Using Indigenous Design to Explore Contemporary Ideas in Quantum Mechanics

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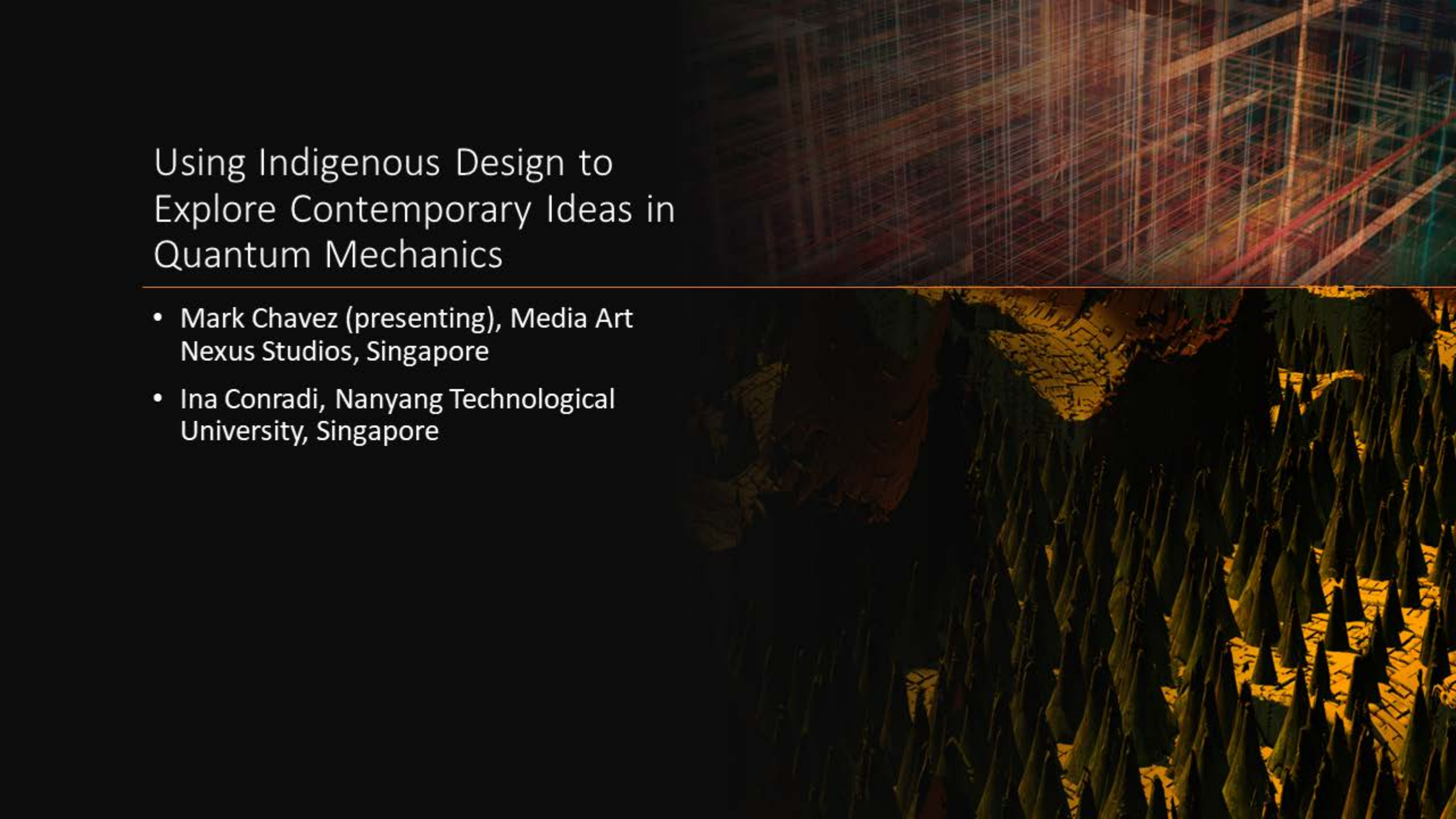
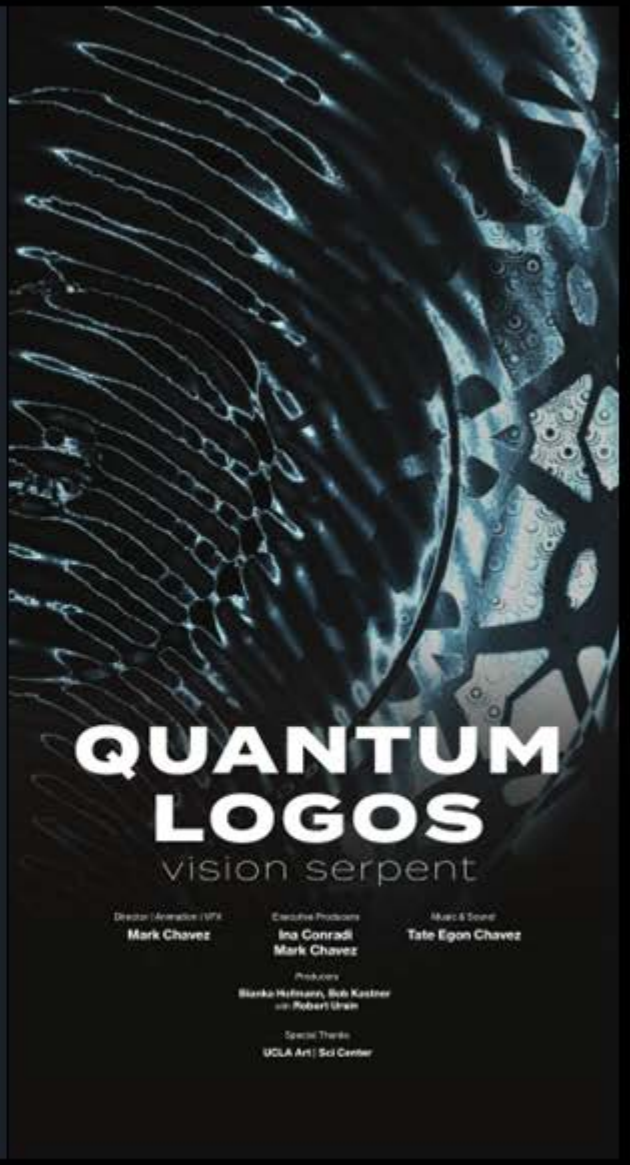


Introduction:

- Case Studies
  - Quantum LOGOS (vision serpent)
    - Utilizes Mesoamerican design motif
  - Moirai, Thread of Life
    - Southeast Asian design motif



Simulacra and Simulation as a framework

Using abstract animated imagery to highlighting the illusory nature of reality, and the beauty of quantum mechanics.

Quantum Logos (vision serpent)

- Going beyond the limitations of classical logic this film uses images as poetry to represent the quantum world. Using cultural icons to create visual metaphors to explore, and discover; to communicate the counterintuitive, and contradictory beauty of quantum physics.

trailer

Moirai, Thread of Life

- Set in the distant future, a female astronaut in search of untouched lands finds herself gravitating toward a mysterious force in a strange cave. The viewer follows her through a journey of discovery and understanding as she gets pulled into another dimension, her ‘self’ entwined and connected with the larger fabric of the universe.
- The Moirai were the white-robed incarnations of destiny who controlled the metaphorical thread of life of every mortal from birth to death. In this film we reinterpret this metaphor to describe quantum phenomena.
- This film is the third in a series of films using intuitively derived design metaphors to explain quantum theories. Southeast Asian fabrics serve as the film’s primary inspiration.

trailer

Case studies:

- Design archetypes inspired by ancient cultural art and story-telling.
- The films provide visual metaphors that help to explain complex concepts in a more accessible and engaging way.
- Design elements that resonate with audiences on a cultural level enable the films visualize scientific ideas in a more intuitive and relevant manner.
- Our case studies focus on two core issues in quantum theory.

