

# IAN ANDREWS

THE SKETCHBOOK AND THE COLLIDER

# COLLISION EVENT

DRAWING LINKS BETWEEN FINE ART AND PARTICLE PHYSICS



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IN COLLABORATION WITH  
PROF. KOSTAS NIKOLOPOULOS  
UNIVERSITY OF BIRMINGHAM PARTICLE PHYSICS GROUP

 **Birmingham**  
City Council  
REWRITING THE BOOK  
THE LIBRARY OF BIRMINGHAM

 **RESEARCH & CULTURAL**  
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 **UNIVERSITY OF**  
BIRMINGHAM

 **ARTS COUNCIL**  
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THIRD FLOOR GALLERY

APRIL 5 - JUNE 14  
12-5 DAILY (CLOSED SUNDAYS)

**PRIVATE VIEW: APRIL 11<sup>th</sup> 6-8PM**

IANANDREWSFINEART.TUMBLR.COM

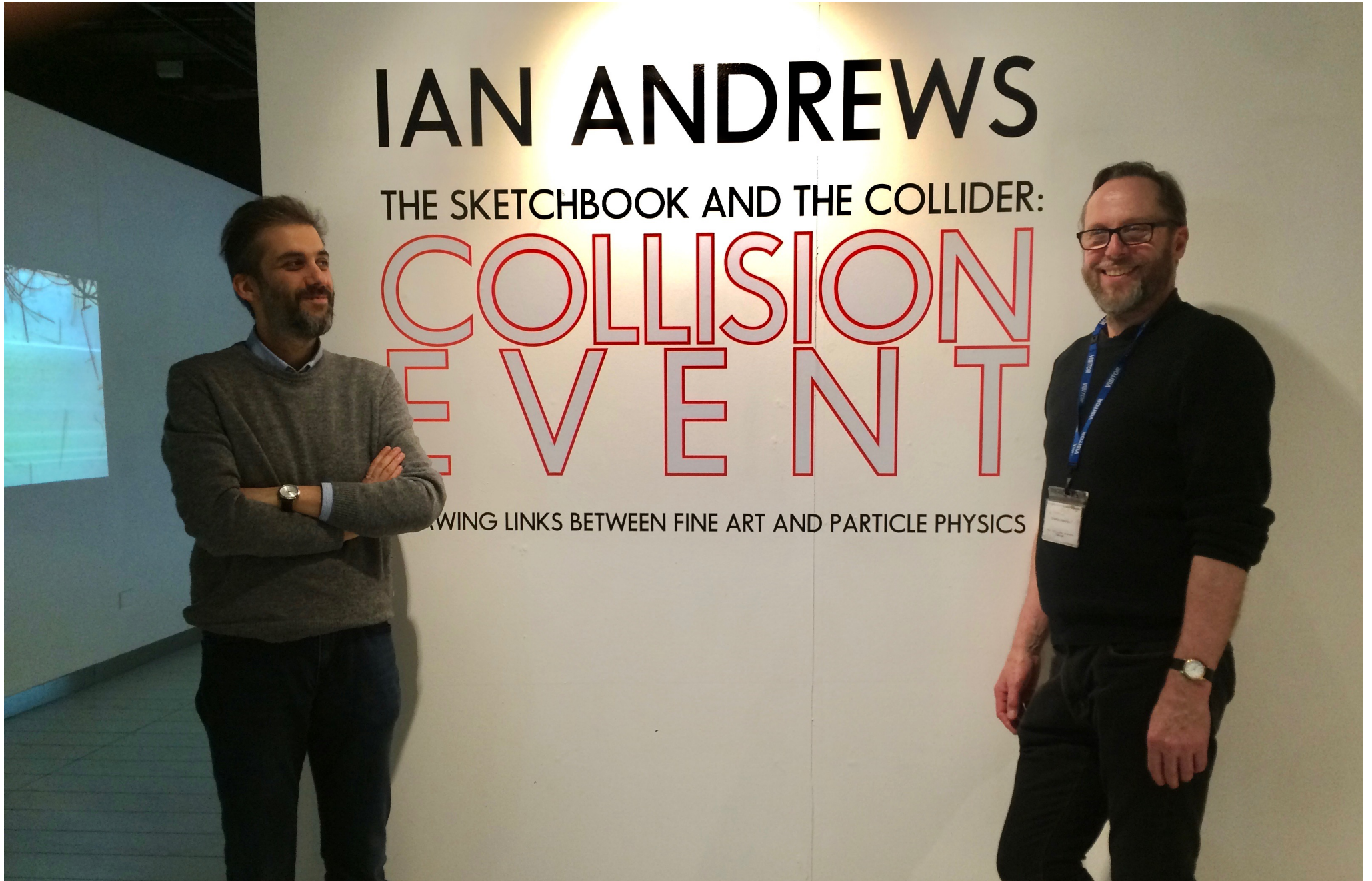


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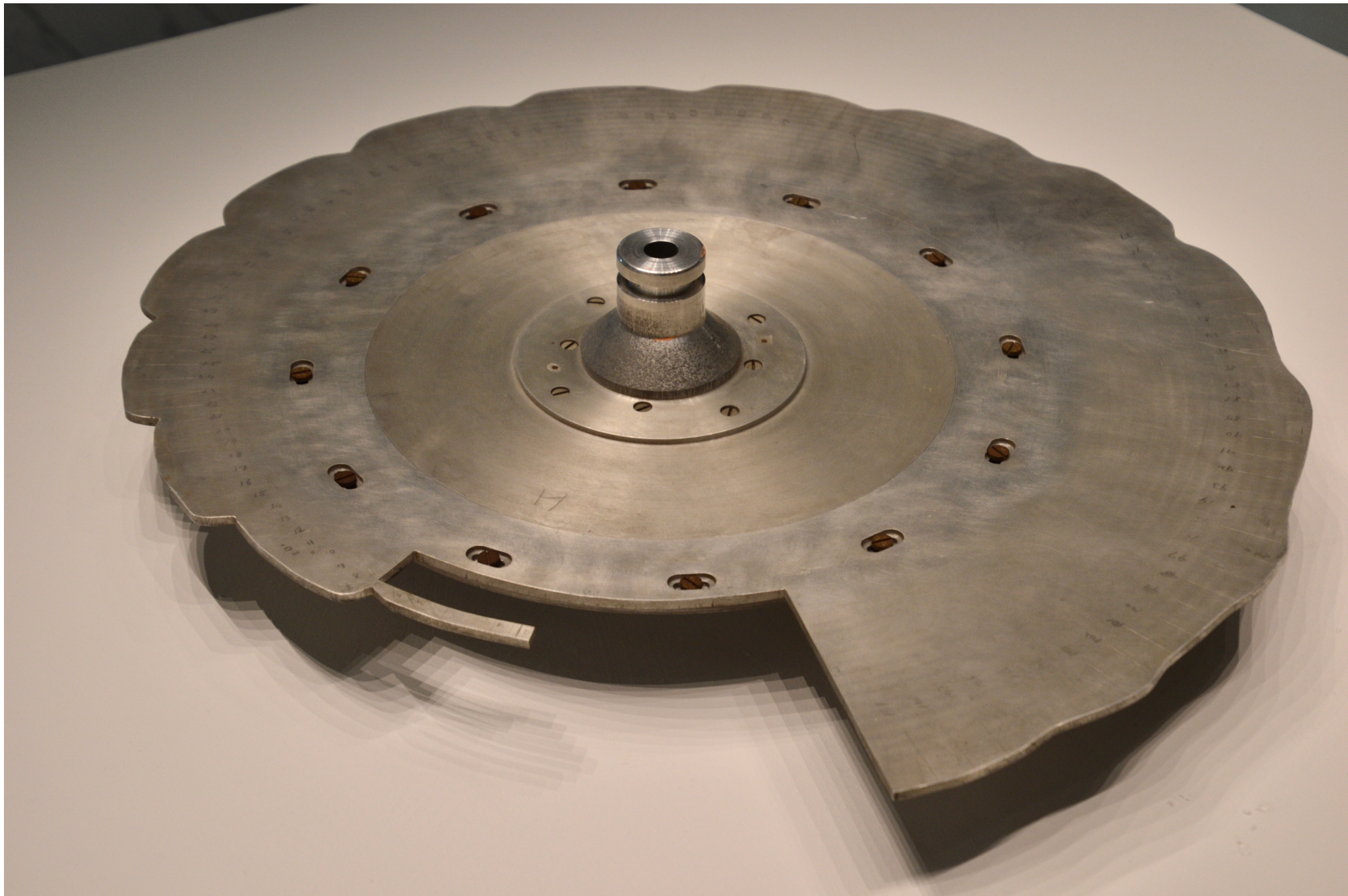
THE SKETCHBOOK AND THE COLLIDER:

