

Title: Tesseract

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1. PROGRAM NOTES

Tesseract is a live audiovisual work designed to provoke a questioning of the mechanisms of perception. The work creates interactions between two dimensional and three-dimensional visualisations of sound using lasers and video projections. This sound voltage is derived from a modular synthesiser that is kinaesthetically controlled by the performer using a theremin controller. The work is developed in reference to the tesseract, a four-dimensional hypercube beyond our ability to properly visualise, analogous to what a three-dimensional cube is to a two-dimensional square. It is inspired by a notion of the movement of electrons, as quantum waves, in relation to the movement of the underlying voltage that defines sound synthesis. The work considers the microcosm of the subatomic in relation to the macrocosm of experience.

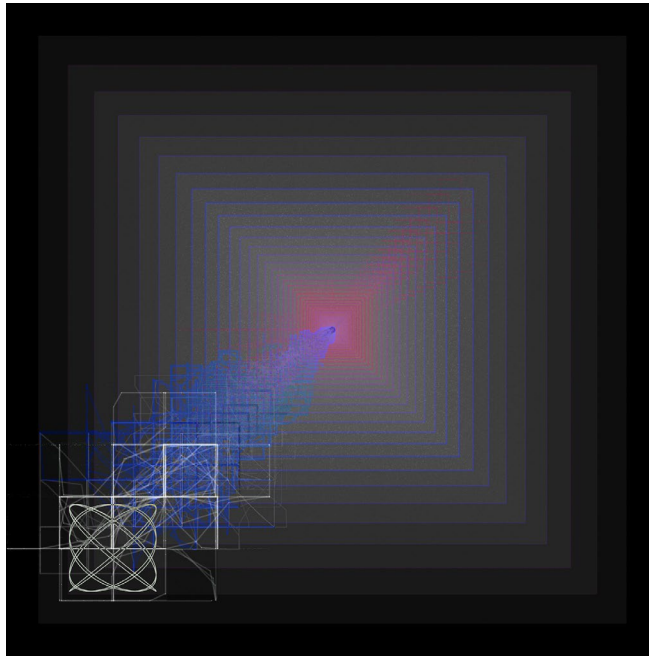


Fig. 1. Concept image, Vijay Thillaimuthu

2. PROJECT DESCRIPTION

Tesseract is a live audiovisual work for the superimposition of lasers and video projections as controlled by sound. The same voltage that is amplified as sound, derived from a modular synthesiser and theremin controller, also deflects laser light into visible patterns and becomes the source for real-time video projections. In addition, a technique used to sonify laser patterns (shape to sound) is used. This technique is referred to by Robin Fox as mechanical synaesthesia[1]. These different display technologies are then mapped together to present a unified experience in conjunction with the sound.

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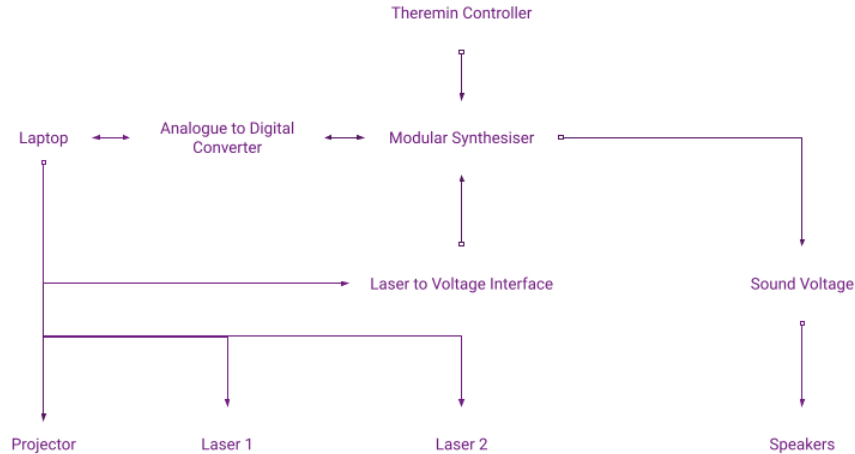


Fig. 2. System diagram, Vijay Thillaimuthu

Tesseract is inspired by notions of the quantum processes that take place across dimensions, unable to be perceived, and scarcely understood. The movement of electrons through physical materials is defined by quantum mechanics. We commonly use complex power and communication networks without understanding their processes in totality. For example, transistors use quantum tunnelling while lasers use the stimulated emission process, where photons essentially teleport when interacting with excited electrons (to create laser light). These are phenomena that can only be explained through theoretical physics. This is an ambitious work pushing the possibilities of existing technologies. This work imagines interaction with forces beyond our understanding and conceptualises a space of infinite potential. It questions what the future might look like as we develop our understanding of the quantum world through particle accelerators and with the emerging potential of quantum computing.

The system has been developed on the principle of *Vector Synthesis* or *Oscilloscope Music*[2], whereby the stereo image of the sound signal articulates the left and right axes of a graphical image on a Cartesian plane. The performer interacts with the system and decides whether to disrupt or accept the generative potential of the system[3]. As both the projections and laser images are derived from the same source, sound voltage, they can be seamlessly mapped together.

3. PERFORMANCE NOTES

This is a live laser, video projection and sound performance work. The work is improvised within the constraints of the system that has been developed. The duration is 30 minutes. Performer is on stage, slightly off centre & angled to have visibility of the projection screen but facing forward (see documentation).

4. MEDIA LINKS

- Documentation of work: <https://vimeo.com/1013750398/cacafe0c7c>
- Previous work: <https://vimeo.com/875864325>

TECHNICAL REQUIREMENTS

Venue to provide:

- Table 1.5 x 1 metre approx.
- 1-2 foldback wedges for sound monitoring at stage
- HDMI connection from stage to projector
- Additional XLR cabling if required
- Projector and projection screen
- PA & FOH mixing console
- Sound Engineer
- Smoke machine at stage (optional inclusion)

Artist to provide:

- 2-3 lasers
- Stands for lasers
- Cat-5 & XLR cables
- Modular synth/electronics
- Laser/Vision Control Laptop, network switch
- Stereo DI to FOH mixing console
- Haze Machine

ETHICAL STANDARDS

Work contains stroboscopic imagery, loud sounds, haze effects & lasers. As such, warnings will be posted at entrances and will be announced. As the performance utilises lasers, it will comply with all relevant health and safety regulations.

REFERENCES

- [1] Robin, Fox. "Triptych is Now Live and Touring." Robin Fox Official Website. Published March 16, 2023.
<https://robinfox.com.au/triptych-is-now-live-and-touring/>.
- [2] Holzer, Derek. *Vector Synthesis: A Media Archaeological Investigation into Sound-Modulated Light*. Helsinki: Aalto University, 2019.
- [3] Patteson, Thomas. "The Time of Roland Kayn's Cybernetic Music." Roland Kayn Official Website. Published December 5, 2016.
<https://kayn.nl/wp-content/uploads/2016/12/The-Time-of-Roland-Kayns-Cybernetic-Music-Thomas-Patteson.pdf>.