Focus – Young's Double Slit Experiment, the Observer Effect

- Using new creative technologies these short films construct designs that demonstrate similarities between current scientific notions and ancient indigenous thought.
    - To emphasizing the blurring of boundaries between reality and representation
    - To reveal the interconnectivity between scientific observations on the nature of reality and intuitive artistic expression.
- Offering fresh insights into quantum theory
    - To underscore the value of incorporating diverse cultural perspectives in the production of scientific media.
- Demonstrating how animation can be a powerful tool for decolonizing science communication by foregrounding subjective experience and utilizing cultural design archetypes to enrich scientific storytelling.

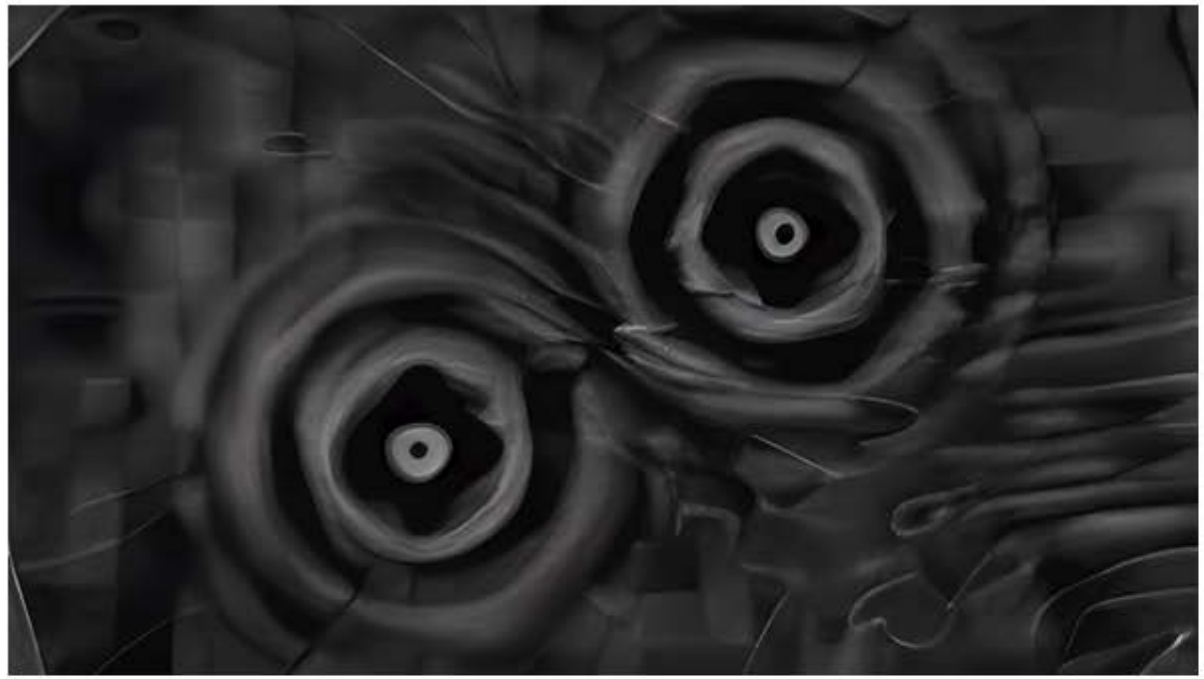
Design strategy

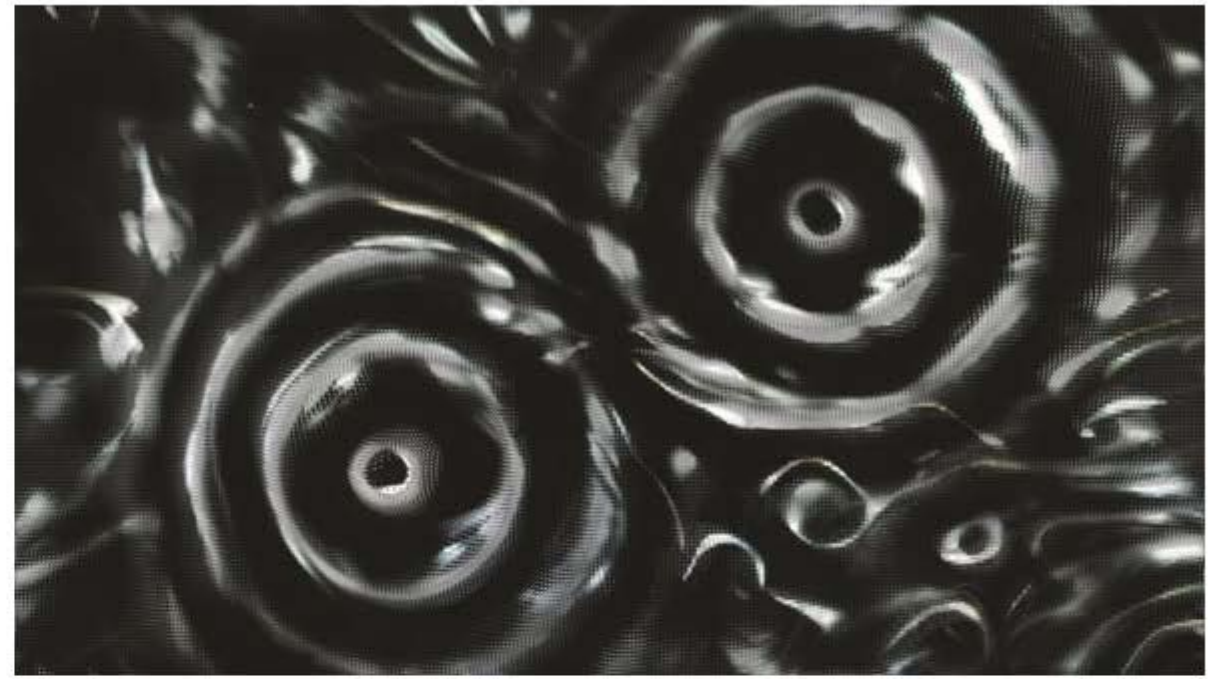
Design archetypes inspired by ancient cultural art and philosophy, provide visual metaphors that help to explain complex concepts in a more accessible and engaging way.

Design elements that resonate with audiences on a cultural level, make these scientific ideas more relatable and relevant.

Introduction:

By employing design elements that resonate with audiences on a cultural level, the films make these scientific ideas more relatable and relevant.