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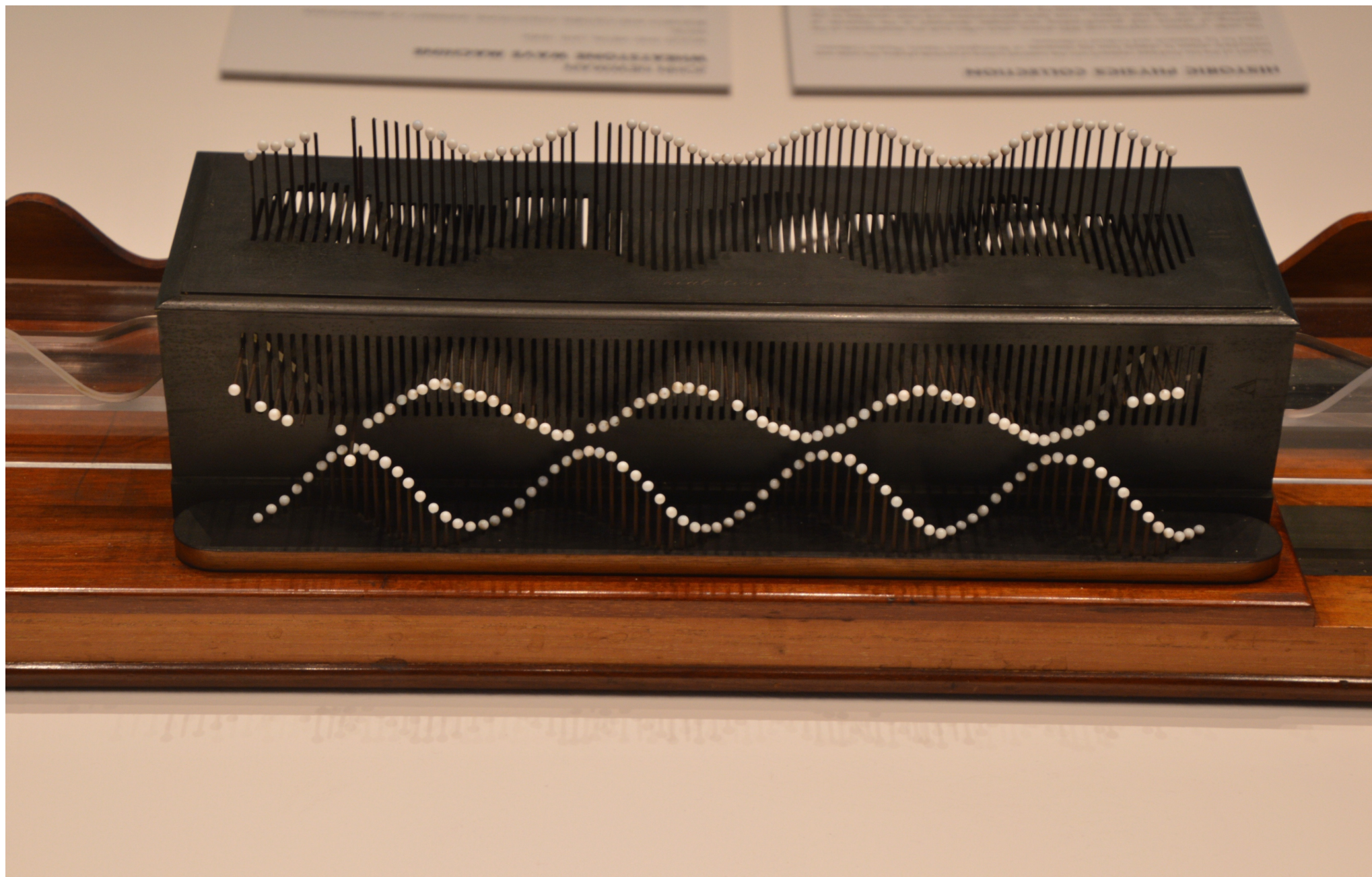
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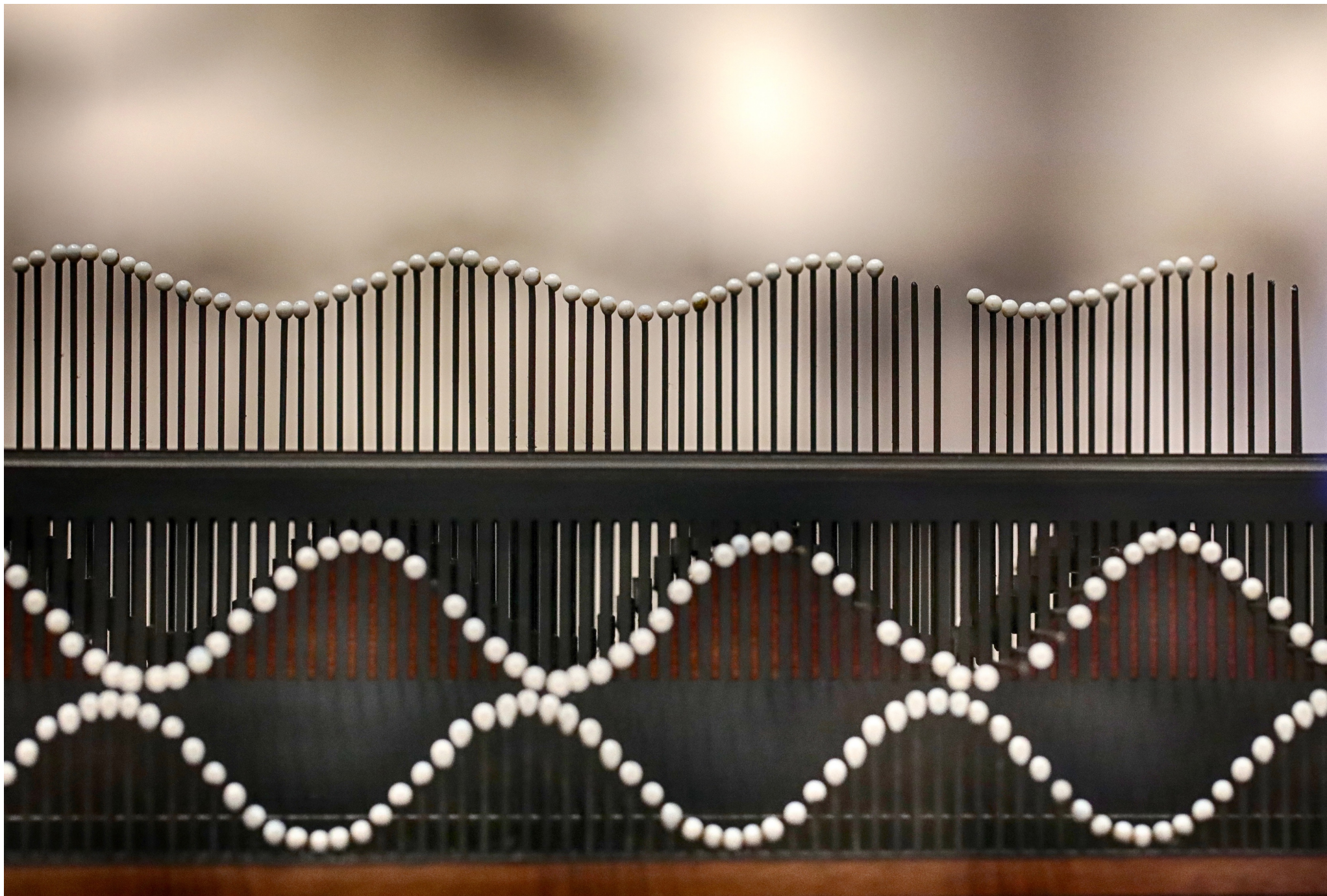


















