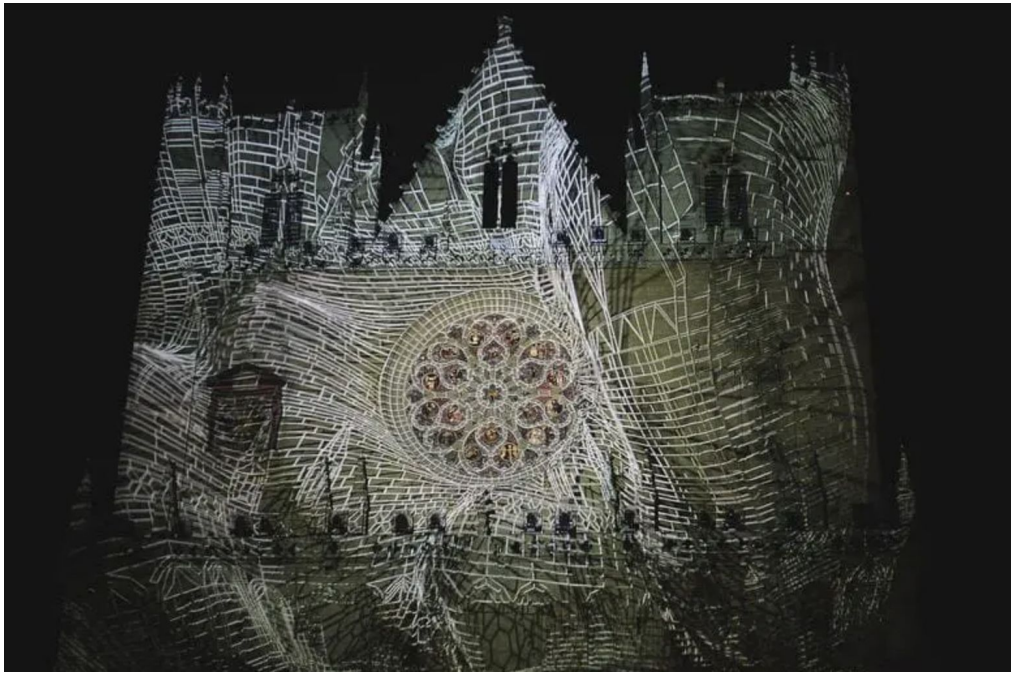
Projection mapping technology: Introduction and Uses

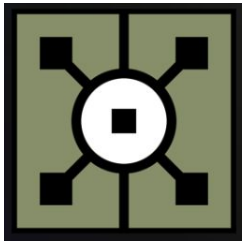
peng geng

The Projection Mapping Technology's History and Evolution



Projection mapping techniques originated in the 1960s and were initially used in experimental art. With the development of computer graphics and digital technology, projection mapping became a mature art form. Today, this technology is widely used in commercial, educational, and architectural fields, and has become an important element of visual art and urban illumination.

The fundamental elements of projection mapping technology



1.2 Projection mapping technology key components
The following components are required to implement projection mapping:

1.Projector: the core device that projects an image or video onto the target surface.

2. 3D modeling software: creates digital models of the target object, such as Blender, 3ds Max, Maya.

3.Projection mapping software: handles the calibration of the projected content, e.g. Resolume Arena, MadMapper, VPT.

4.Content creation tools: design images or videos that adapt to the shape of the object, such as Adobe Creative Suite, Cinema 4D, TouchDesigner.

Technological Issues and Developments in Projection Mapping

Despite the advances in projection mapping technology, challenges remain, such as ambient light interference, high equipment costs, and complex operations. However, technological developments are gradually addressing these issues:

Ambient light interference: Development of high brightness and contrast projectors to improve visibility in bright environments.

Equipment costs: technological advances and market competition reduce costs and popularize projection mapping technology.

Complex operation: Develop intuitive and easy-to-use software to simplify the operation process.