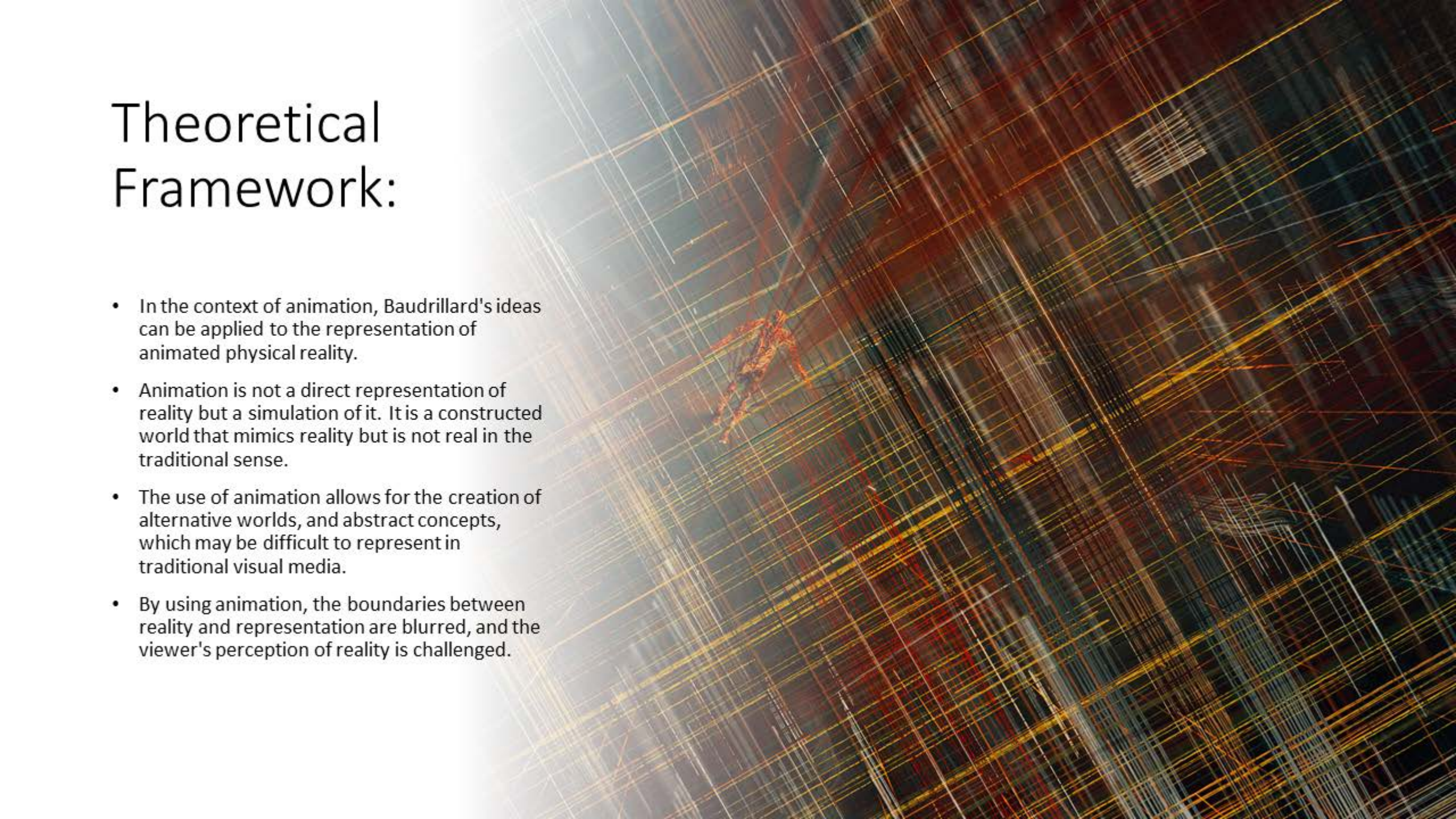


Theoretical Framework:

- Jean Baudrillard's concept of "Simulacra and Simulation" refers to the blurring of the boundary between reality and representation in contemporary society.
- In his theory, he argues that society has become so saturated with media images and representations that it becomes difficult to distinguish between reality and simulation.
- He suggests that the signifiers or representations of reality have become more important than the reality itself.

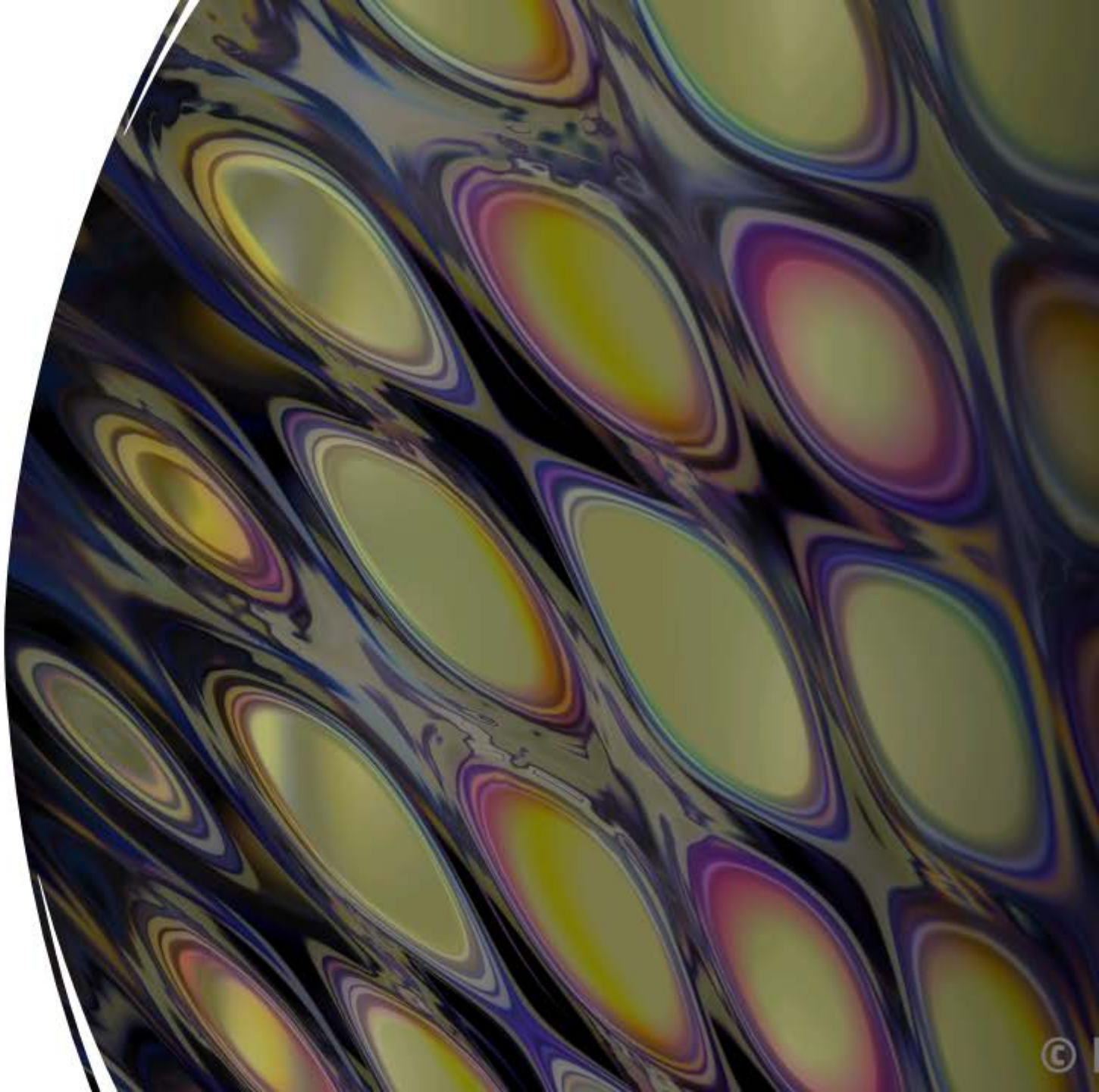
Theoretical Framework:

- In the context of animation, Baudrillard's ideas can be applied to the representation of animated physical reality.
- Animation is not a direct representation of reality but a simulation of it. It is a constructed world that mimics reality but is not real in the traditional sense.
- The use of animation allows for the creation of alternative worlds, and abstract concepts, which may be difficult to represent in traditional visual media.
- By using animation, the boundaries between reality and representation are blurred, and the viewer's perception of reality is challenged.