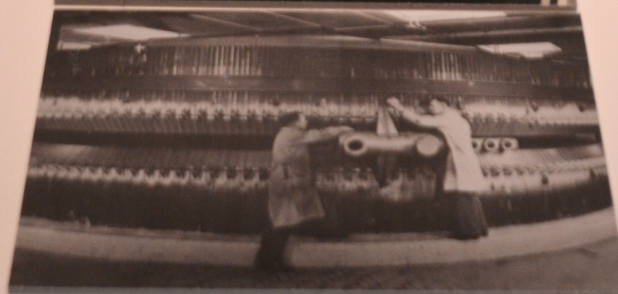
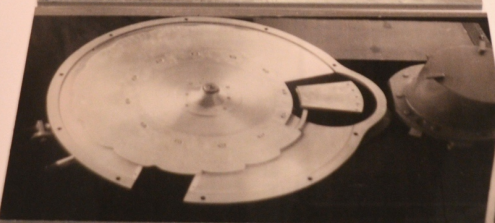


#### SCANNING TABLES

1. 1942 SCANNING TABLE
2. 1942 SCANNING TABLE (2nd version)
3. 1942 SCANNING TABLE (3rd version)
4. 1942 SCANNING TABLE (4th version)
5. 1942 SCANNING TABLE (5th version)

Before the scanning table was used, there were four scanning tables. These were placed in a room at the top of the building. The scanning table was used to scan the plates of the scanning table. The scanning table was used to scan the plates of the scanning table. The scanning table was used to scan the plates of the scanning table.

Scanning was conducted in a different room. The scanning table was used to scan the plates of the scanning table. The scanning table was used to scan the plates of the scanning table. The scanning table was used to scan the plates of the scanning table.



