in a way that moves with the changing shape.

03 - State of Art



03 - State of Art

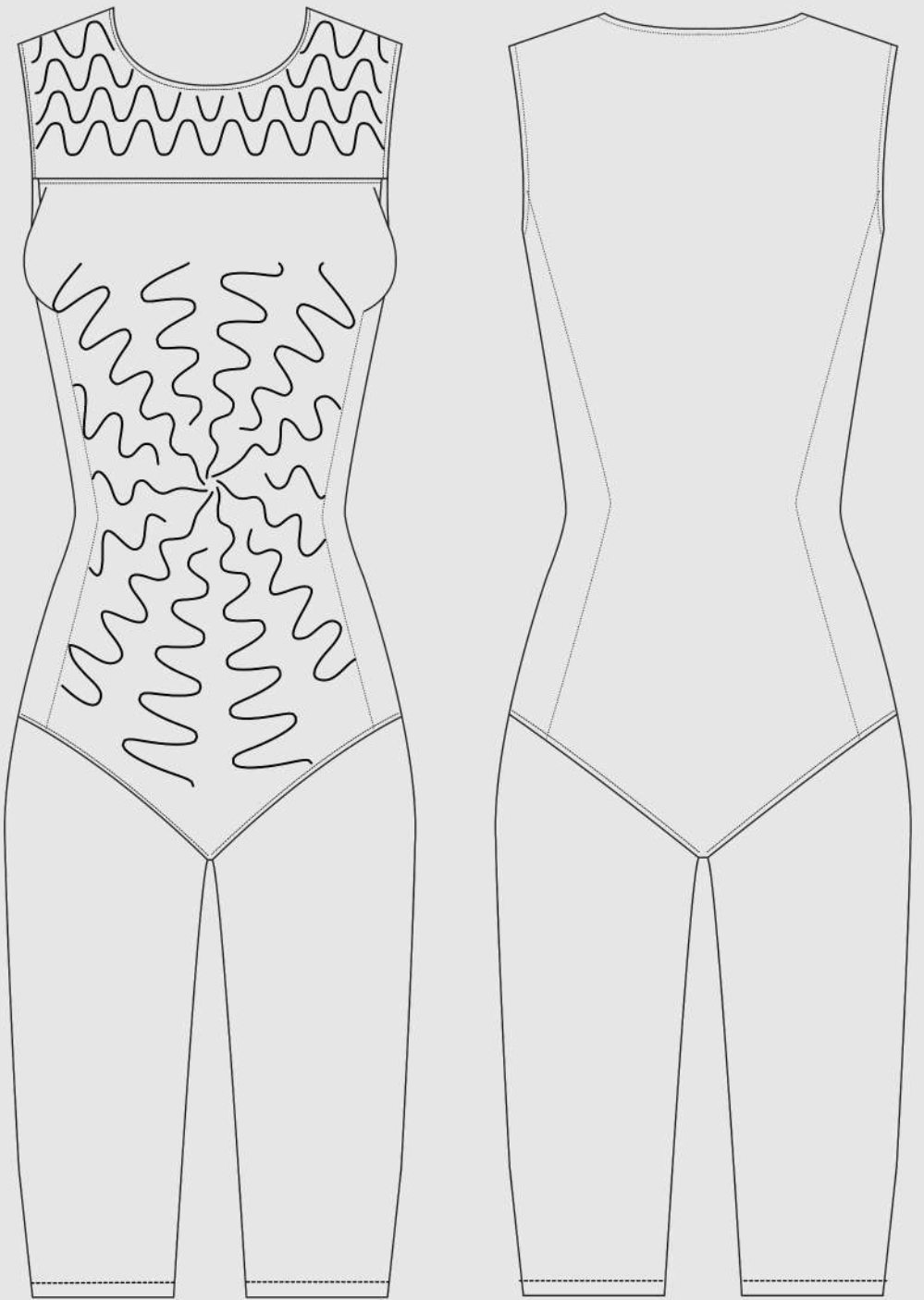


04 - Garment



Our solution involves designing a garment for pregnant women using UltraSound technology embedded in the clothing. This technology can constantly monitor the health of the fetus by measuring amniotic fluid pressure, fetal position, blood pressure, and heart rate. If any abnormality is detected, it immediately alerts the mother. The garment fits around the mother's abdomen, but it is designed to be adjustable, allowing it to be worn throughout the entire pregnancy. This garment can also be used after pregnancy, as it is designed to make breastfeeding comfortable for mothers.

04 - Garment



Technical Drawing



3d Animation

04 - Technology

Hydrogel-Based Fabric:

Function: Operates like Ultrasound Gel.

Hydrogels can hold a large amount of water, making them good conductors for ultrasound waves

Probe:

Function: The transducer will be responsible for sending sound waves into the body and receiving the echoes that bounce back from tissues and fluids.

