Synthesising
Birger Sevaldson

Classical roots

- The concepts of analyses and synthesis is very old
- Rooted in classical euclidian geometry proofs
- Pappus, Alexandria 300 AD
- The Analyomenos: The treasure of Analyses

Georg Friedrich Hegel

- The **thesis** is an intellectual proposition.
- The **antithesis** is simply the negation of the thesis, a reaction to the proposition.
- The **synthesis** solves the conflict between the thesis and antithesis by reconciling their common truths, and forming a new proposition.

Benjamin Bloom **Taxonomy of Educational Objectives**

- Analysis
  - Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations
    - Analysis of elements
    - Analysis of relationships
    - Analysis of organizational principles
- Questions like: How would you classify...?
- Synthesis
  - Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions
    - Production of a unique communication
    - Production of a plan, or proposed set of operations
    - Derivation of a set of abstract relations

Christopher Alexander

- Notes on the Synthesis of Form
- ”Best Fit”
- Talkes of ecological balance of larger intertwined systems already in 1966
- Tryies to build a mathematical logic for the ”best fit”

The failure of design methods

- Gedenryd establishes the ”general and complete failure of design methodology”

1. *separation*: The separation of the design process into distinct phases, with each individual activity being performed in isolation from the others.
2. *logical order*: The specification of an explicit order in which to perform these different activities.
3. *planning*: The pre-specification of an order in which to perform the activities within a phase.
4. *product–process symmetry*: The plan being organized so as to make the structure of the design process reflect the structure of the sub-components of the resulting design product.

Analyses - Synthesis - Evaluation

Product-Process Symmetry

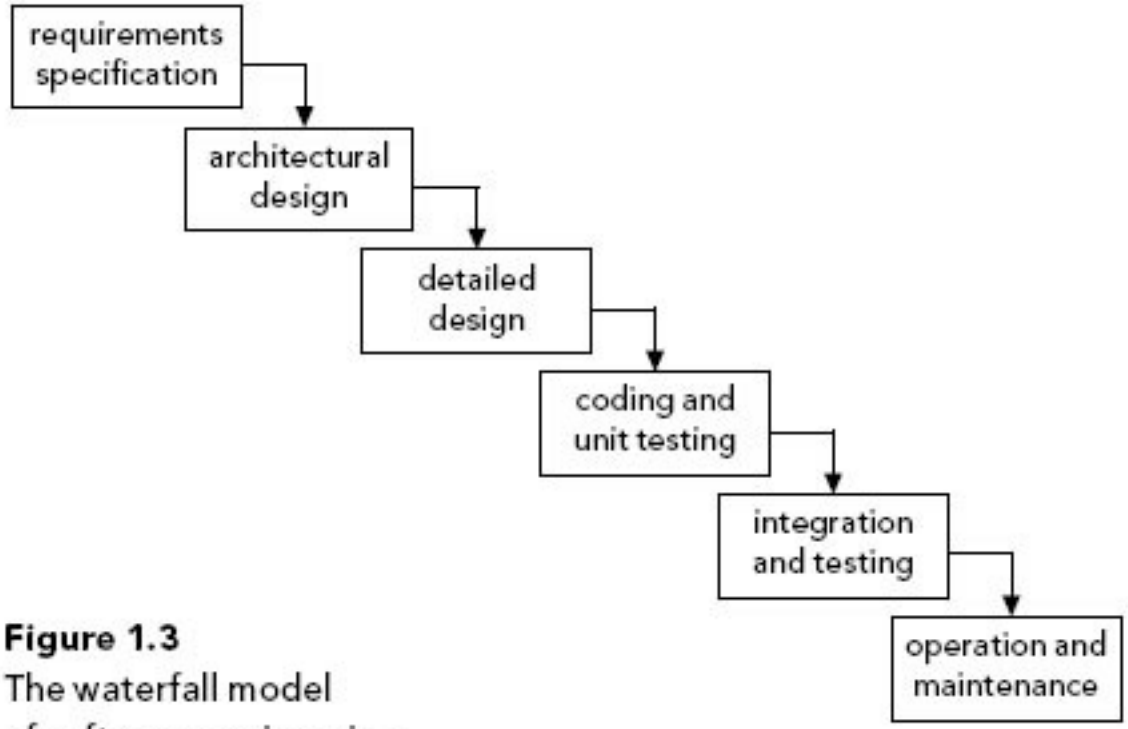


Figure 1.3
The waterfall model of software engineering.