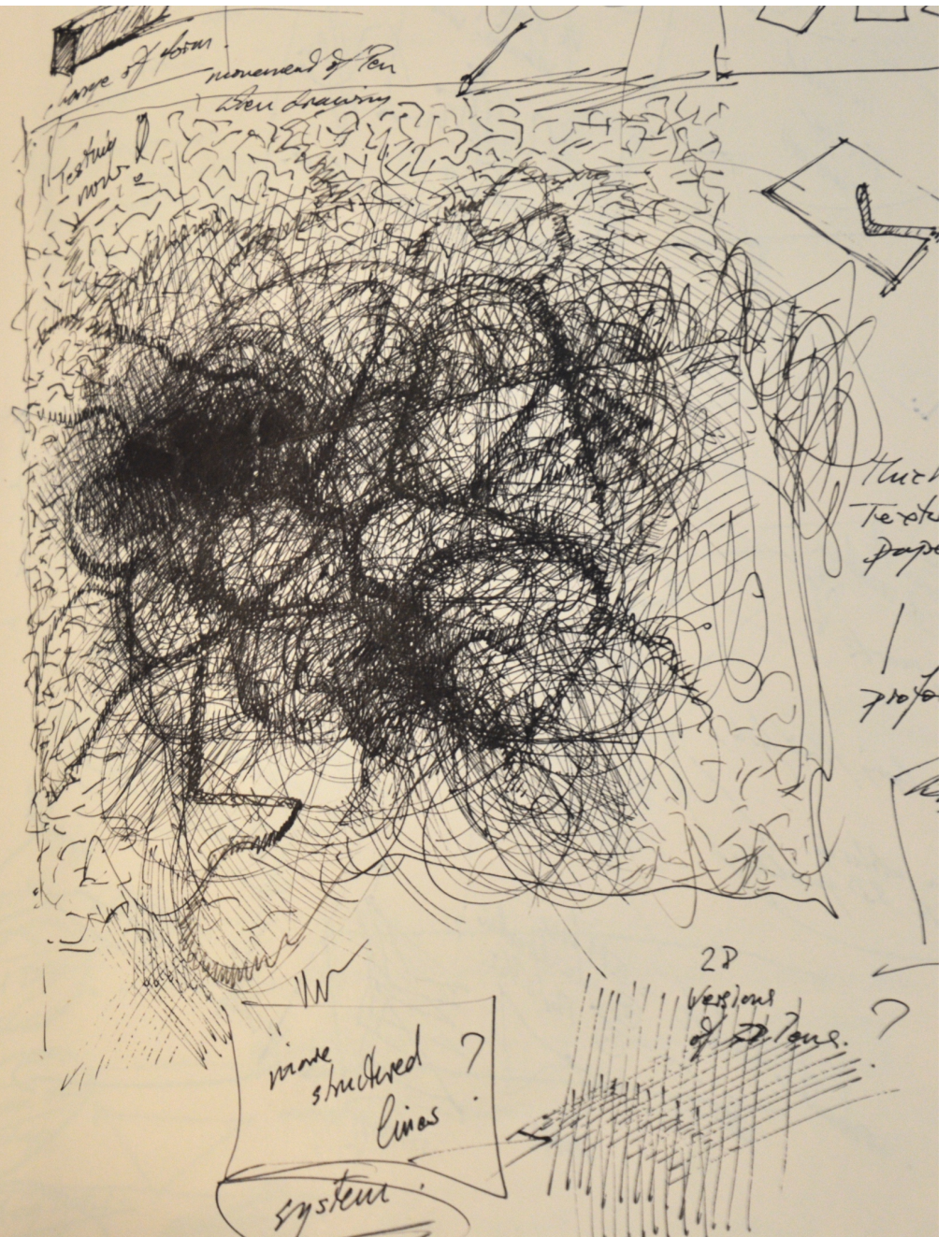
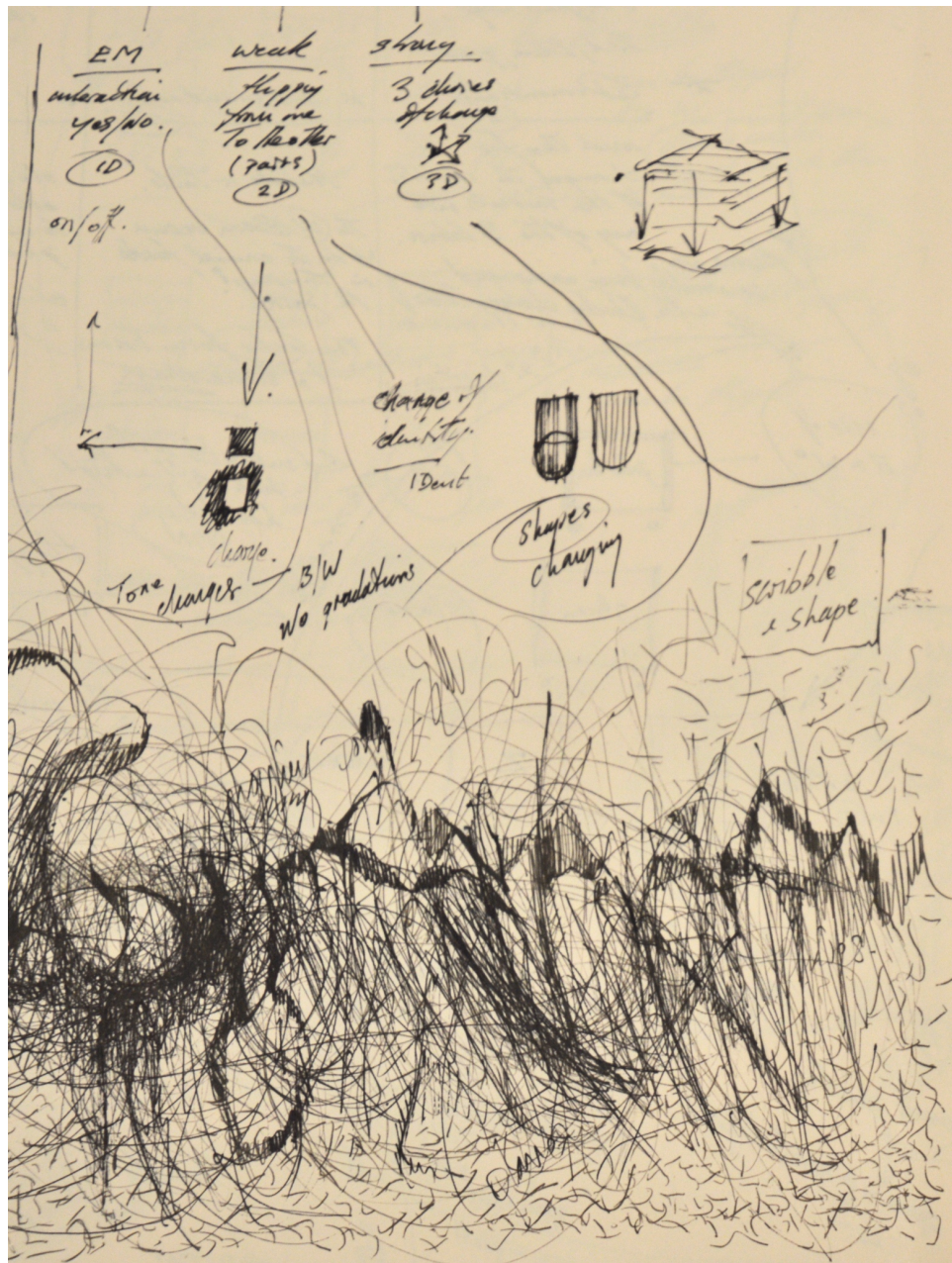
#### HISTORIC PHYSICS PHOTOGRAPHS

