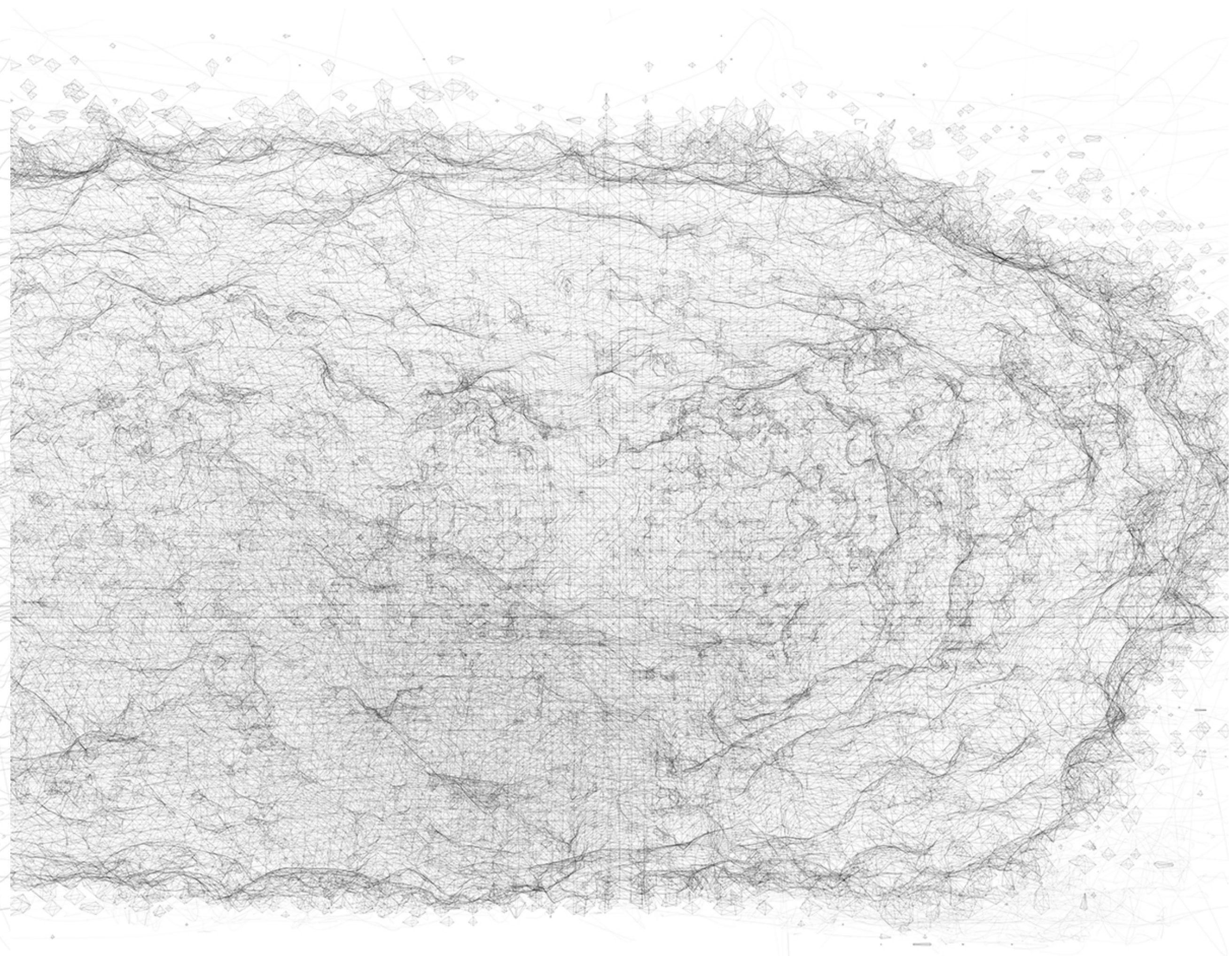
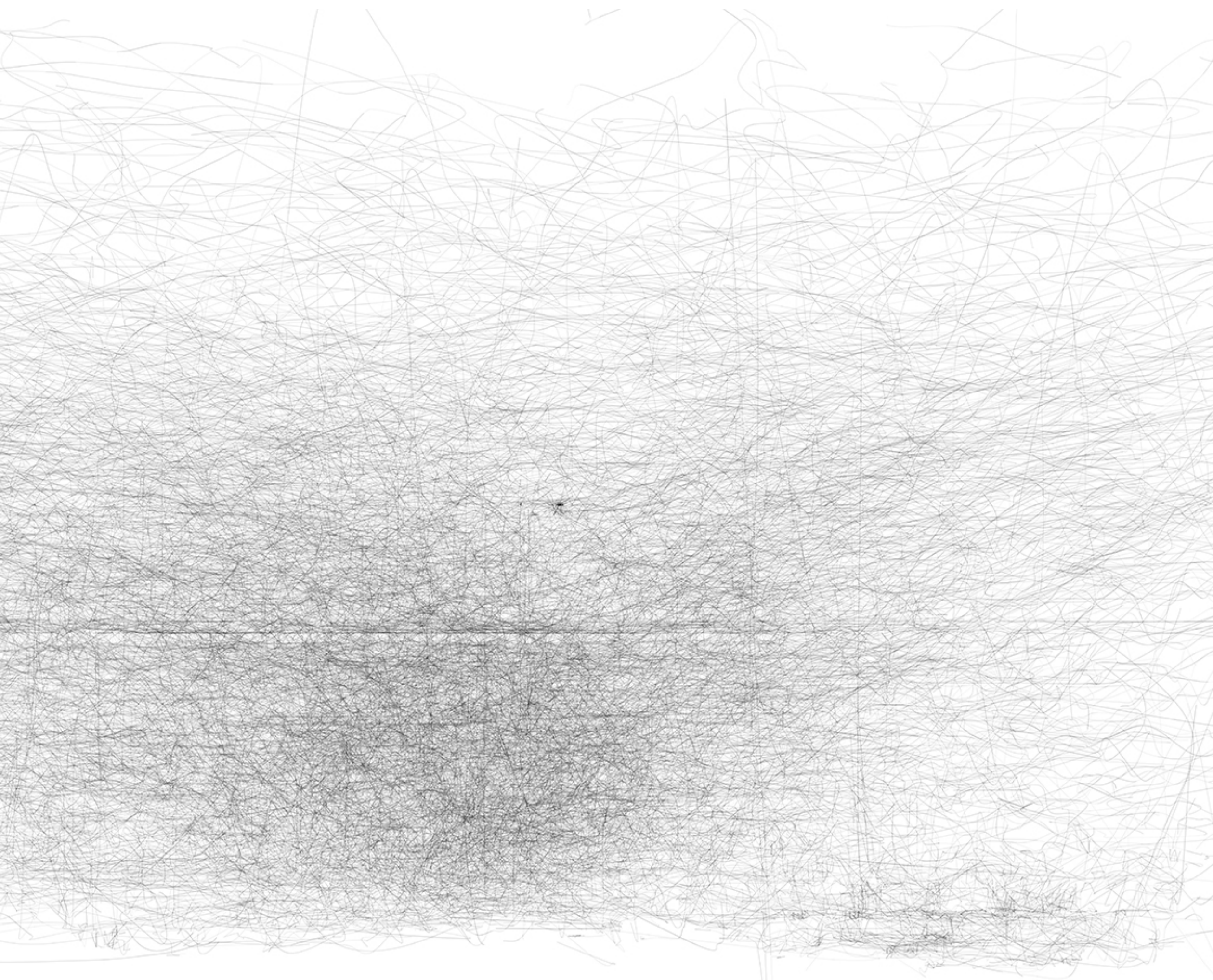


Data Visualization and Software Art

Carola Dreidemie 2024



["same": {"id": "69848", "ptsZ": [382, 367, 351, 332, 315, 308], "veloY": [-250, -1200, -500, -850, -1050, -1050], "velo3D": [158, 151, 155, 144, 158, 158], "ptsX": [307, 302, 290, 280, 263, 242], "ts": [1520276339.9768317, 1520276339.9968317, 1520276340.0068316, 