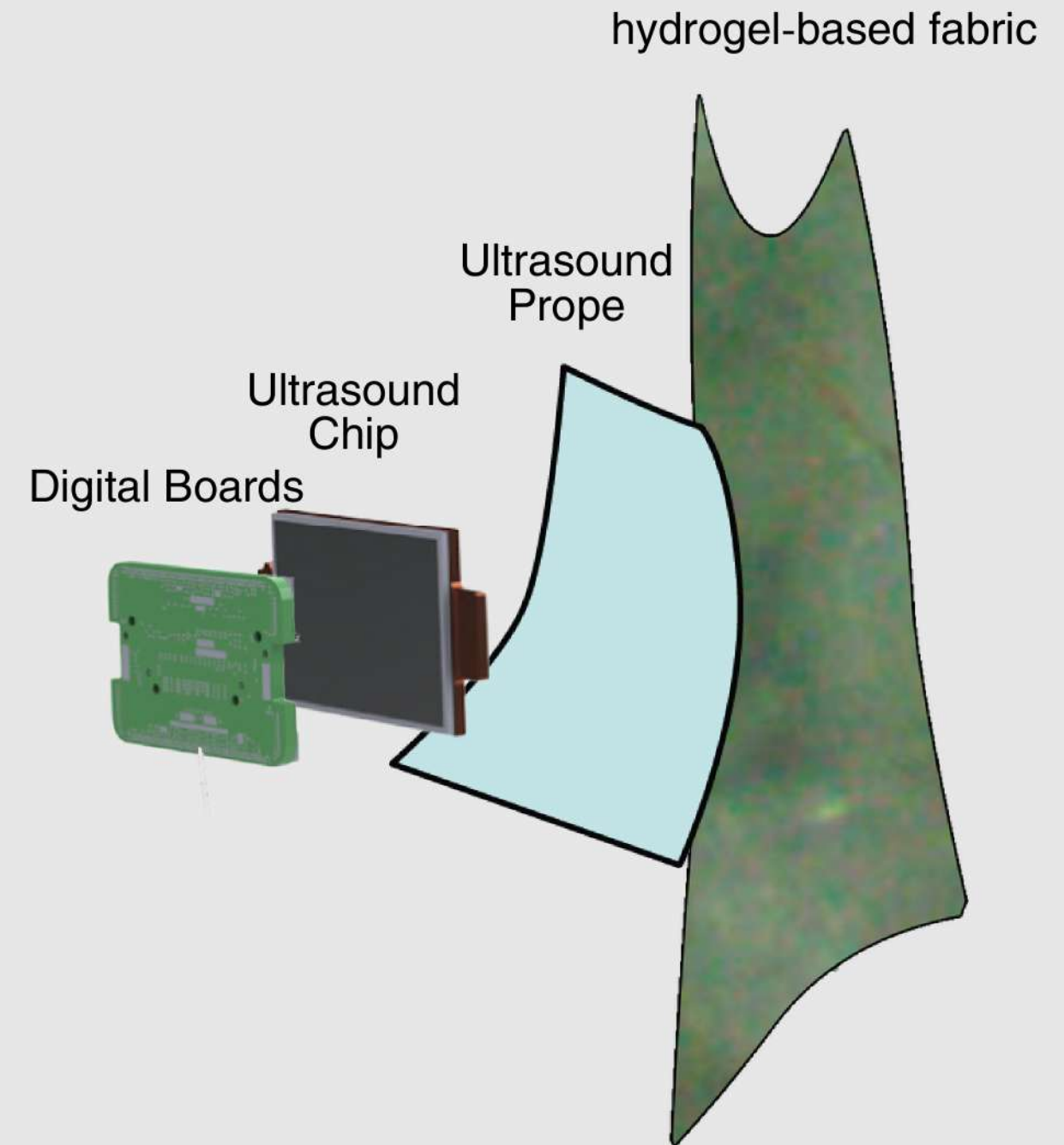
Data Processing Unit (Ultrasound Chip and Digital Boards)

Function: This unit will process the received echoes to extract relevant health parameters. It will analyze the data to provide numerical values, such as:

Amniotic fluid index (AFI): Calculated from the depth of amniotic fluid pockets.

Fetal heart rate: Derived from Doppler ultrasound signals.

Other parameters: Depending on the specific health criteria needed to be monitored.



REALISATION









06 - CONCLUSION

This suit represents a step towards a more sustainable and compassionate future, where pregnant women can reclaim their mobility and safety despite rising temperatures due to climate change.



A woman with long, dark, curly hair is seen from behind, wearing a black, long-sleeved, ruffled dress. She is looking towards a large, glowing, abstract light pattern on a wall. The pattern consists of many thin, curved lines that create a sense of depth and movement, resembling a stylized flame or a complex geometric design. The lighting is dramatic, with the woman's face and hair in shadow, while the light pattern is the primary source of illumination. The overall mood is contemplative and artistic.

Thank you

[video link](#)