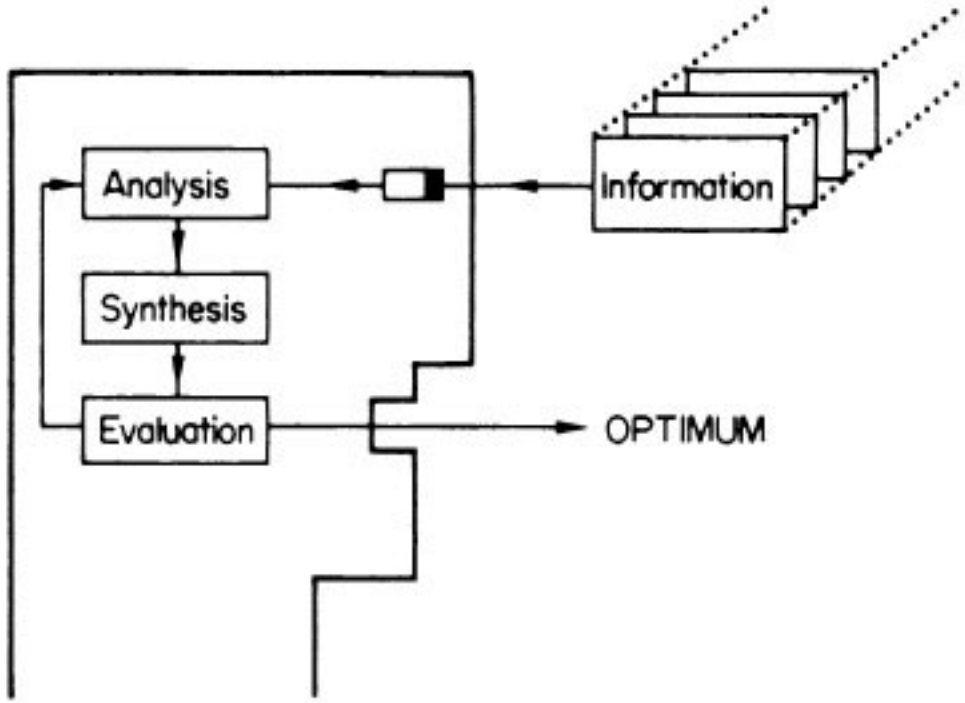
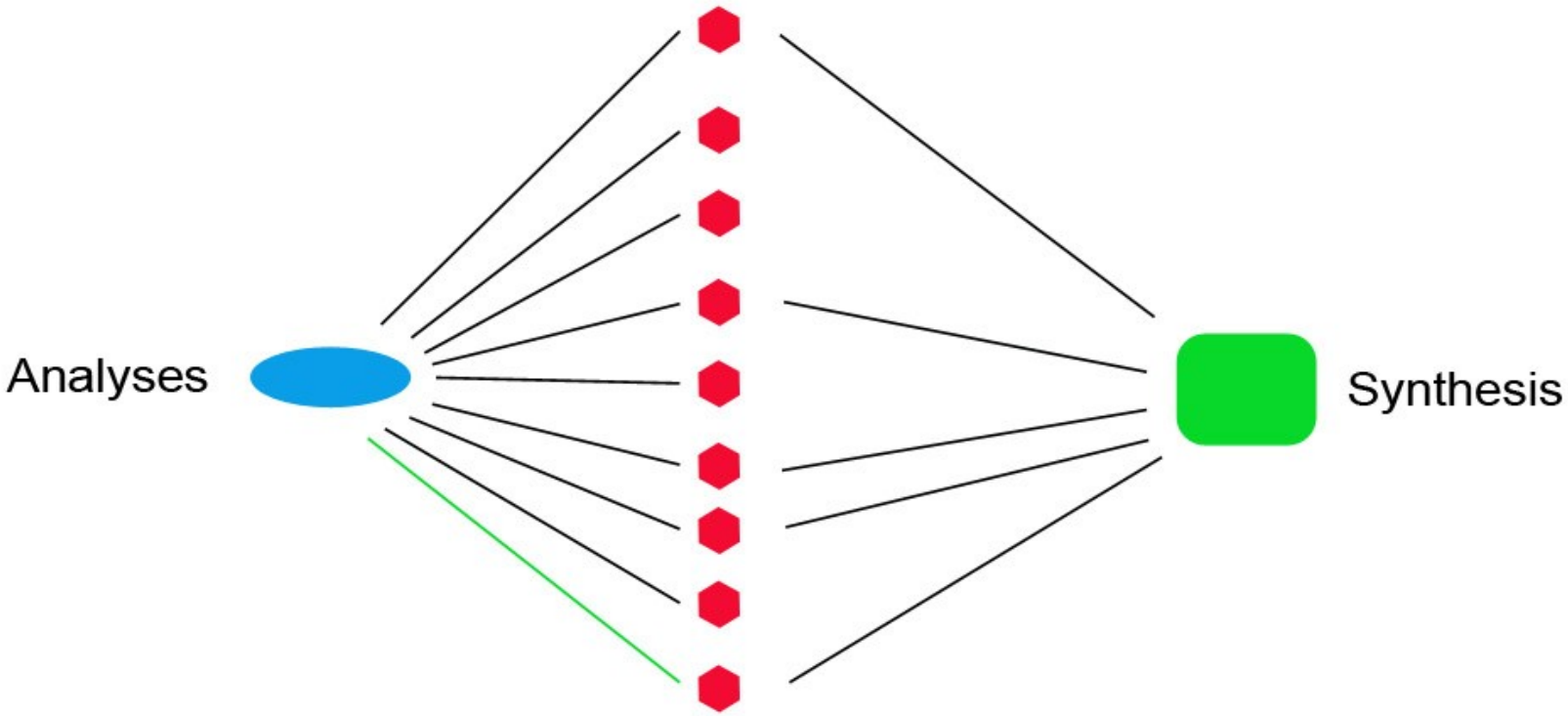
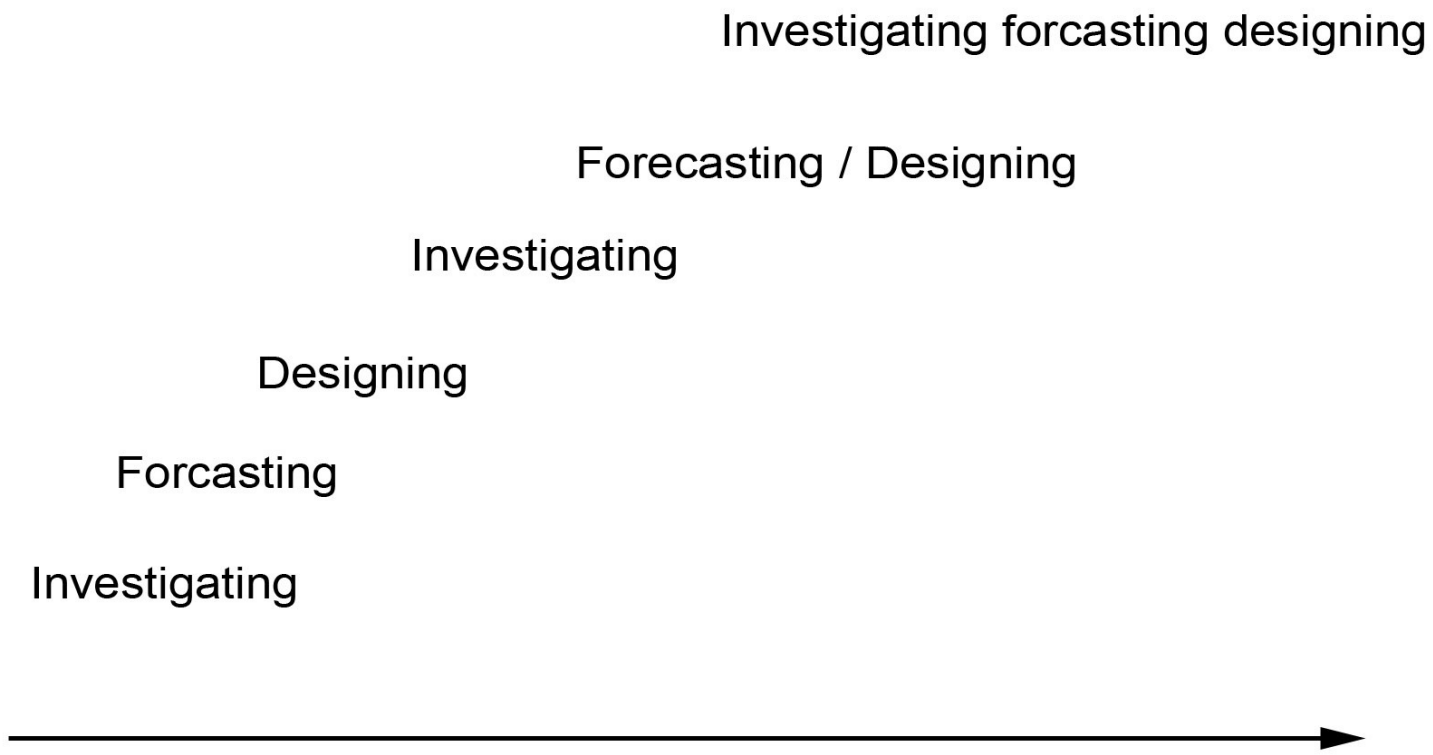


Figure 1.16 Original caption: "Designer as computer".


Analyses
Synthesis


Investigating forcasting designing
Forecasting / Designing
Investigating
Designing
Forcasting
Investigating

We synthesize through and by

- Iterations: Developing solutions stepwise through and by design and reflection. Trial and Error (e.g. Capjon)
- Heuristics: AHA!!! and HALLELUJA!!! type of realisations and discoveries in the design work and reflection. (e.g. Gregory Ulmer)
- Flow: Closely related to heuristics. The creative flow in individuals, groups or domains. (Csikszentmihalyi)

Jaques Hadamard 1900 (?)