Theoretical Framework:

- Similarly, Sergei Eisenstein's writings on animation suggest that animated images can resist Western rationalism and binary thinking. In Eisenstein's view, animated figures have a plasmatic elasticity, and they can change shape, species, gender, or any other imposed boundary. In this sense, animation has the potential to represent physical reality in a way that transcends the limitations of traditional media, and it can provide a new perspective on the world.

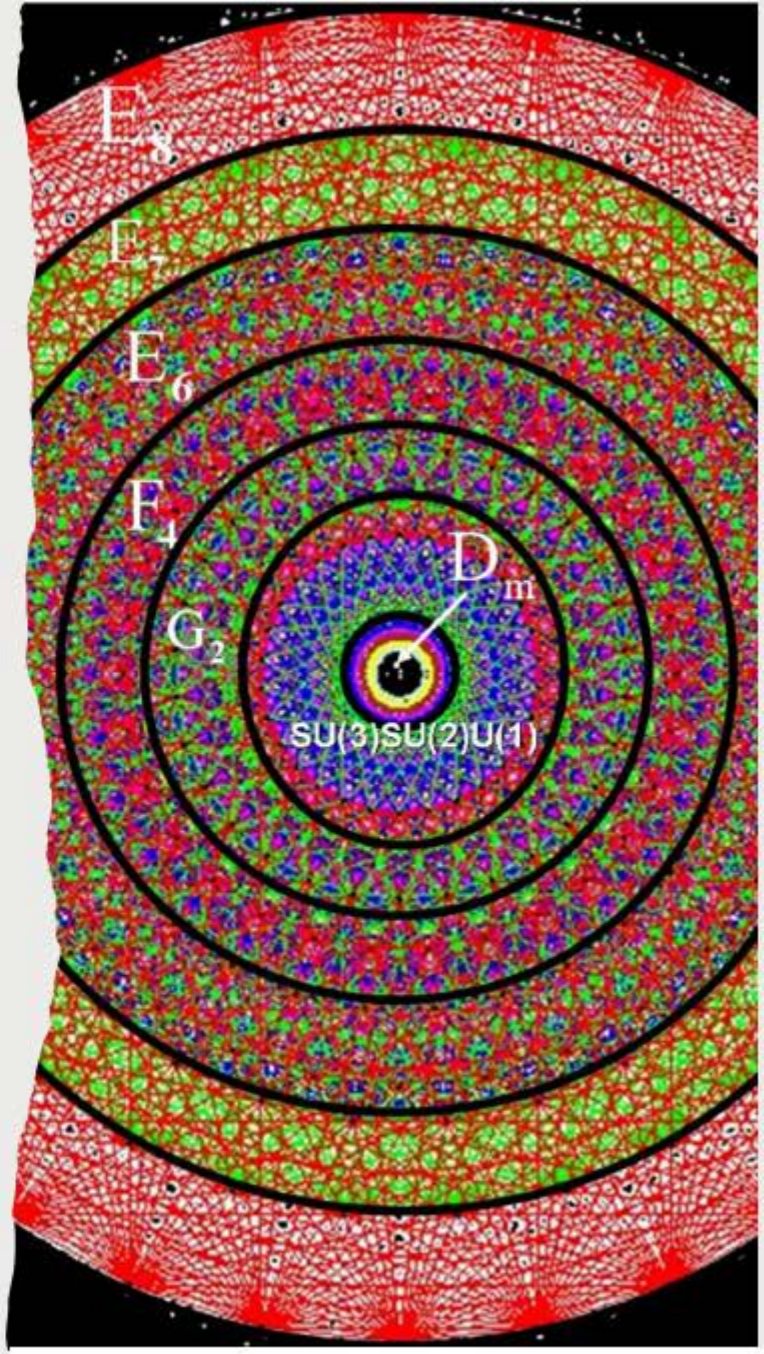


Theoretical Framework:

- Taken together, Baudrillard and Eisenstein's ideas highlight the potential of animation to represent physical reality in a way that challenges traditional notions of representation. By using animation, we can create new realities that blur the boundaries between reality and representation and provide new perspectives on the world.

Quantum LOGOS (vision serpent)

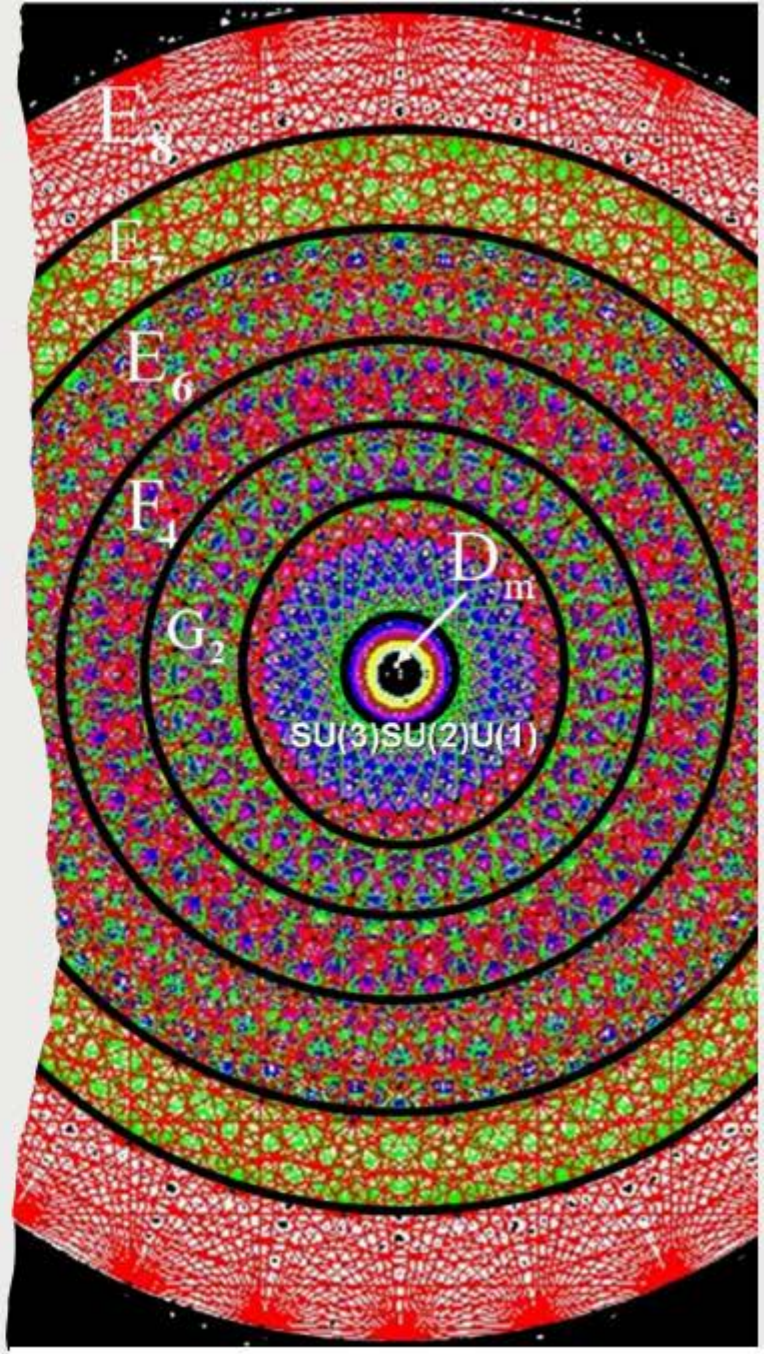
- In Quantum LOGOS (vision serpent) we focus on illuminating quantum mechanics, with the visuals and related ideas derived from mythic archetypes. In the film, our challenge was to find a way to convey meaning with an aesthetic approach toward the abstract and invisible knowledge by comparing the phenomenological aspect of quantum mechanics with ancient artistic design archetypes.