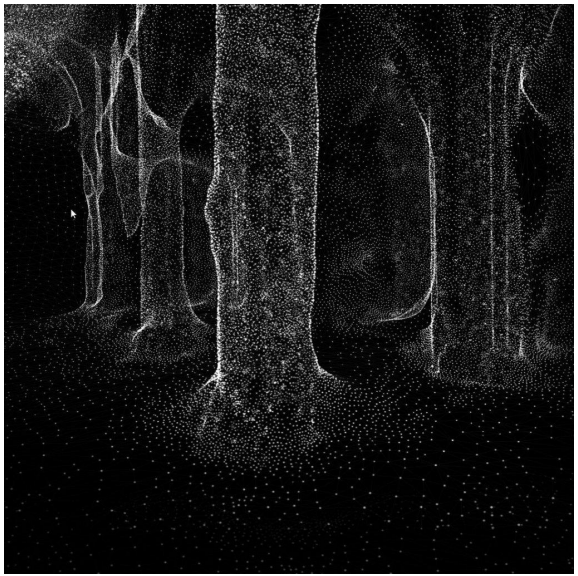
Projection mapping trends include AR and VR integration, multi-projector integration, and enhanced interactivity, bringing more possibilities for artistic innovation.

Projection mapping technology in the field of art application examples

Joanie Lemercier

His work transcends the plane and expands dimensions through the interplay of light and shadow on materials such as wood, glass, paper, ceramics, textiles and water.
Much of Lemercier's practice is inspired by nature and reflects the representation of the natural world through mathematics, science and technology.
In recent years, he has attempted to completely dematerialize projected surfaces, using transparent materials and water mists.