- Preparation
- Incubation
- Illumination
- Verification

Heuristic

- The heuristic moment is suggested as a part of a systematised method. Its moment of synthesis is called crystallisation by Fetterman:
- *The crystallization is typically the result of a convergence of similarities that spontaneously strike the ethnographer as relevant or important to the study.*
- *Every study has classic moments when everything falls into place.*
- (Fettermann 1989)

Intuition

The Dreyfuss and Dreyfuss Skill Acquisition model

Table 10.1 Summary of Dreyfus model of skill acquisition

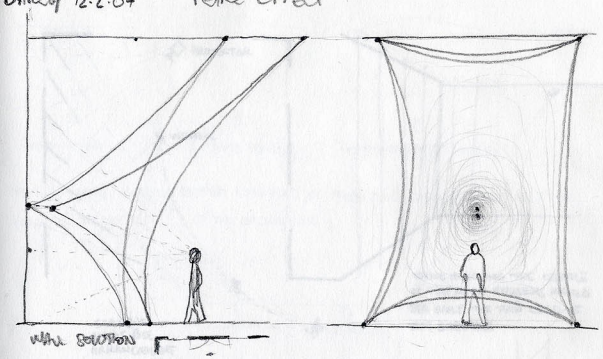
Level	Characteristics
1 – Novice	• rigid adherence to taught rules or plans • little situational perception • no discretionary judgement
2 – Advanced Beginner	• guidelines for action based on attributes or aspects • situational perception still limited • all attributes and aspects of work are treated separately and given equal importance
3 – Competent	• coping with crowdedness (multiple activity/ information) • now sees actions, at least partially, in terms of longer-term goals • conscious, deliberate planning • standardized and routinized procedures
4 – Proficient	• sees situations holistically, rather than in terms of aspects • sees what is most important in situation • perceives deviations from the normal pattern • decision making is less laboured • uses maxims for guidance whose meanings vary according to the situation
5 – Expert	• no longer relies on rules, guidelines or maxims • intuitive grasp of situations based on deep, tacit understanding • analytical approaches used only in novel situations or when problems occur • vision of what is possible

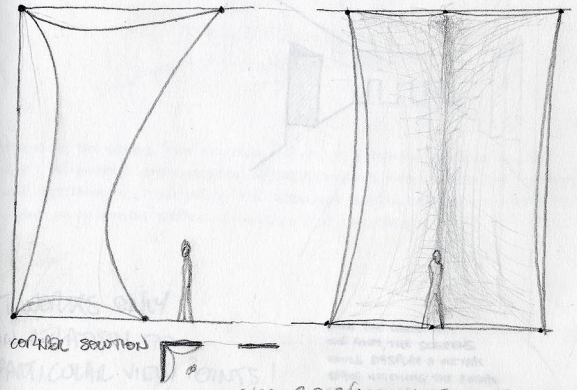
Synthesizing Techniques

- Keeping many balls in the game
- Using diverse media
- Re-discovering: Switching between media or looking at things upside-down
- Changing social setting
- Incubation: Letting a large amount of information and unfinished solutions simmer.
- Head-banging!!! Again and again