String theory, exceptional Lie groups hierarchy and the structural constant of the universe

Quantum LOGOS (vision serpent)

- The patterns identified are, like mandalas, attractive to the aesthetic eye. Yet share design similarities with mathematical patterns observed in quantum mechanics. By utilizing intuitive forms with significant meaning for less technically informed early cultures, we found that many visualizations made by early cultures shared common design traits with graphically represented math in contemporary quantum physics.

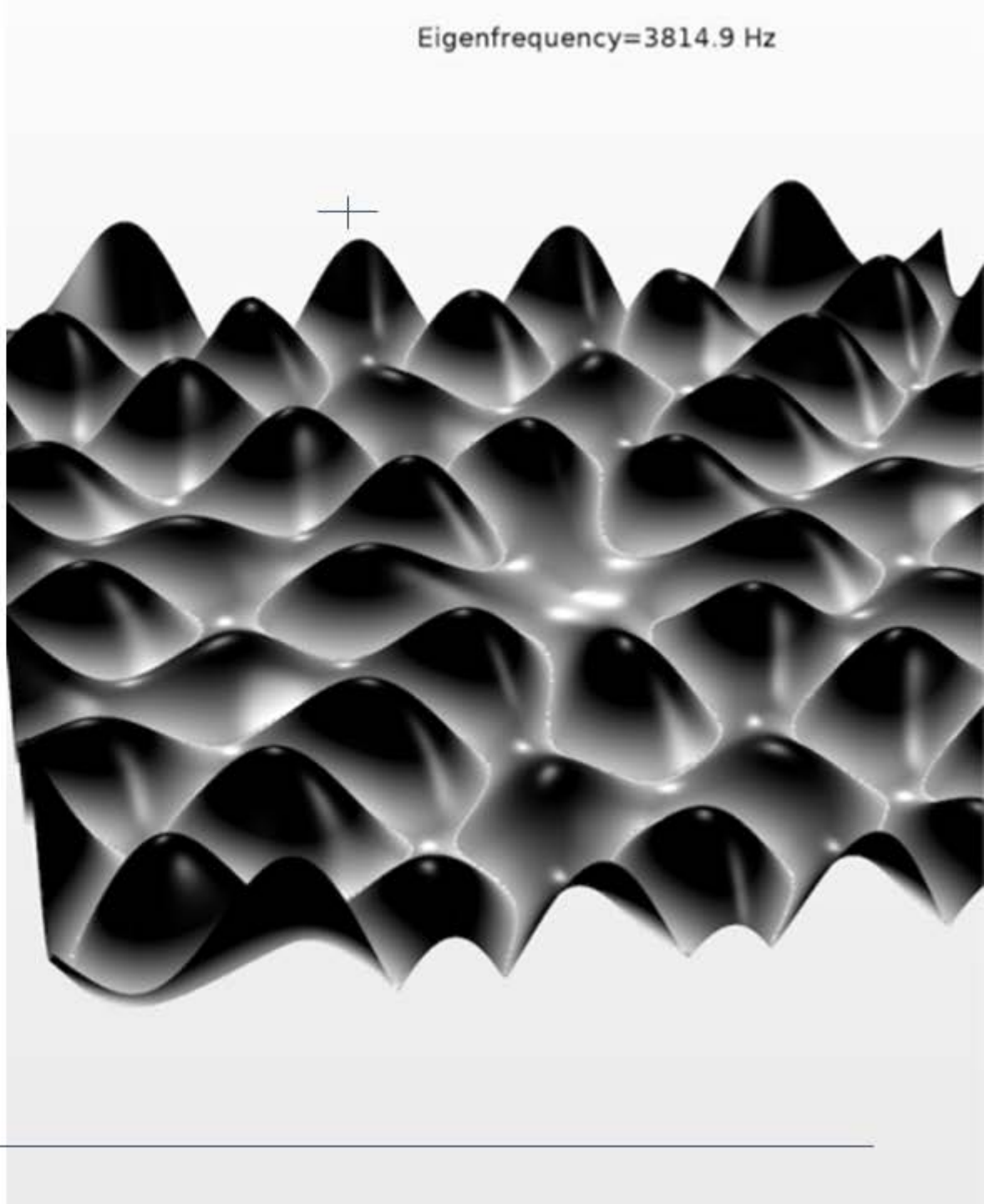


String theory, exceptional Lie groups hierarchy and the structural constant of the universe

Ernst Chladni (1756–1827), the father of acoustics, found a simple relationship between sand and various vibration modes on a smooth surface. On polished steel plates, he dusted fine sand and created patterns of nodal lines with the subtle vibrations of a violin bow. The audible vibrations caused by the violin bow stroking the side of the metal plate formed patterns, while the sand formed linear patterns corresponding to the audio waveform.

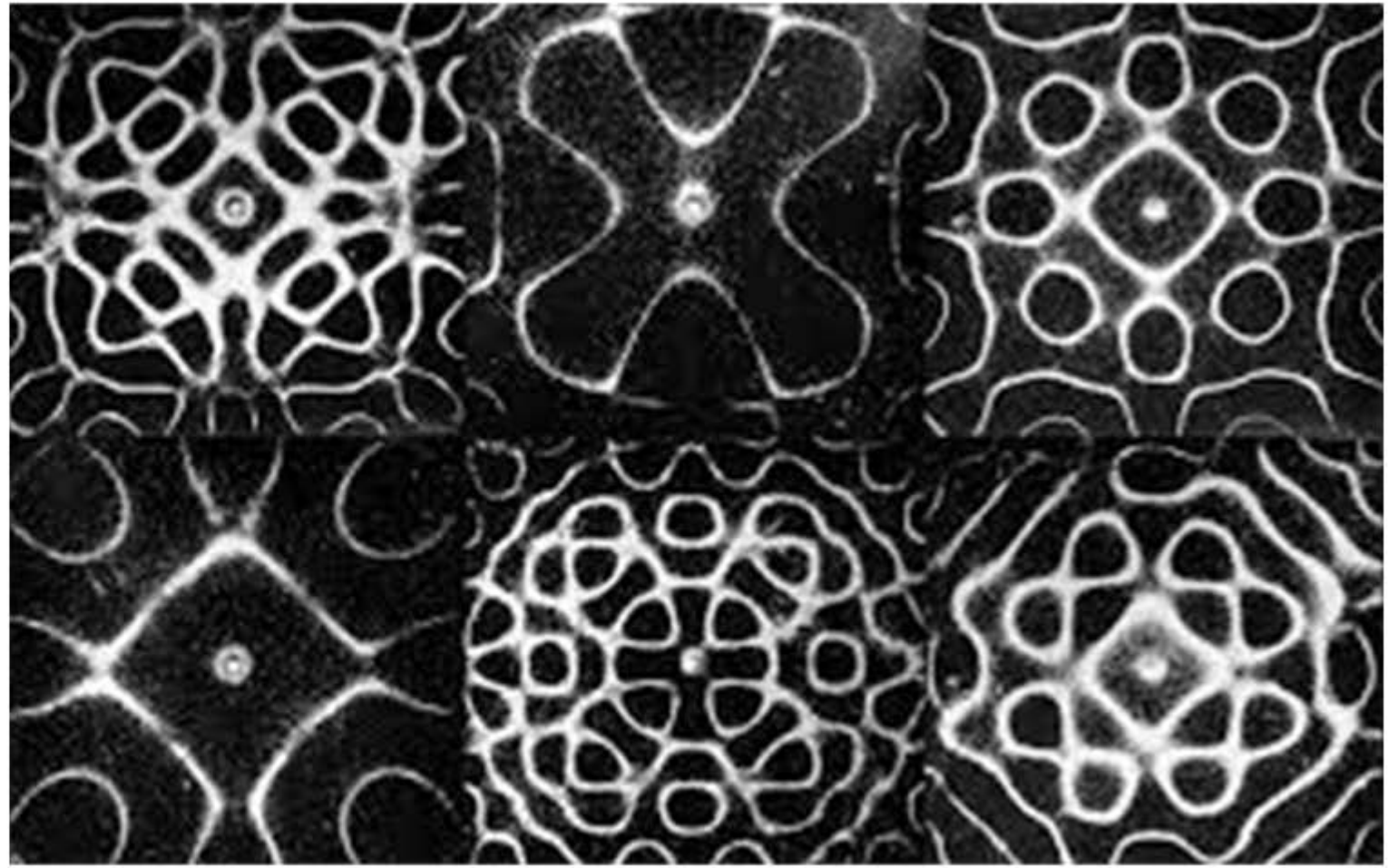
How do Chladni plates make it possible to visualize sound