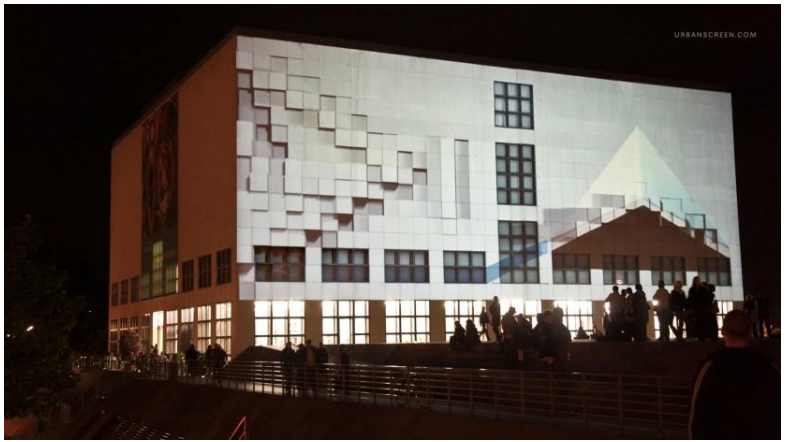
Nimbes



https://joanielemercier.com/nimbes/

UrbanScreen

555 KUBIK

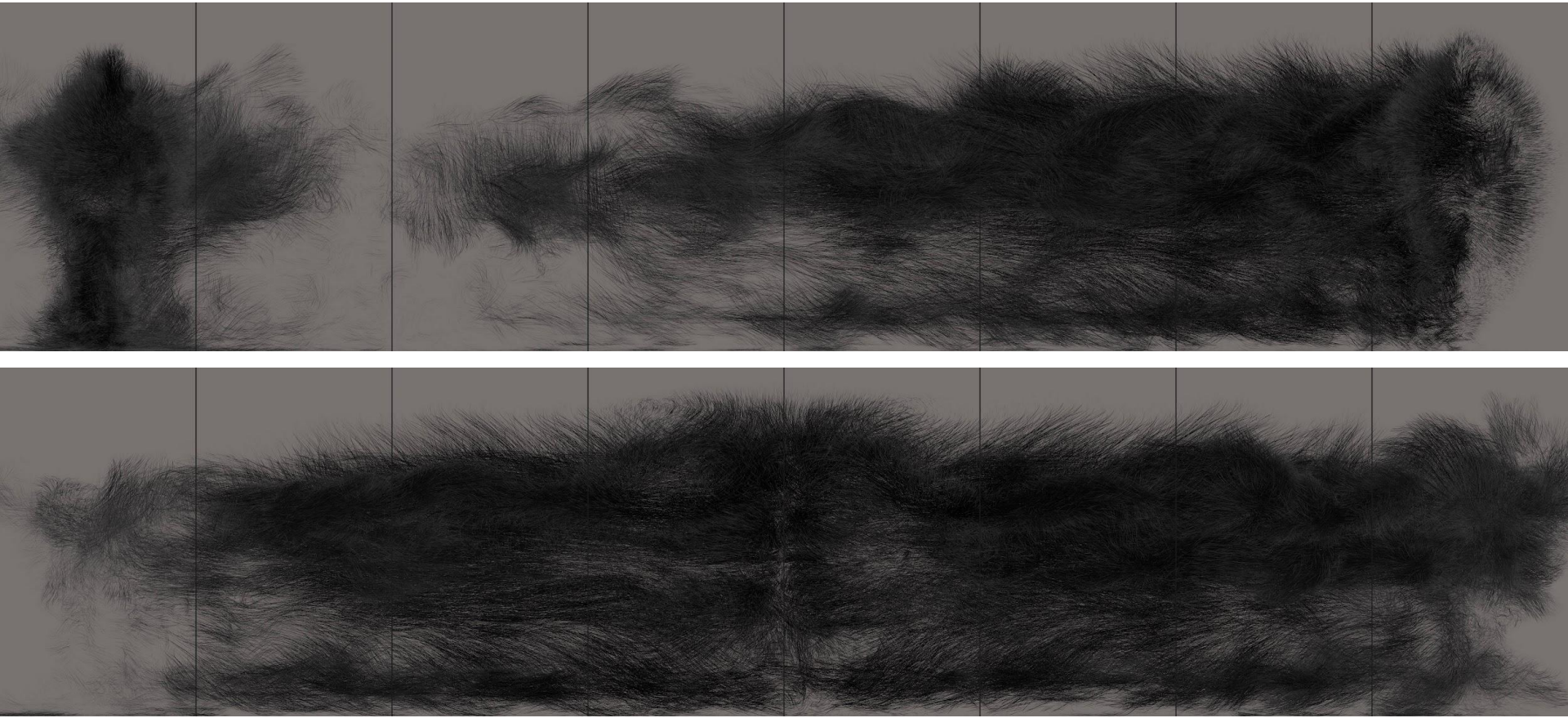


The idea of "555 KUBIK" comes from considering a building as a three-dimensional canvas and mapping moving images onto the surface of the building through projection mapping techniques. In this work, UrbanScreen uses the façade and geometry of the building to create a series of imaginative moving images. These images make the buildings seem to come to life, sometimes breathing, expanding and contracting, sometimes disintegrating and reorganizing like a Rubik's cube.