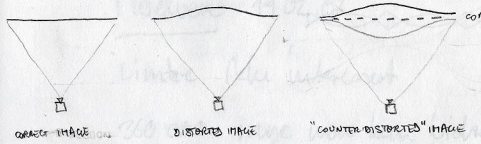
BARELY

BARZIV 12.2.07 MOIRÉ EFFECT

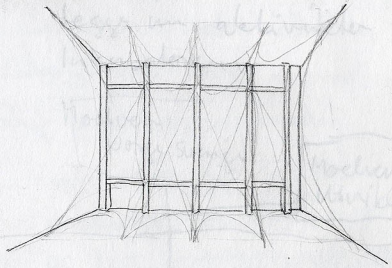




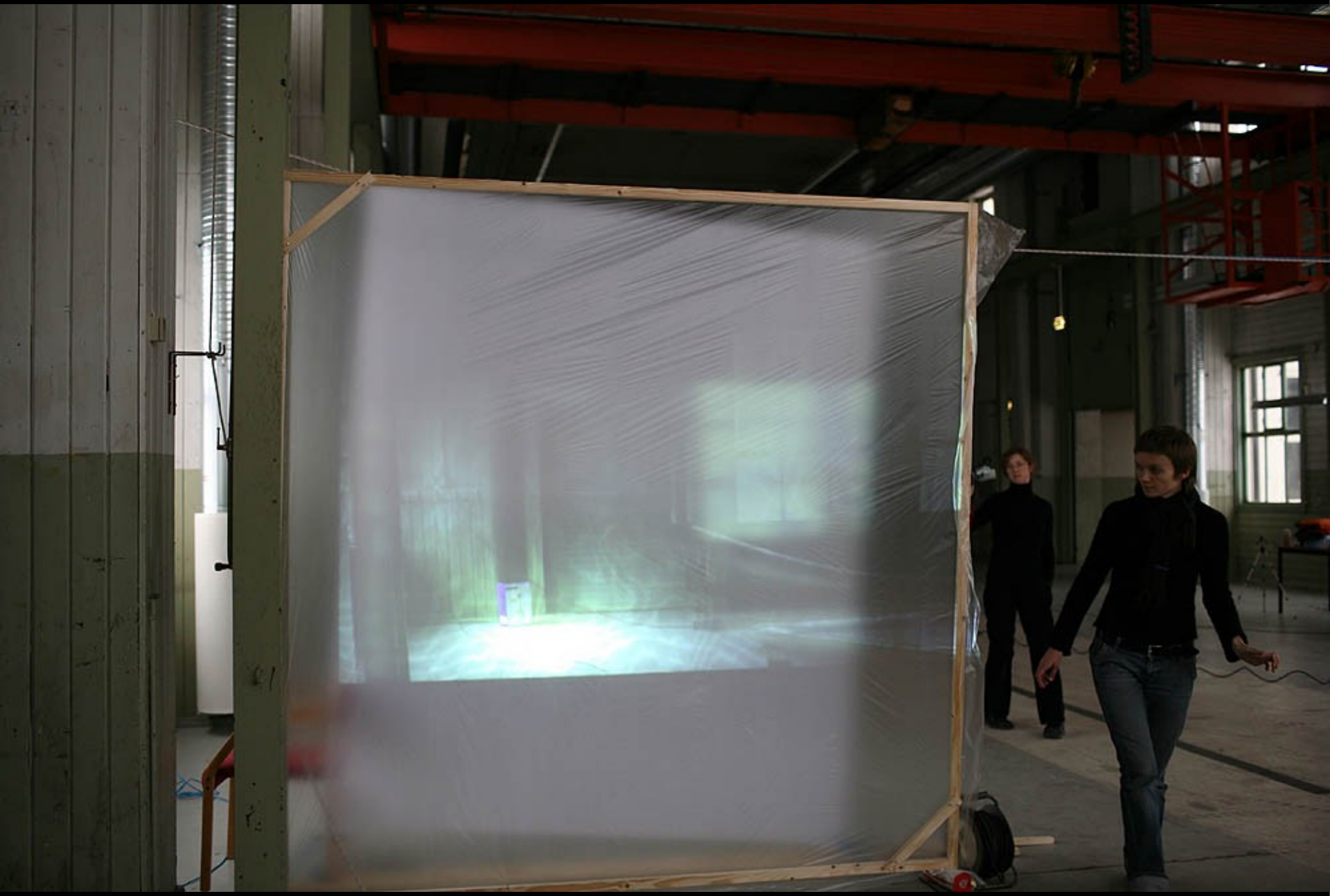
THE 2 SURFACES HAVE TO COINCIDE
-THE MOIRÉ EFFECT IS STRONGER