RESEARCH AND CULTURAL COLLECTIONS, UNIVERSITY OF SHEFFIELD

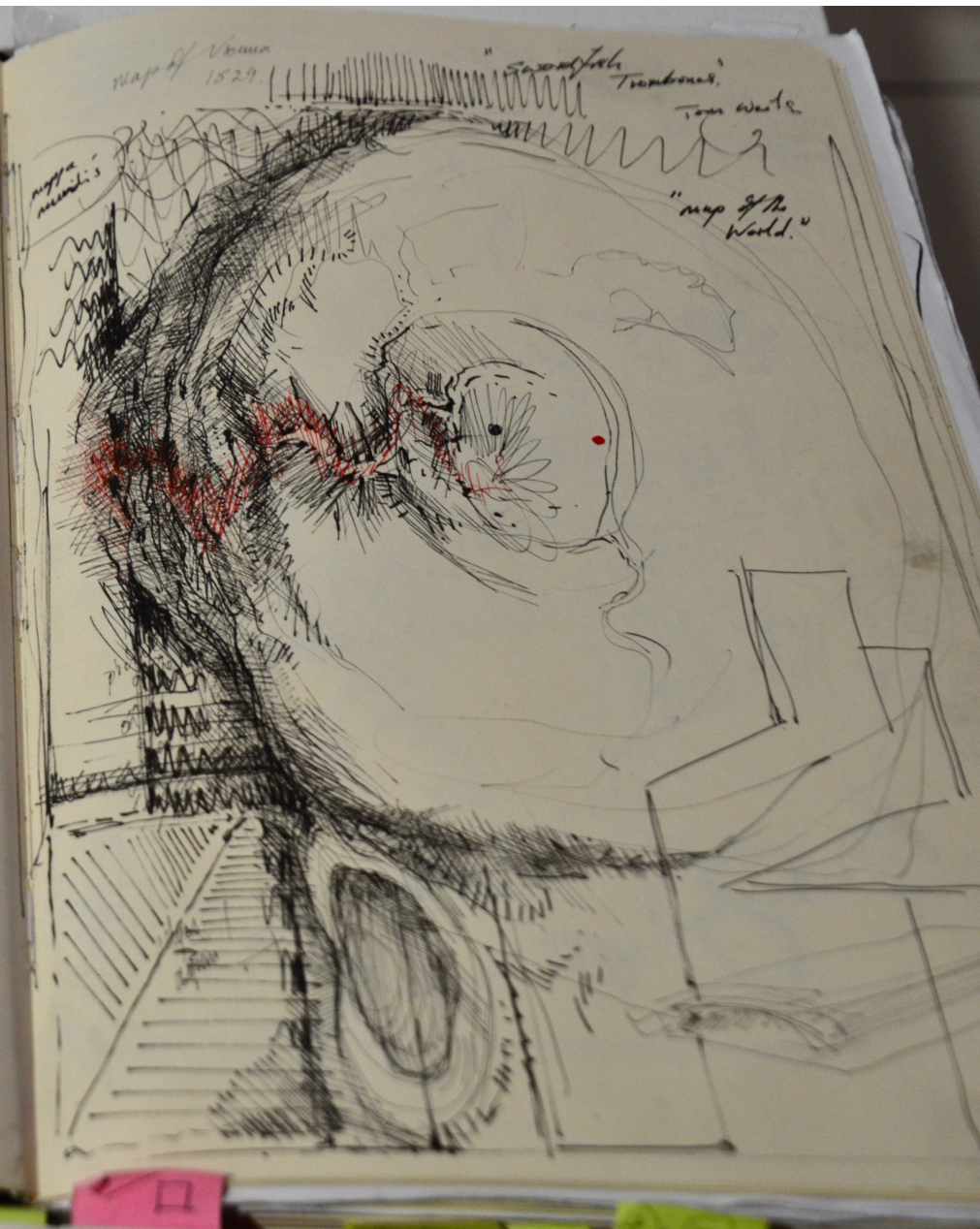
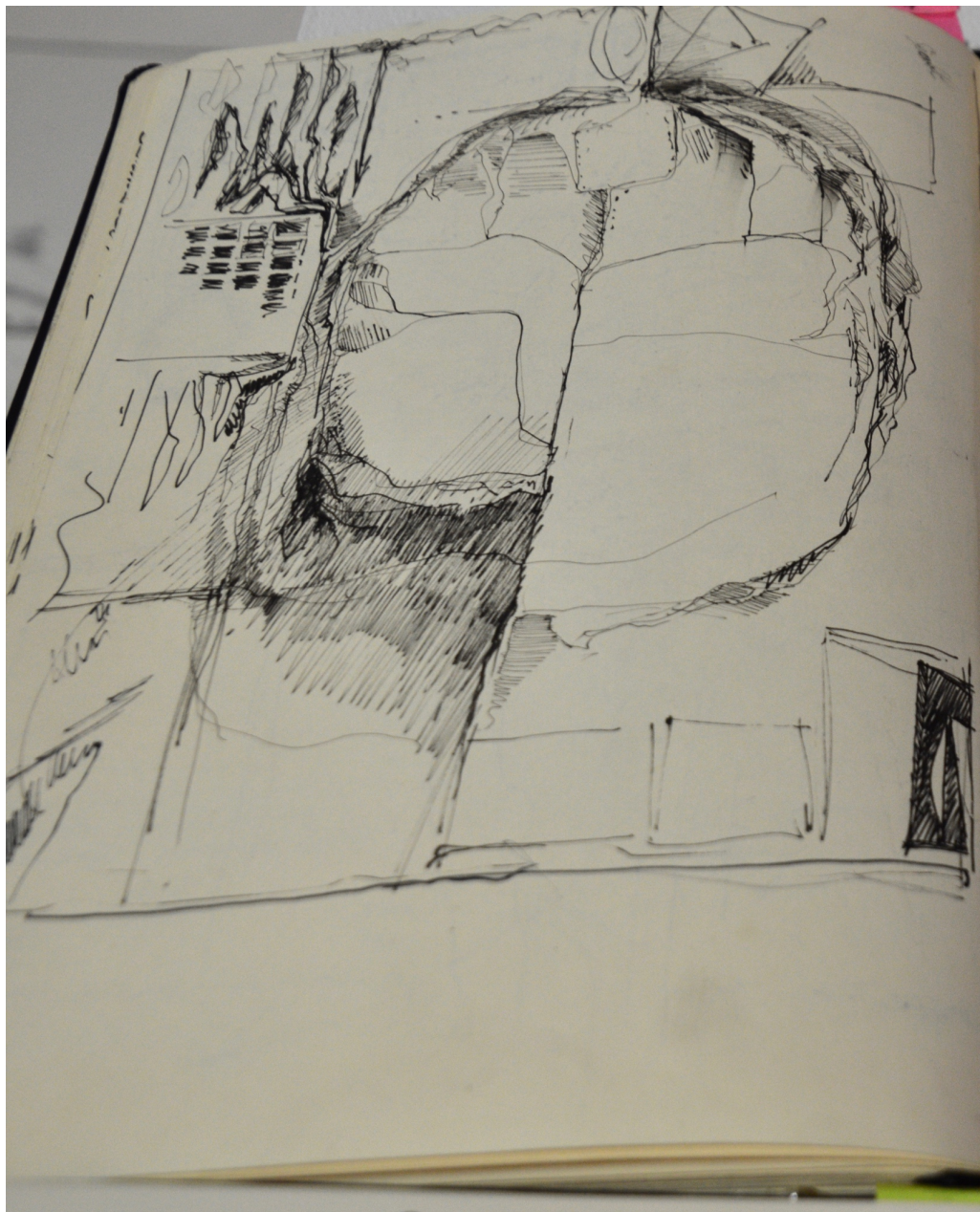
A series of photographs of the Mitterlindt Case in the Historic Physics Photographs collection. The images show the interior of the Mitterlindt Case, which was used to store the Mitterlindt Case. The images show the interior of the Mitterlindt Case, which was used to store the Mitterlindt Case. The images show the interior of the Mitterlindt Case, which was used to store the Mitterlindt Case.

Coverage was made from various by the use of the photographs and of the Mitterlindt Case. The images show the interior of the Mitterlindt Case, which was used to store the Mitterlindt Case. The images show the interior of the Mitterlindt Case, which was used to store the Mitterlindt Case. The images show the interior of the Mitterlindt Case, which was used to store the Mitterlindt Case.