- https://www.comsol.de/



Excitation
Nodal Lines
Antinodes
Resonant
Frequencies
Fine Powder
Visualization

http://dataphys.org/



Excitation
Nodal Lines
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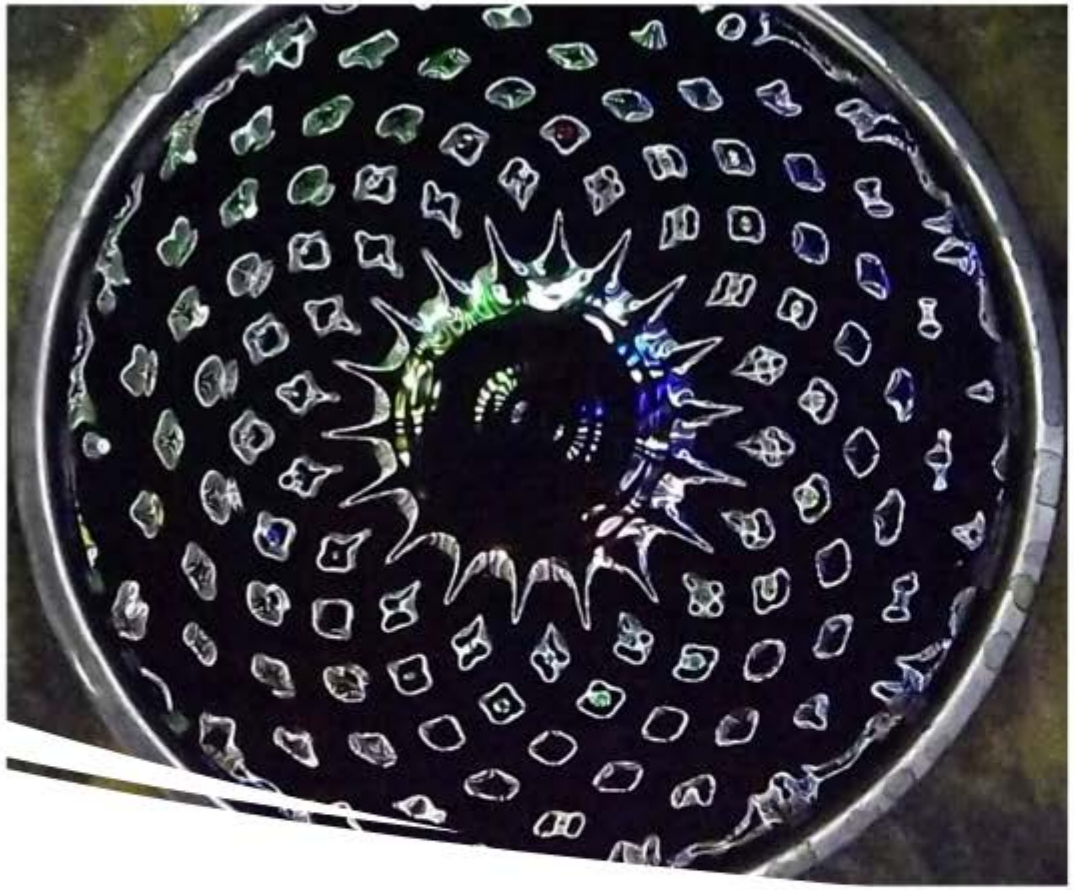
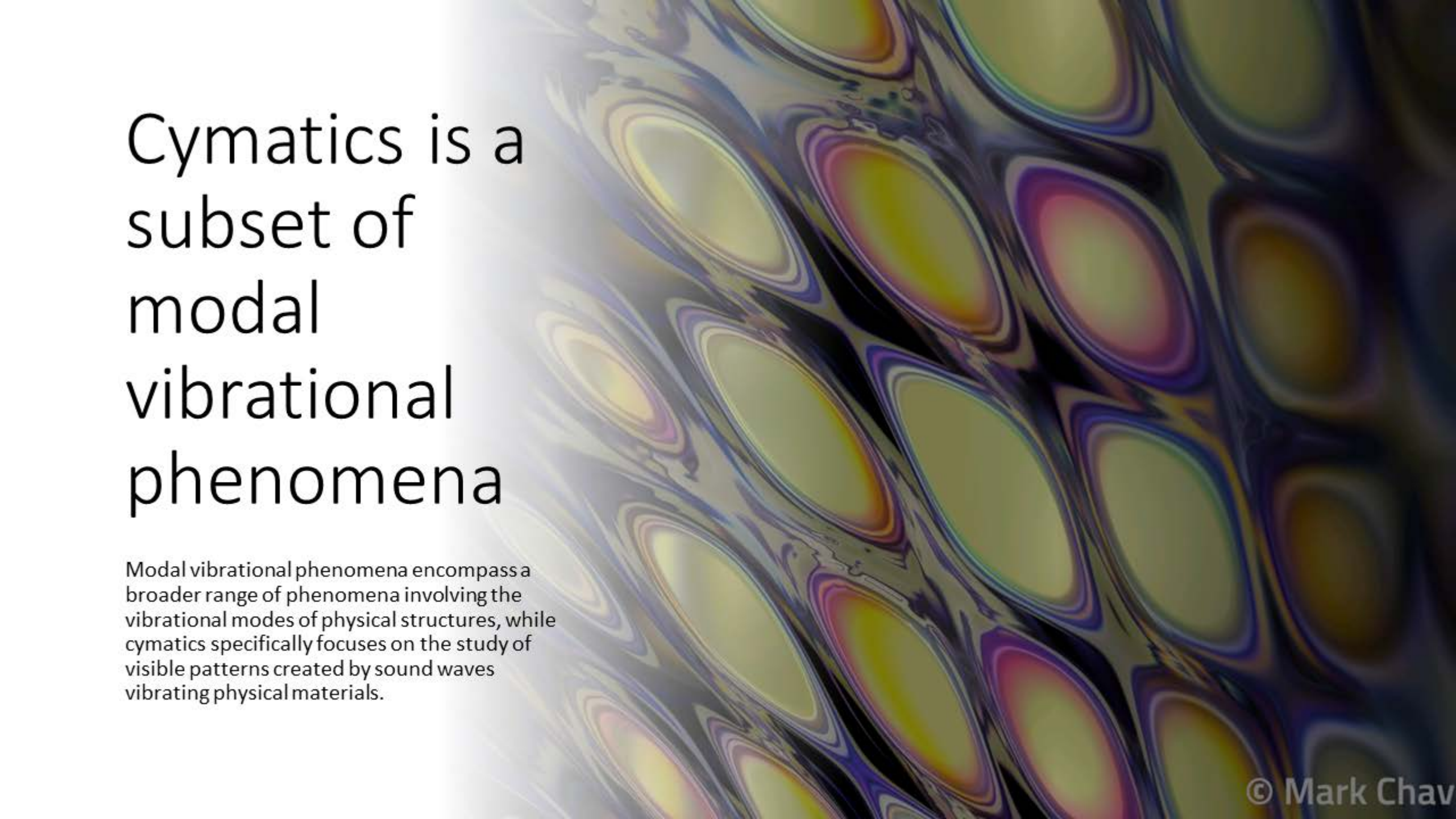
Chladni's law. (2022, May 13). In *Wikipedia*. https://en.wikipedia.org/wiki/Chladni%27s_law



- Audio-generated visual patterns create beautiful geometric figures with sound in many areas of nature, such as in snowflakes and even in the colossal weather systems on Saturn. The tortoiseshell and other natural designs also resemble patterns generated by cymatics techniques at specific frequencies.

