

## Methods of Iterating

My object of replication is a video, which is generated by code.

The sound and image have a delicate connection. The image includes colour and position, while the sound includes pitch, loudness, and timbre. Among them, loudness and pitch are related to spatial position, while timbre is related to colour.

During the replication process, the sound serves as my input, and the output is animation.

To establish a connection between two variables by coding, we first need to determine the range of variation for each variable.

- Loudness: amplitude (0, 1)
- Pitch: Spectrum (0, 255)

However, the timbre is defined by all other perceptual properties of a sound.

In the replicated object, higher volume corresponds to a larger or closer visual representation, while higher pitch corresponds to brighter colours. This setup is in line with human perception and provides a comfortable experience.

- Color: R(0, 255), G(0, 255), B(0, 255)
- 3D Position: Camera Z(-x, x), Width (0, windowWidth), Height (0, windowHeight)
- 2D Position: Width (0, windowWidth), Height (0, windowHeight)

I believe the core of this tool lies in the correspondence between different variables, especially when the variables belong to different types of information, such as visual information, auditory information, and body movements. My proposal is an experiment, considering auditory information and body movements as input materials. I am also considering incorporating more visual characteristics as parameters, such as shape (circle, square, triangle), and text (font, weight, size).

### Reference List:

*Pitch, loudness and timbre*. UNSW. Available at: <https://www.animations.physics.unsw.edu.au/jw/sound-pitch-loudness-timbre.htm> (Accessed: 15 January 2024)

Philip Ording. (2019). *99 Variations on a Proof* (pp. 15-18). Princeton University Press.