1520276340.0268316, 1520276340.0468316, 1520276340.0668316], "angleXY360": [158, 151, 155, 144, 158, 158], "ptsX": [488, 501, 523, 545, 569, 621], "veloZ": [-750, -1600, -950, -850, -350, -350]}, {"id": "64544", "ptsZ": [506, 504, 500, 493, 484, 484, 484, 480, 484, 484, 484, 493, 491, 491, 500, 497, 491, 491, 496, 491, 488, 486, 484, 484, 442, 400, 359], "veloY": [50, -200, 450, 50, 100, 100, 50, -200, 50, 0, 100, -400, 0, -350, -100, -300, -250, -150, -250, -1000, 350, 1650, -400, -3300, -100, -449, -449], "velo3D": [348, 38, 270, 341, 213, 213, 206, 146, 189, 180, 191, 122, 180, 135, 161, 143, 147, 153, 150, 59, 196, 251, 146, 140, 90, 150, 150], "veloX": [-250, -250, 0, -150, 150, 150, 100, 300, 300, 400, 500, 250, 649, 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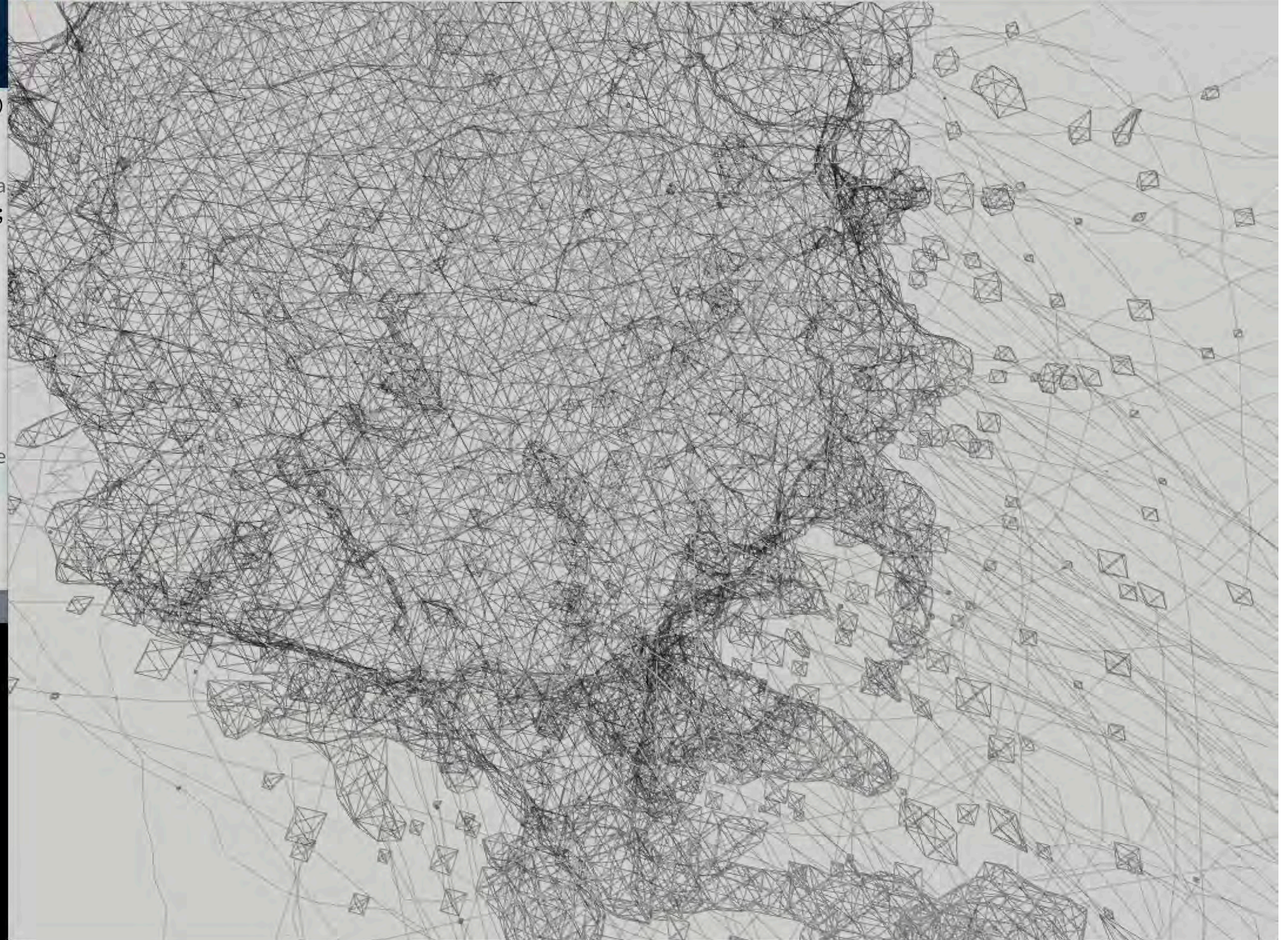