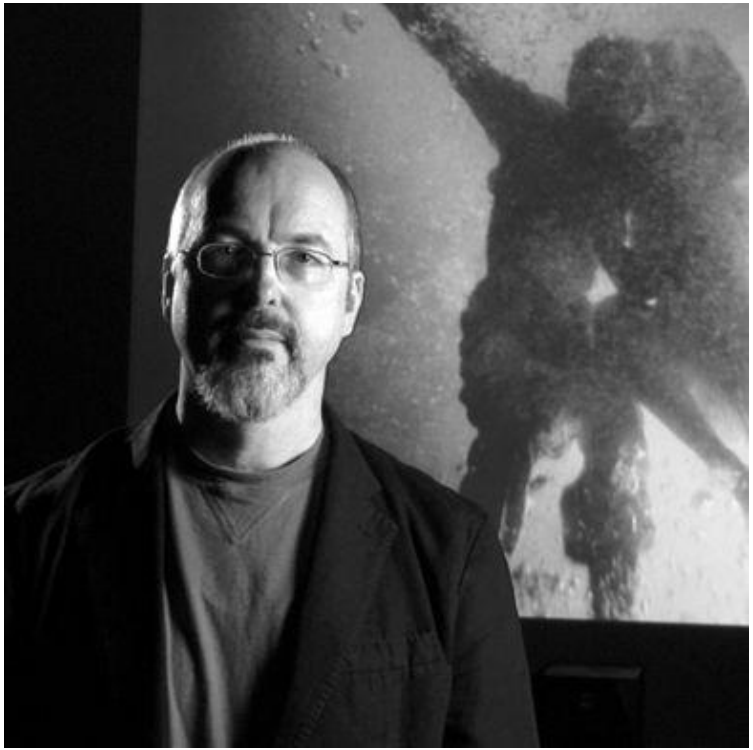
https://www.urbanscreen.com/555-kubik/


teamLab

Dissipative Figures - 2 Humans



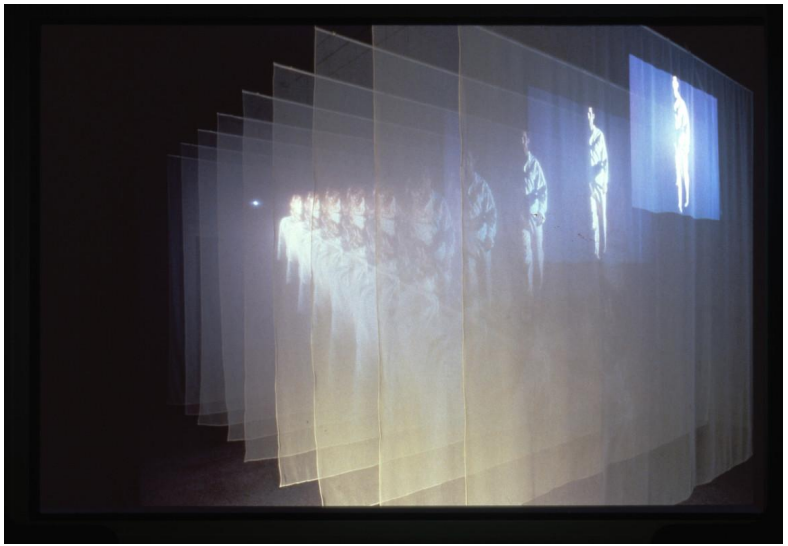
Bill Viola

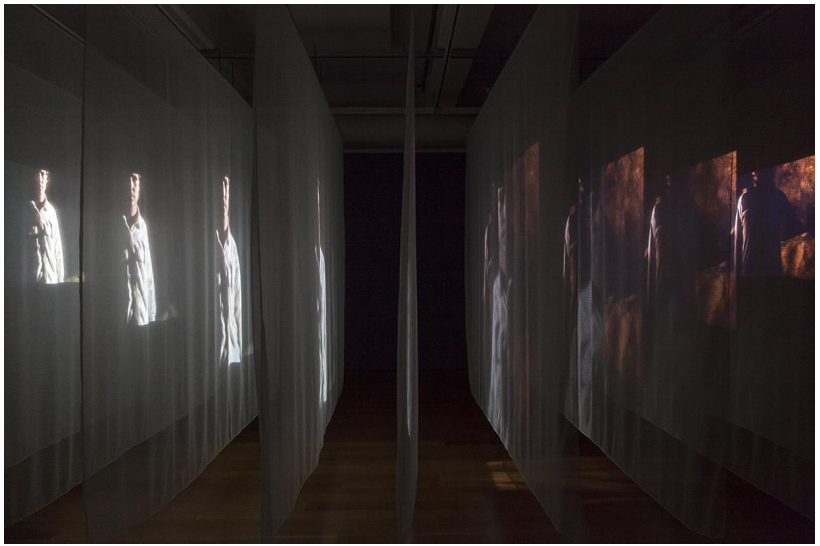


Bill Viola（born January 25, 1951) is an American contemporary video artist whose artistic expression depends upon electronic, sound, and image technology in new media His works focus on the ideas behind fundamental human experiences such as birth, death and aspects of consciousness.

https://www.facebook.com/fabricworkshop/videos/bill-viola-the-veiling/384864078871387/

The veiling





The Veiling is a visually and spatially charged installation that explores the boundaries between reality and illusion, presence and disappearance, through a series of translucent curtains and projection techniques.

question 1

I'm curious to see what kind of projector or projection mapping we imagine in our minds for the future.