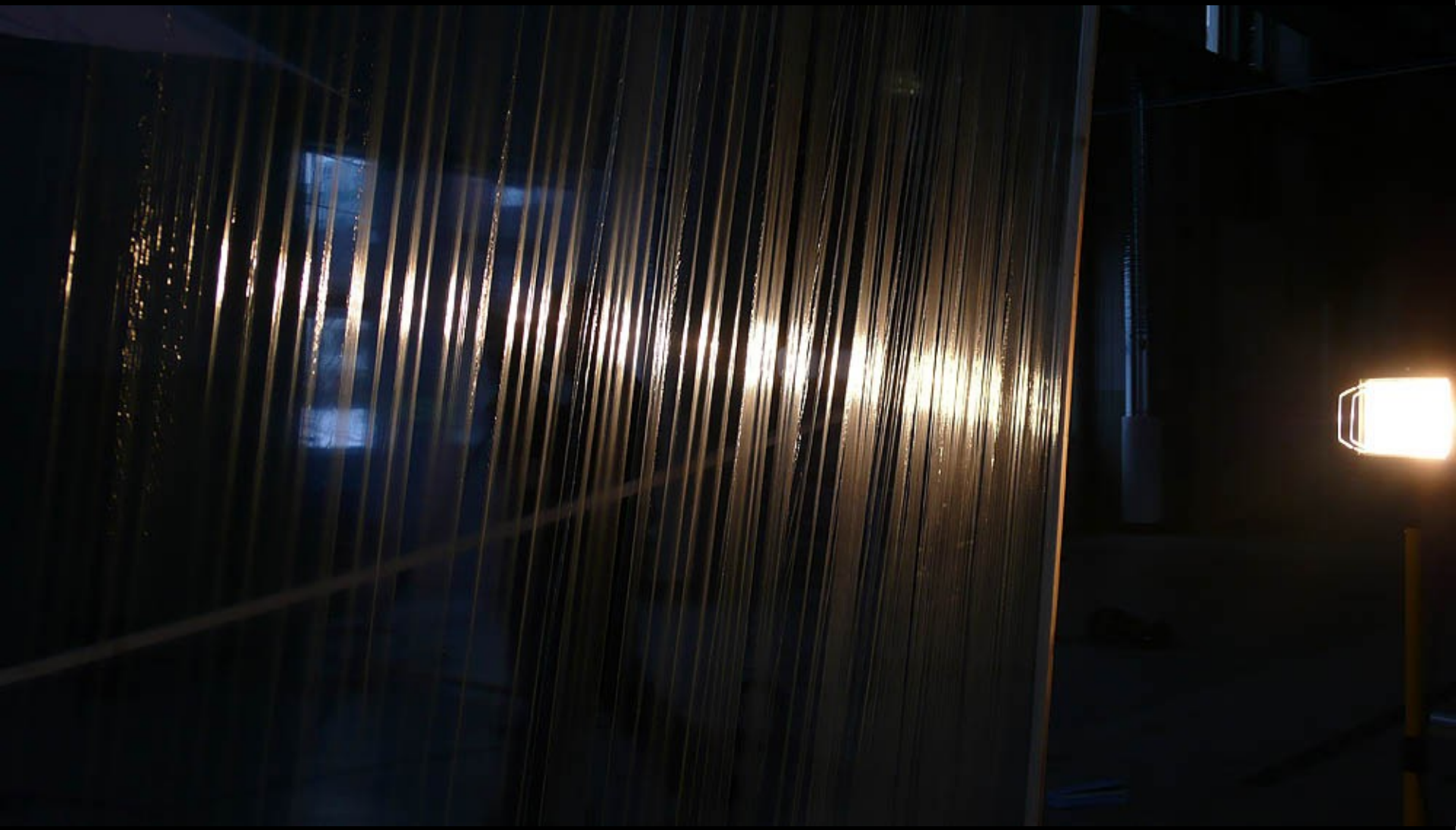


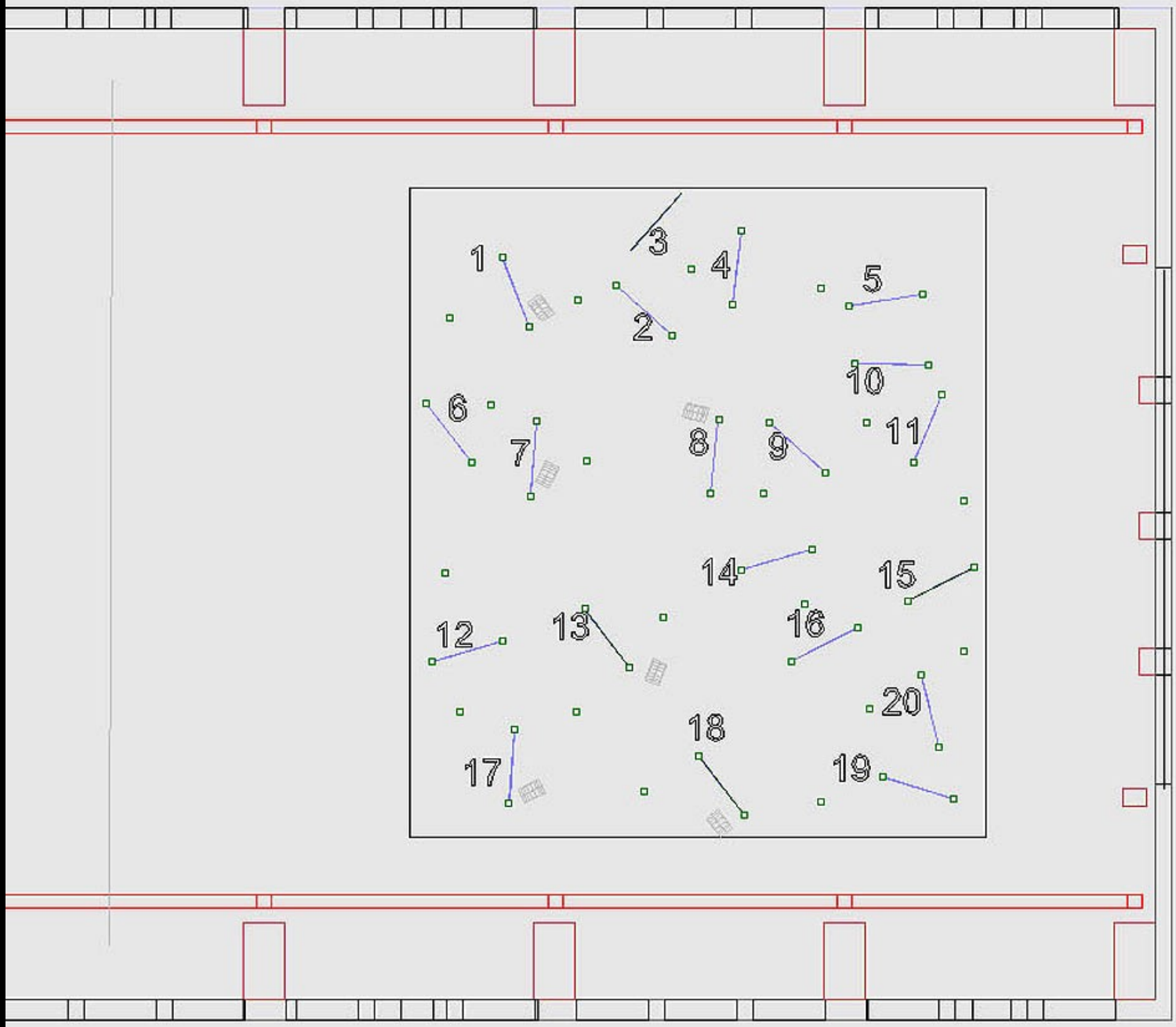
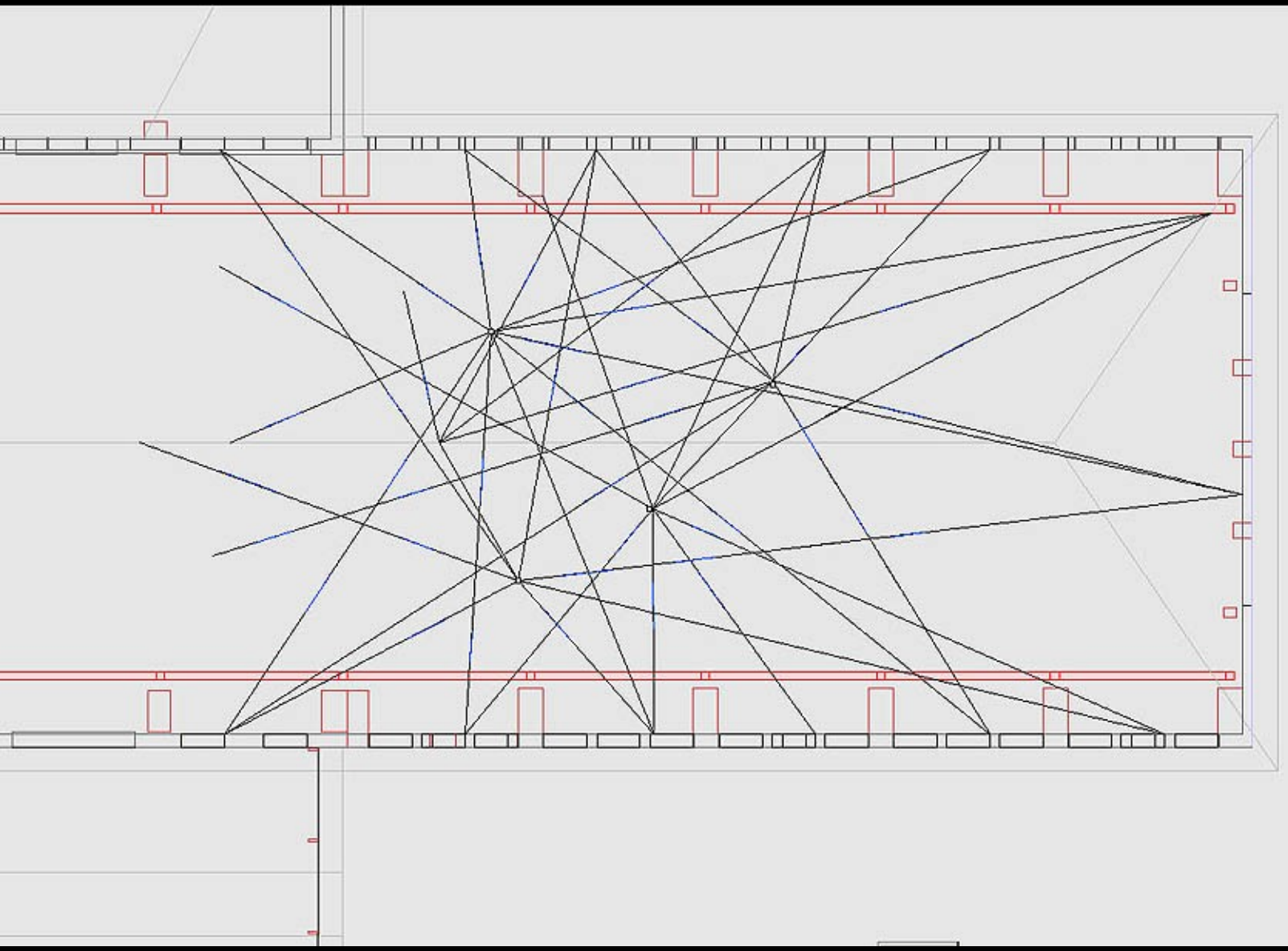
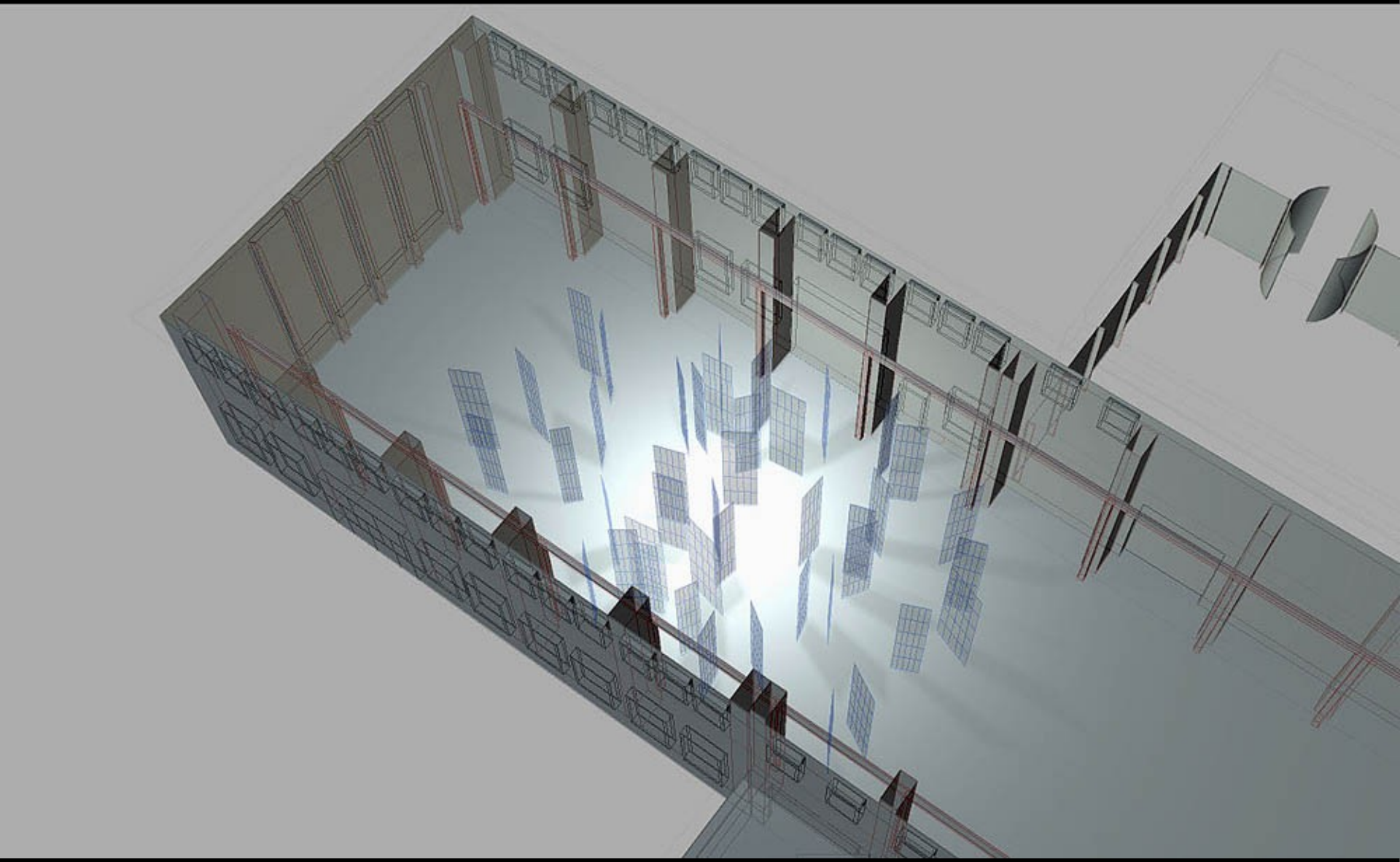
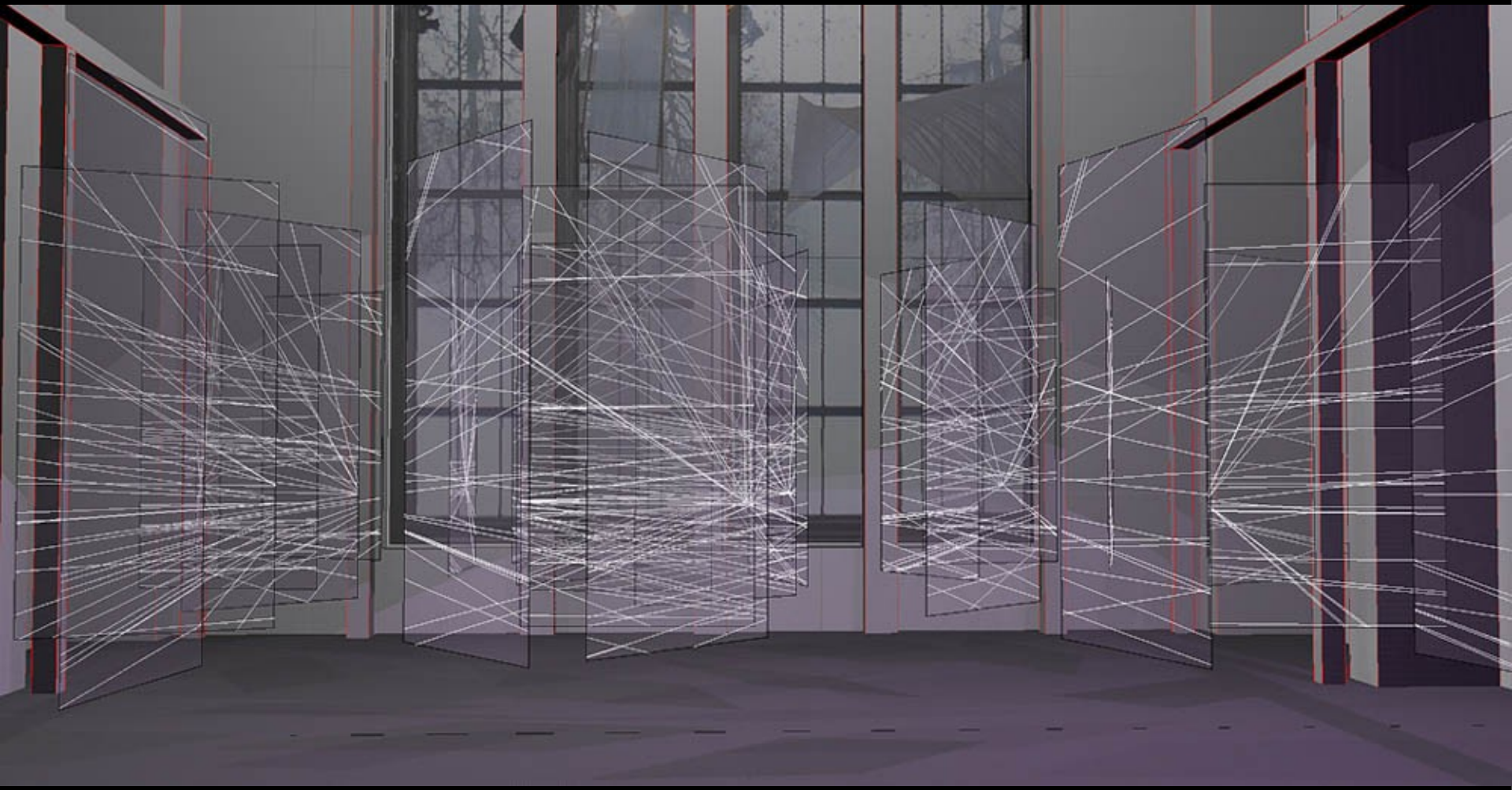