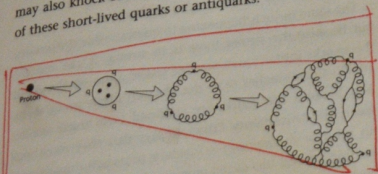






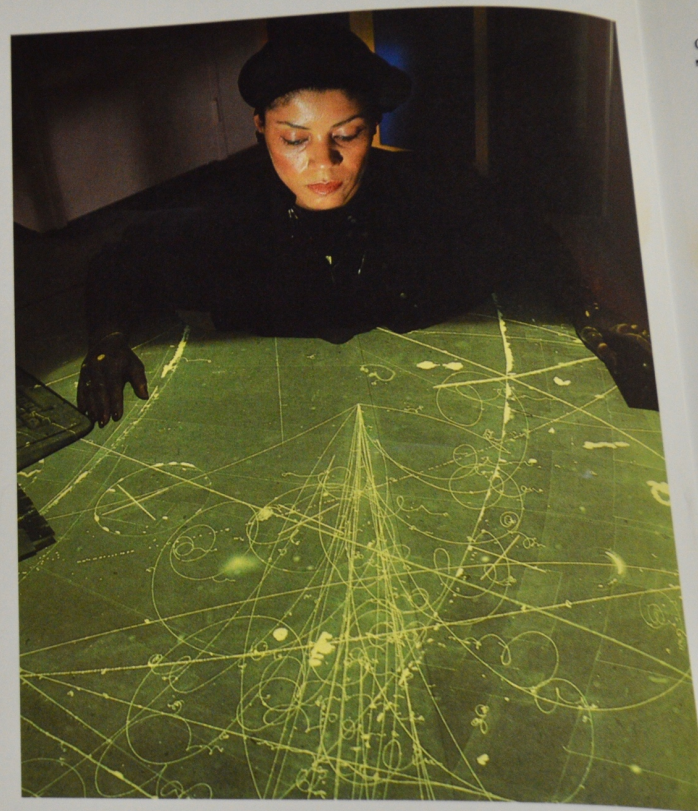
# THE UNDETECTABLE QUARK

at the LHC. From a distance, this looks like a solid object. Look a bit closer, and we see the quarks: the simple model of a proton is three of them: up, up, down. But according to QCD, these quarks are constantly changing colour by exchanging gluons, like little levers constantly switching around in a well-balanced machine, and if we look closer still, we can pick out those gluons. And if we look closer still, we would see that some of these gluons are temporarily switching into short-lived quark-antiquark pairs, like the loops in Feynman Diagrams. The more we look, the more is happening, and collisions at the LHC are sensitive to this fine structure: they mostly involve gluons, but the collision may also knock out one of the main quarks, or even some of these short-lived quarks or antiquarks.



Zooming in on a proton.

There is a lot going on in a proton, and particles tend to behave in strange ways when squeezed into a small space like this, something first realised by Heisenberg in 1927 when he came up with the Uncertainty Principle – an idea that will