Cymatics is a subset of modal vibrational phenomena

Modal vibrational phenomena encompass a broader range of phenomena involving the vibrational modes of physical structures, while cymatics specifically focuses on the study of visible patterns created by sound waves vibrating physical materials.



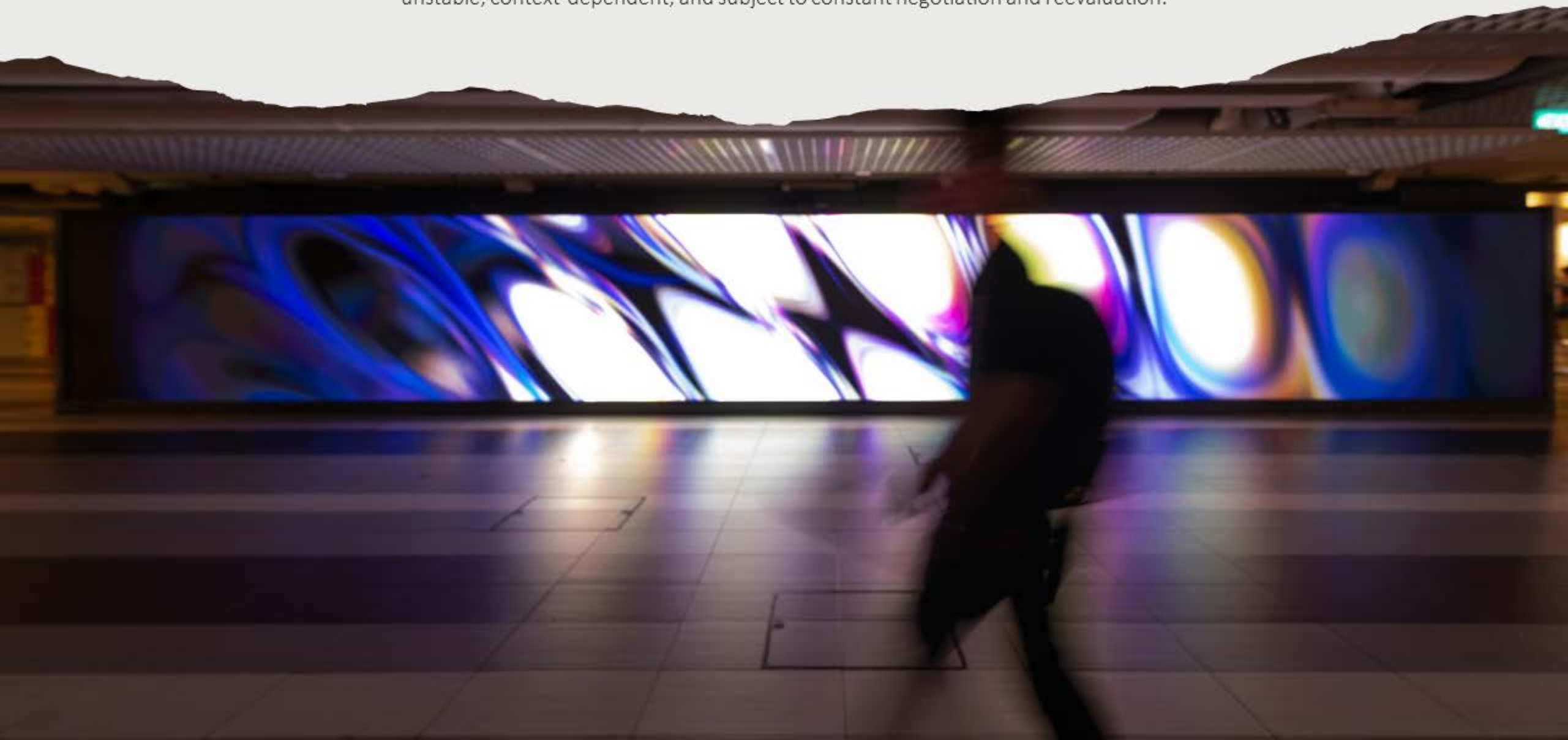
Images compiled by D.J. Hart: **From Affinity: 2 Infinity and Bey0nd**

Our artistic approach

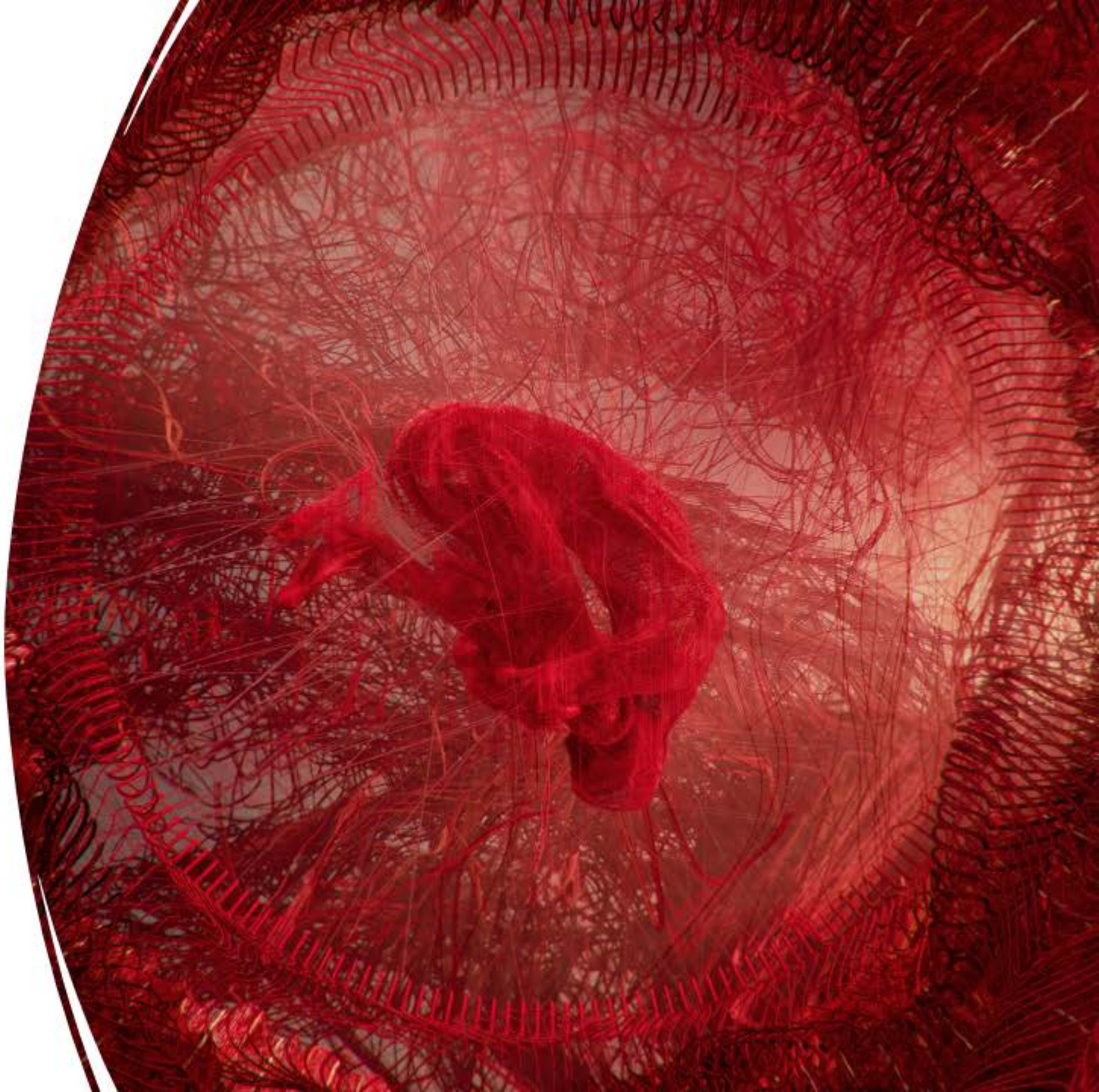
- The ideology of meaning revolves around moving away from fixed, objective interpretations and recognizing the subjective and contingent nature of interpretation. We reject the idea that there is a single, universal truth or meaning that can be objectively derived from an artwork.