Abejasnuevo_Solo_linea_A

```
89   y = -((row.getFloat(2))
90   if(!first)
91   {
92     //if(z<100&&z>95)//pa
93     line(x,y,z,x2,y2,z2);
94   }
95   first=false;
96   x2=x;
97   y2=y;
98   z2=z;
99 }
100 /**/
101
102 // Plot Surface at a Thre
103 noFill();
104 //fill(255,255,0, 50);
105 iso.plot(.8);
106 }
```

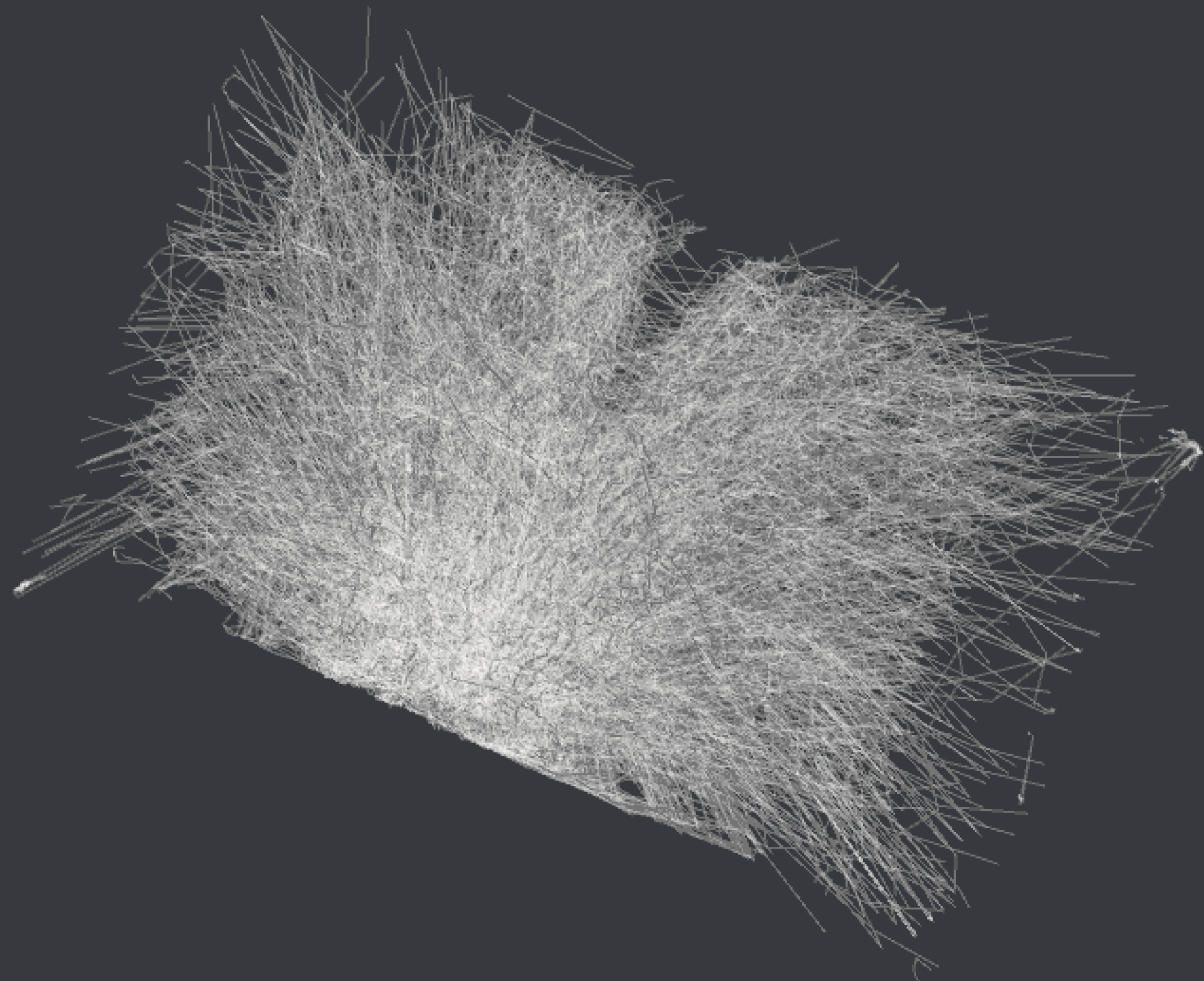
Done saving.