6 THE WORLD OF PARTICLE PHYSICS









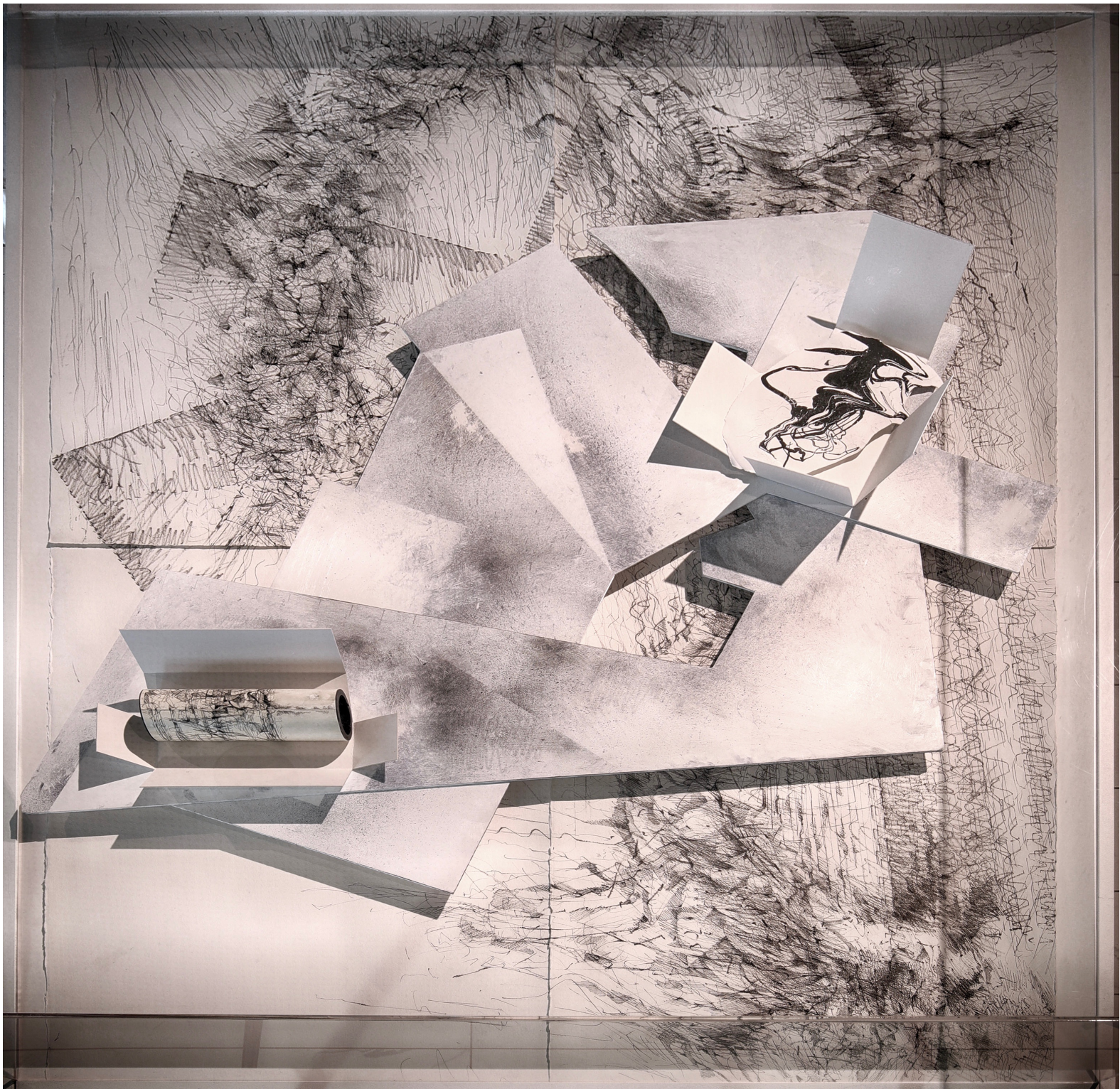




















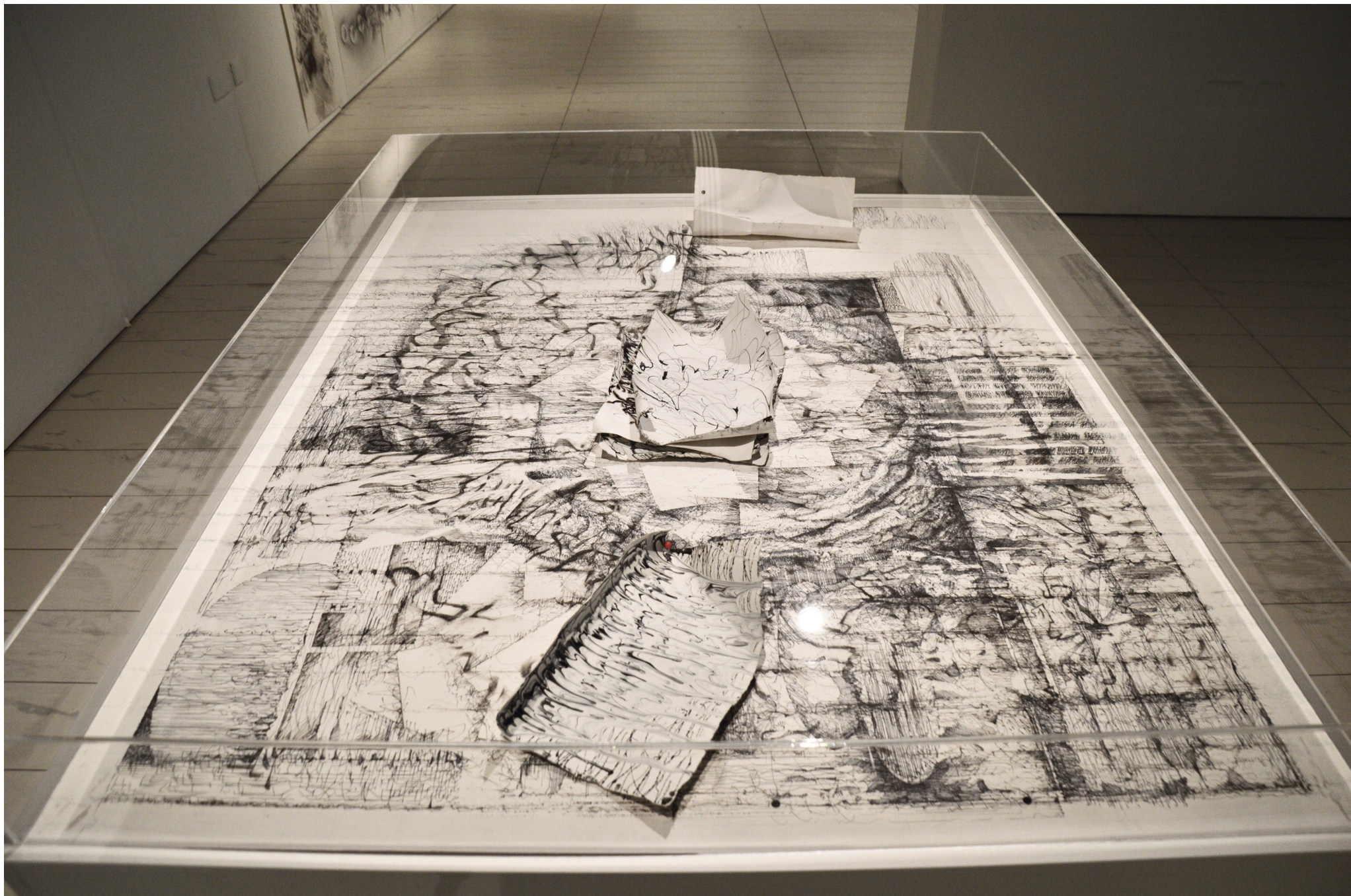
































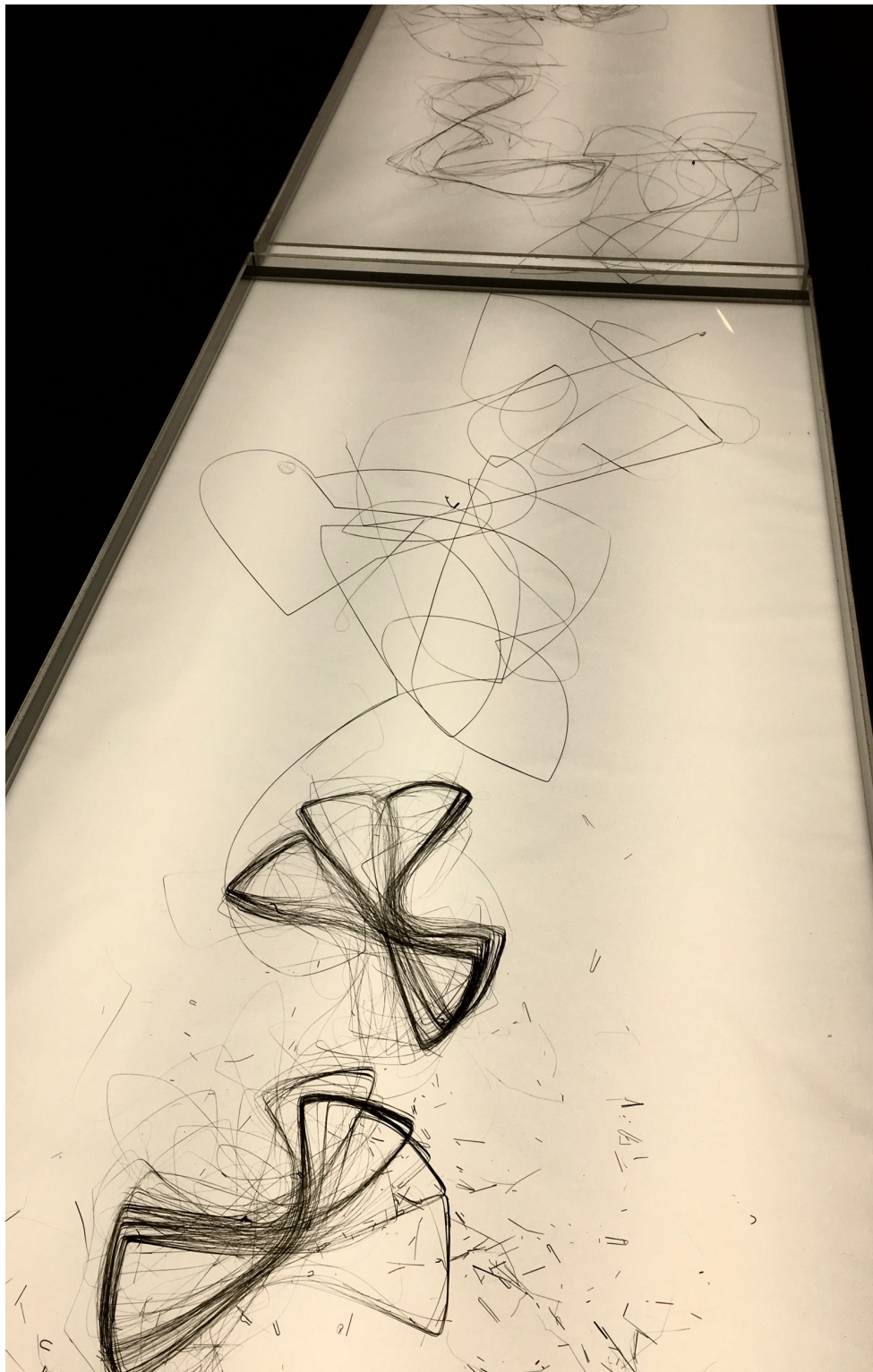








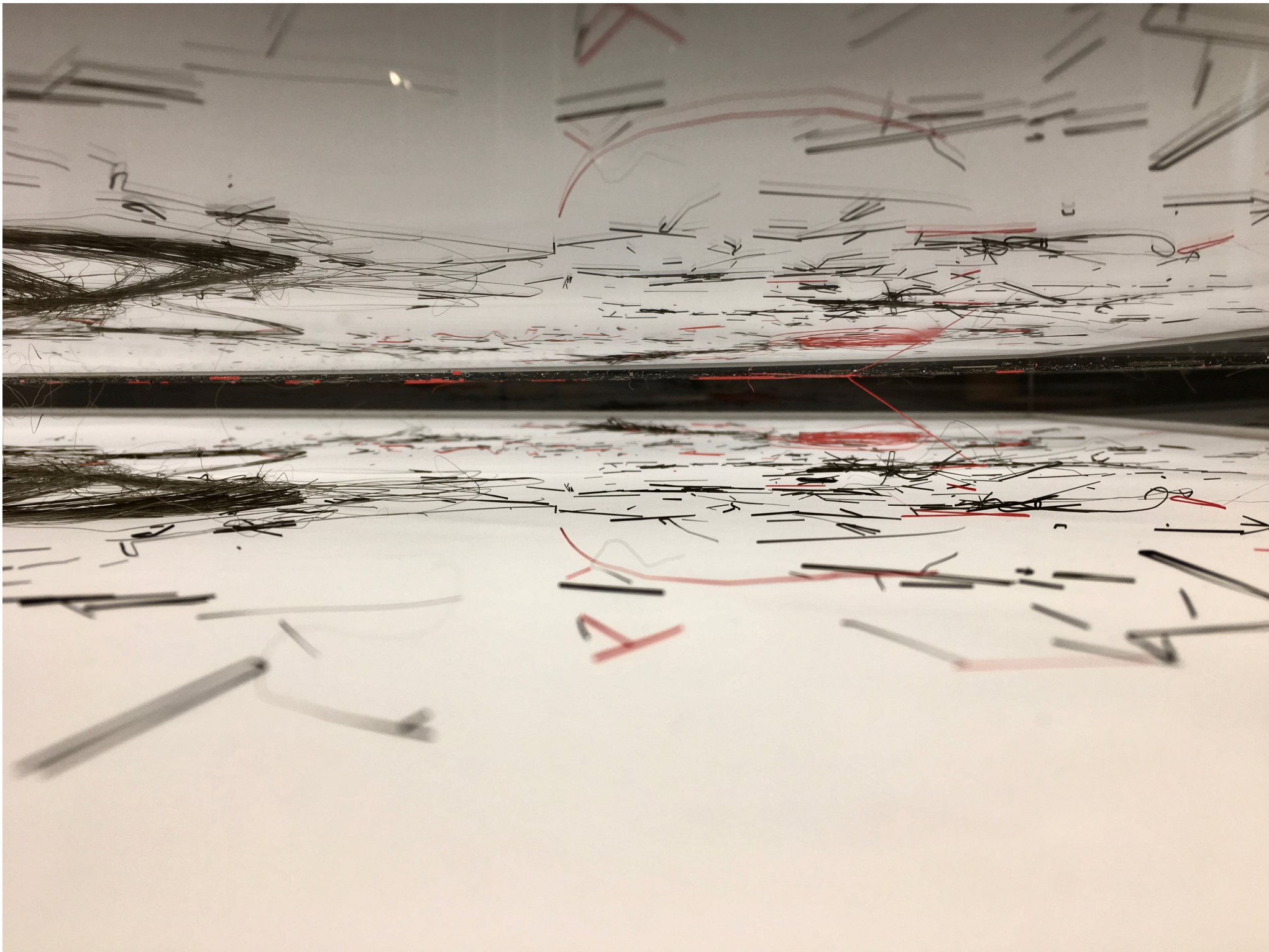




























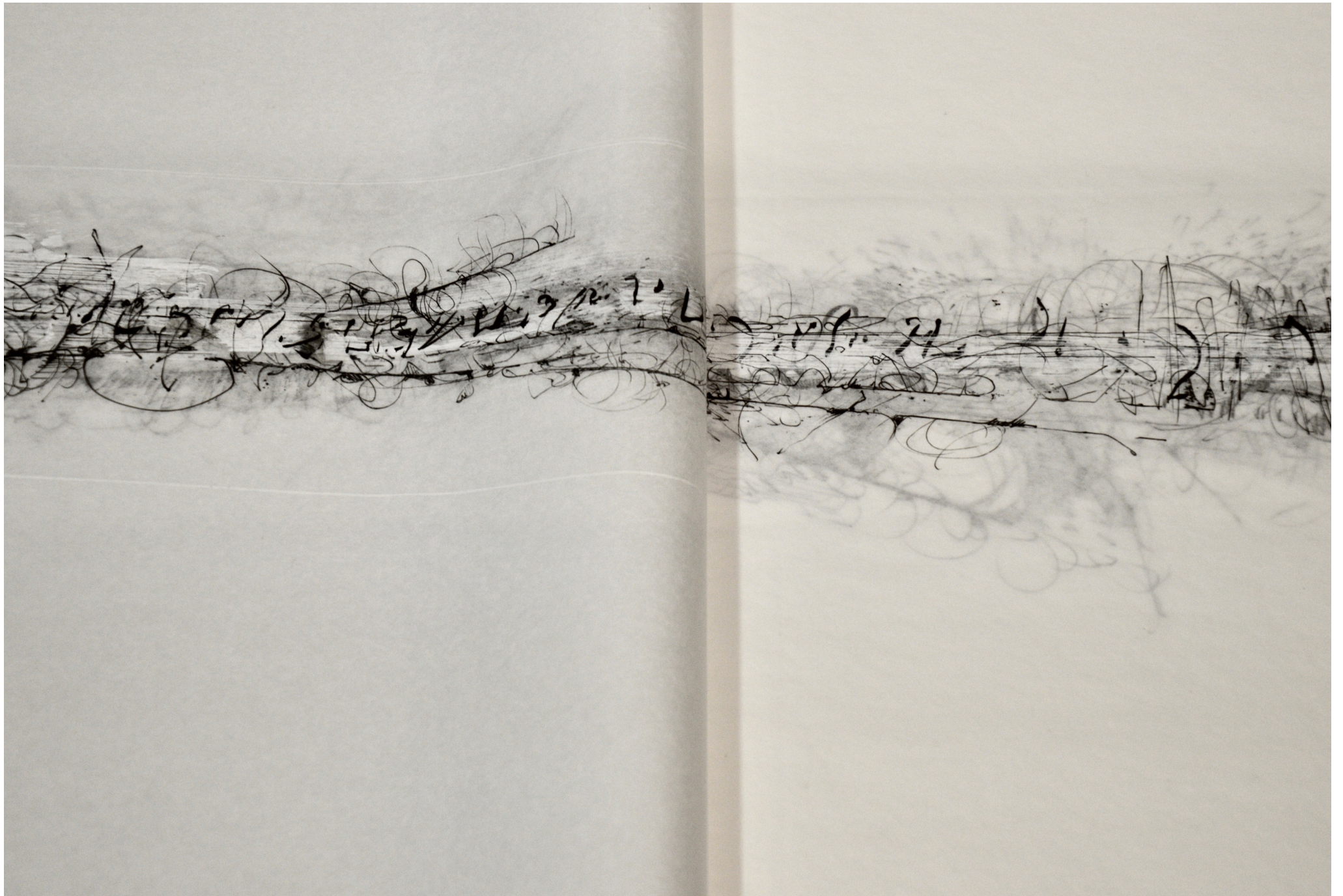






















**David Miller**

Curator

<http://www.mysterdavid.co.uk>

**Martin James Cooper**

Photography.

Instagram @meek\_photograff

**Robin Pugh of Digital Trickery**

Digital and hardcopy publicity and signage

<http://www.digitaltrickery.co.uk>

**Joseph Lilly of The Holodeck**

Specialist fine art printing

<http://www.theholodeck.co.uk>

**Matt Foster of Plane Structure**

Bespoke joinery and exhibition furniture

<http://plane-structure.co.uk>