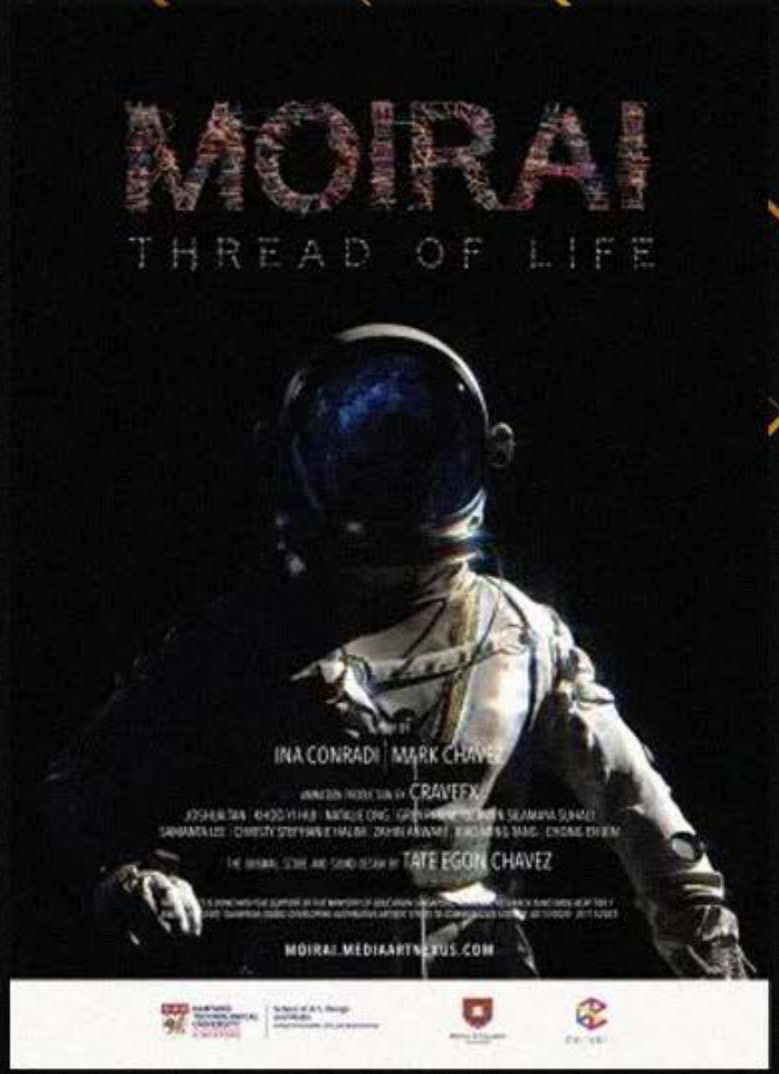
Our artistic practice embraces the multitude of meanings and interpretations that arise, acknowledging that meaning is constructed through a complex interplay of cultural, historical, social, and individual factors. We employ various strategies, such as fragmentation, pastiche, irony, and parody, to disrupt and question established systems of meaning.

By challenging the status quo, we actively reject grand narratives and metanarratives that claim to provide all-encompassing explanations of reality. Instead, we celebrate the diversity and plurality of voices, perspectives, and interpretations. We understand that meaning is inherently unstable, context-dependent, and subject to constant negotiation and reevaluation.



- Overall, our artistic approach defies traditional notions of meaning, inviting viewers to actively engage with our work and participate in the ongoing dialogue that shapes its significance.





BEVERLY HILLS 23RD film festival

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FILM AWARDS

MOIRAI, THREAD OF LIFE
MARK CHAVEZ

- Our artistic practice dismisses grand narratives and metanarratives that offer definitive explanations of reality. Instead, we celebrate diversity and the multitude of voices, perspectives, and interpretations. Moreover, we firmly believe that meaning is inherently unstable, context-dependent, and subject to constant negotiation and reevaluation.
- In our work, we challenge traditional notions of authorship and originality by emphasizing intertextuality, appropriation, and the recycling of existing cultural forms. We also question the idea of the autonomous artist-genius and recognize the collective and collaborative nature of artistic production.
- Rather than adhering to fixed meanings, we understand that an artwork is not confined solely to the intentions or inherent qualities of the artwork itself. Instead, meaning is co-constructed through the interactive relationship between the artwork and the viewer. Each individual brings unique perspectives, experiences, and cultural contexts, actively contributing to the interpretation process.

- The overarching ideology that defines our artistic expression embraces plurality, subjectivity, and the ongoing process of interpretation and redefinition. Accordingly, we foster an open-ended and inclusive approach to understanding and engaging with artworks, rejecting rigid meanings in favor of a more fluid and contingent understanding of artistic expression.
- Through our work, we invite viewers to participate in this dynamic and ever-evolving dialogue, encouraging them to explore and discover their connections and interpretations. By embracing the complexities and uncertainties of meaning, we aim to challenge established conventions and promote a deeper engagement with the diverse possibilities inherent in artistic creation.

Conclusion:

- In conclusion, our artistic practice exemplifies a postmodernist perspective that intricately fuses scientific theories with artistic concepts, offering a significant contribution to the discourse on decolonizing animation. Through our rejection of fixed narratives, we actively celebrate the emergence of diverse voices and interpretations, acknowledging the inherent instability of meaning. Inspired by the profound insights of quantum mechanics and string theory, we deeply comprehend the intricate complexity and multifaceted nature of reality, which is shaped by dynamic vibrations and interconnected modalities. Utilizing Simulacra and Simulation as invaluable lenses, we purposefully challenge established conventions, actively exploring the fluidity of representation and perception within the context of decolonization. Within our artistic endeavors, meaning is co-constructed, and the interaction between our artwork and the viewer becomes a transformative process, intricately influenced by their individual perspectives, experiences, and cultural contexts. By skillfully interweaving these profound philosophical, scientific, and artistic elements, we extend a fervent invitation to esteemed conference attendees to engage in an inclusive and open-ended exploration, ultimately illuminating the boundless possibilities intricately woven within the realm of decolonized animation.

Q&A:

- Discussion about our work.

Mark’s website

Media Art Nexus

Ina’s website