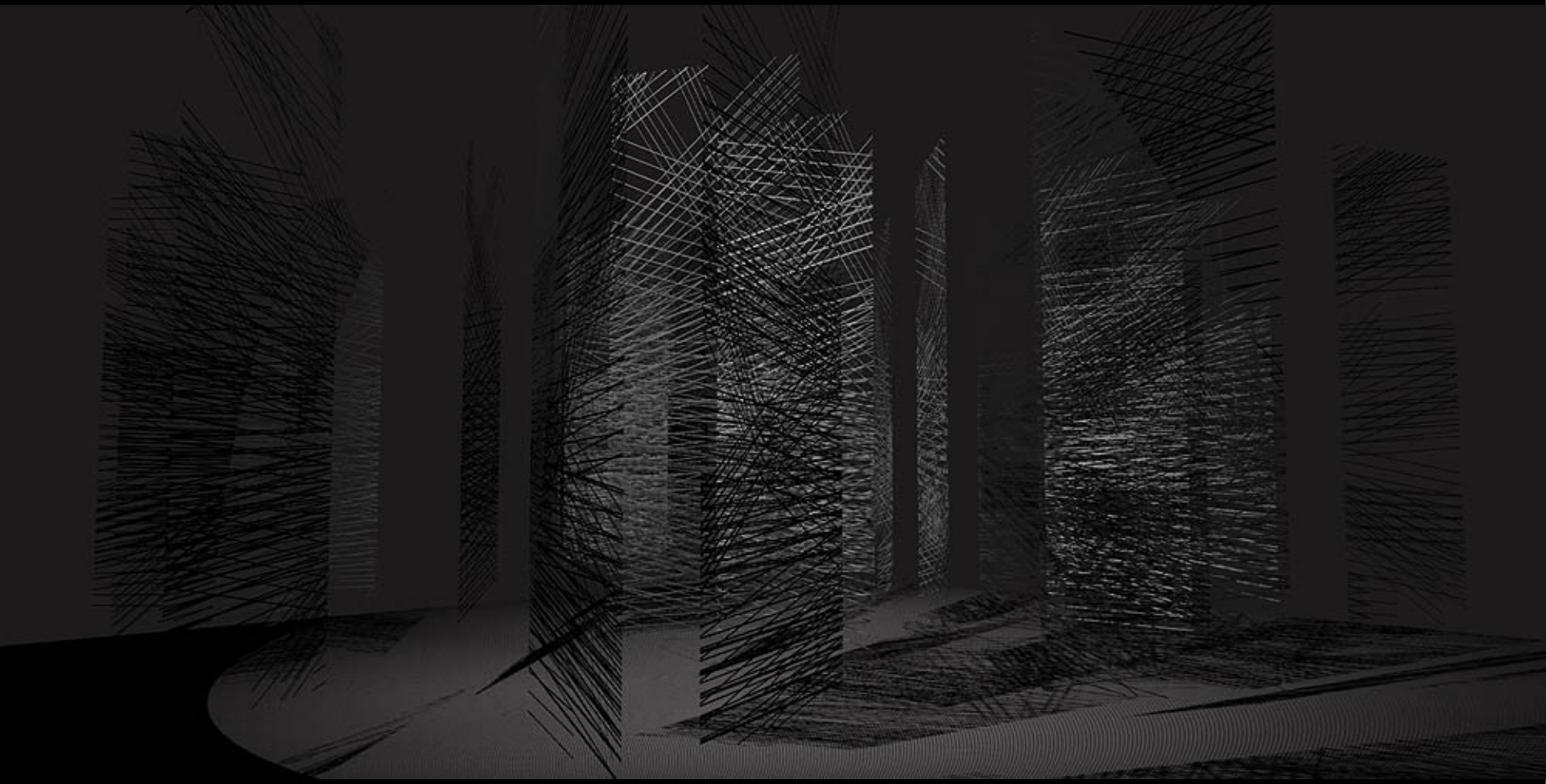
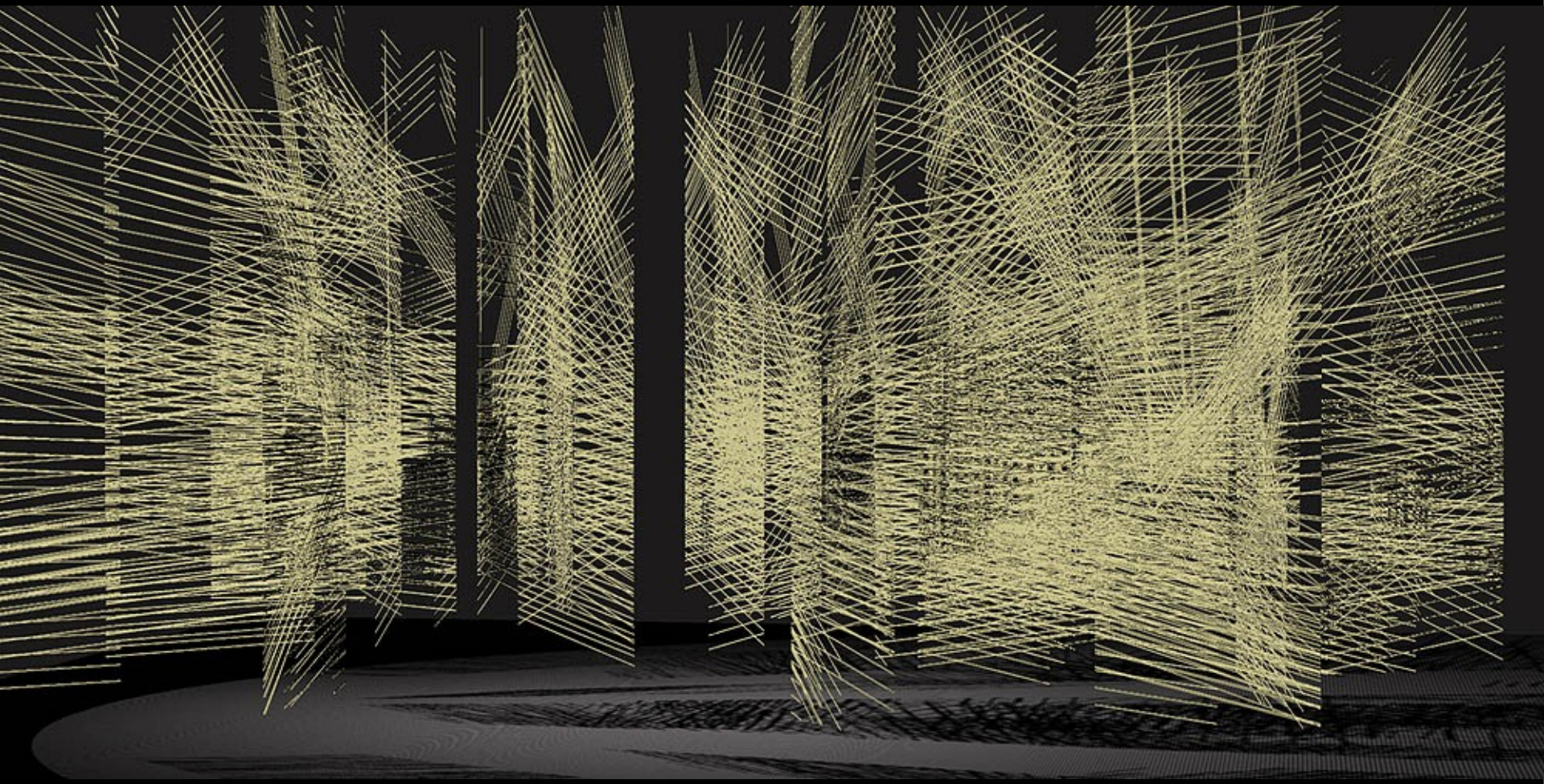
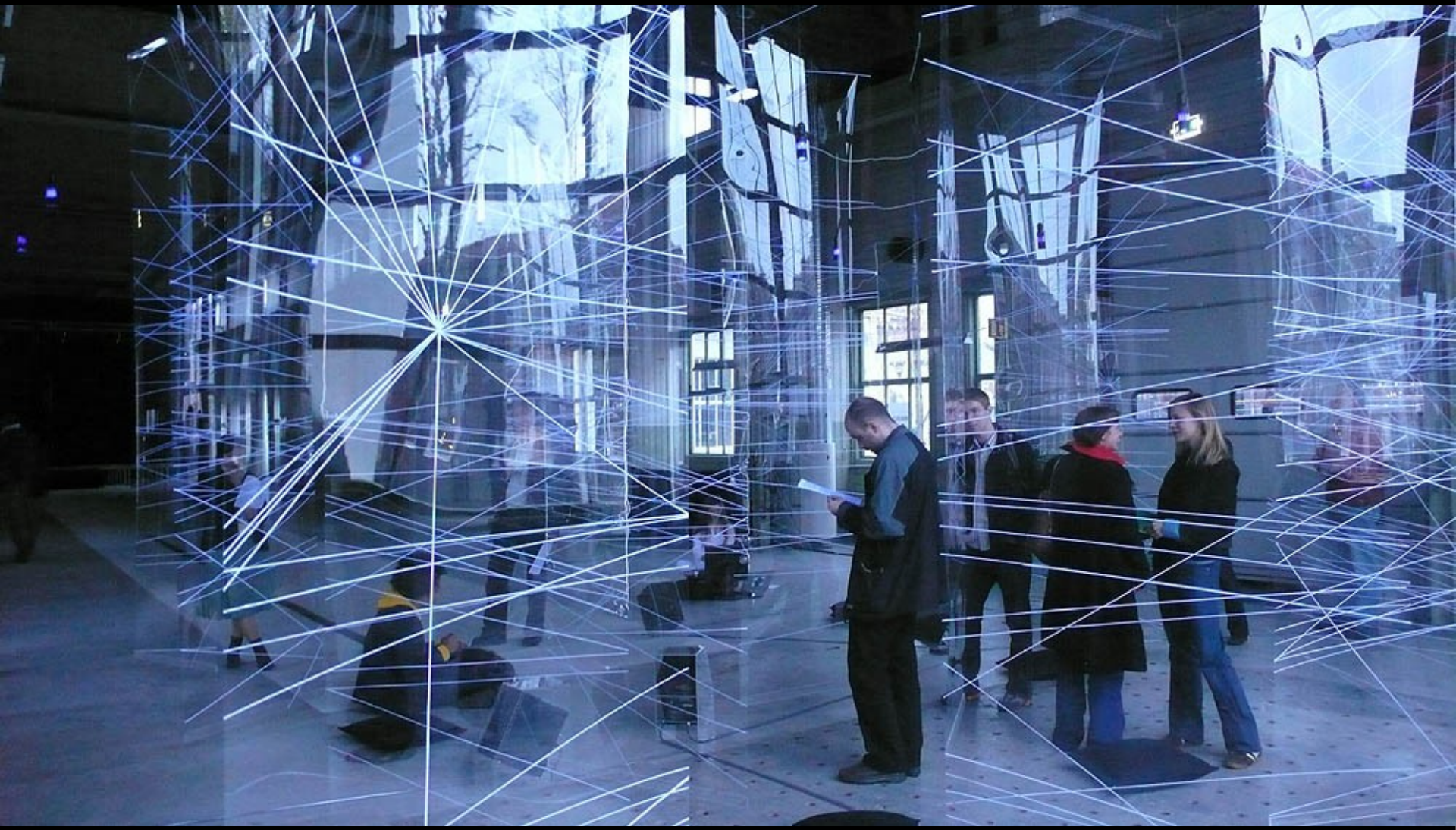
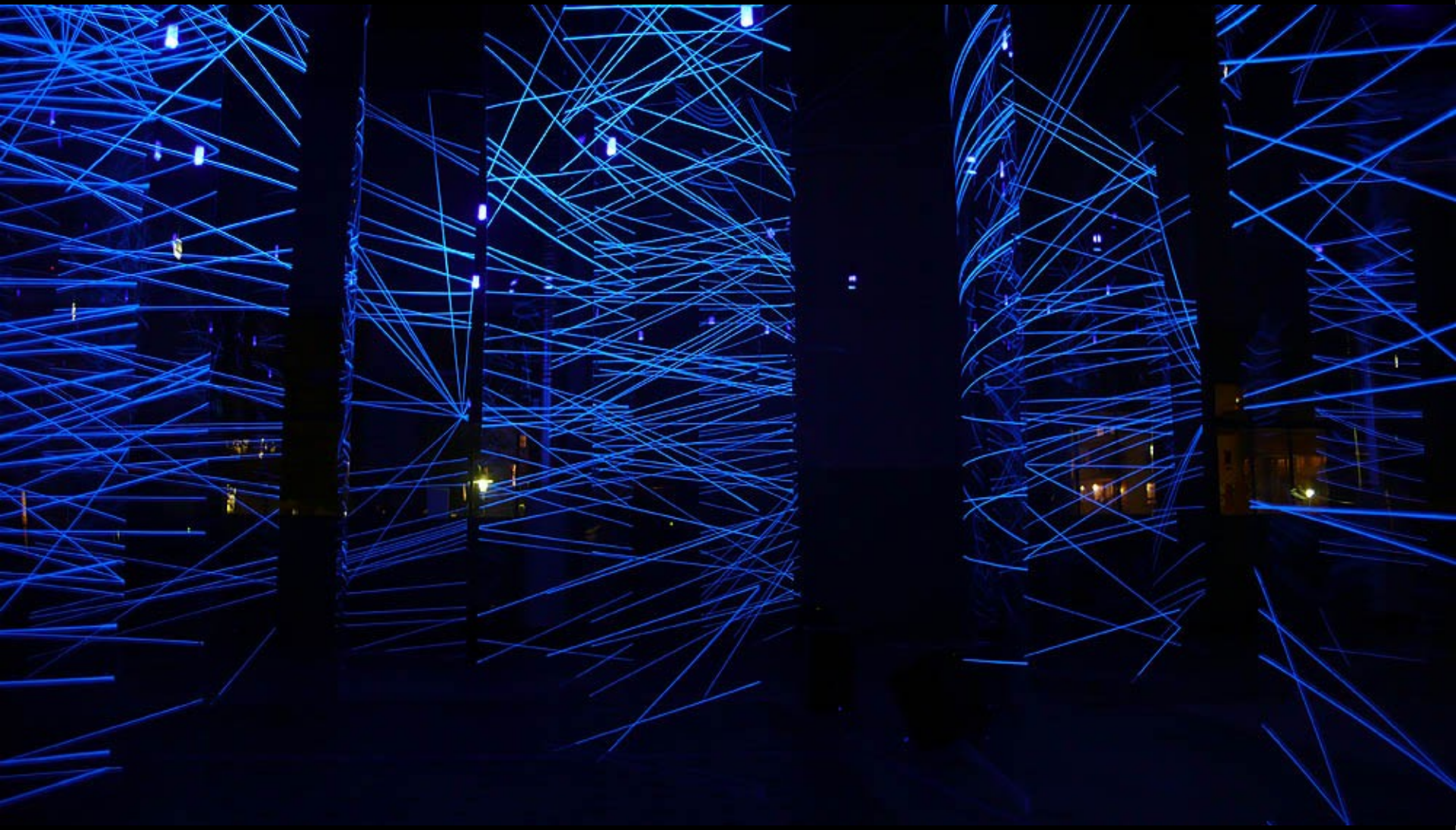
THIS ALLOWS FOR ERASING COMPLEX SURFACES BY PROJECTING COUNTER-DISTORTED IMAGES (ADJUSTED ACCORDING TO...) OF THE BACKGROUND



BY DOUBLING THE SURFACE (TWO VERY CLOSE SURFACES) IT IS ASSIBLE TO CREATE A MOIRÉ EFFECT. THE COUNTER-DISTORTED IMAGE OF THE BACKGROUND WOULD "ERASE" THE SURFACES WHILE PRESERVING THE MOIRÉ EFFECT. THE RESULT IS A FLOATING MOIRÉ EFFECT DISTRIBUTED IN SPACE ON AN INVISIBLE SURFACE - A MOVING GHOST OF THE SURFACE



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