```
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[ -78.0, -67.0, 124.0 ]
[ -81.0, -70.0, 120.0 ]
[ -84.0, -71.0, 114.0 ]
[ -84.0, -72.0, 110.0 ]
[ -82.0, -73.0, 108.0 ]
[ -84.0, -84.0, 108.0 ]
[ -95.0, -115.0, 109.0 ]
[ -100.0, -129.0, 108.0 ]
[ -103.0, -136.0, 106.0 ]
[ -107.0, -145.0, 105.0 ]
[ -111.0, -154.0, 103.0 ]
```









Control manual de rotación

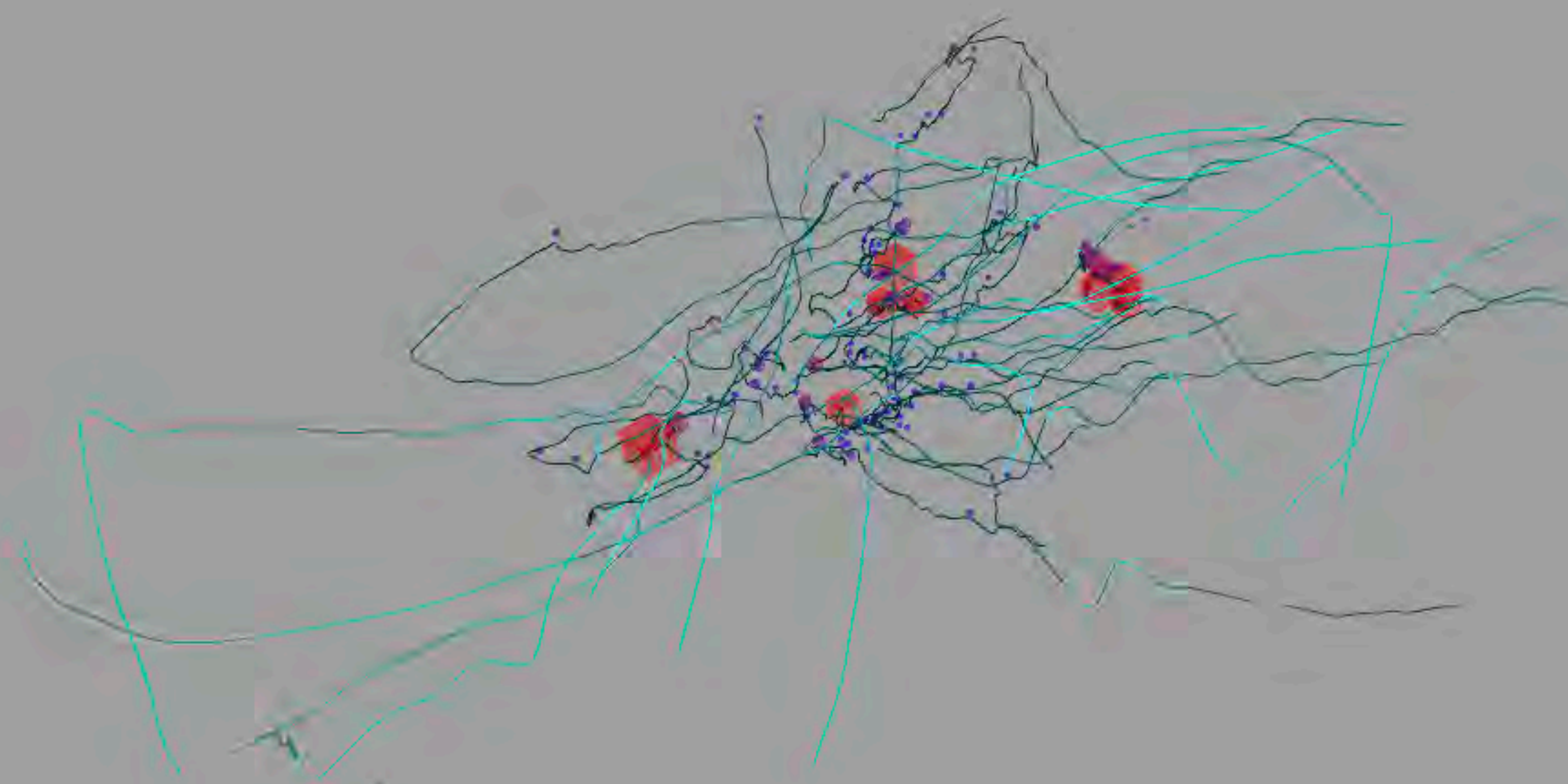


rotación

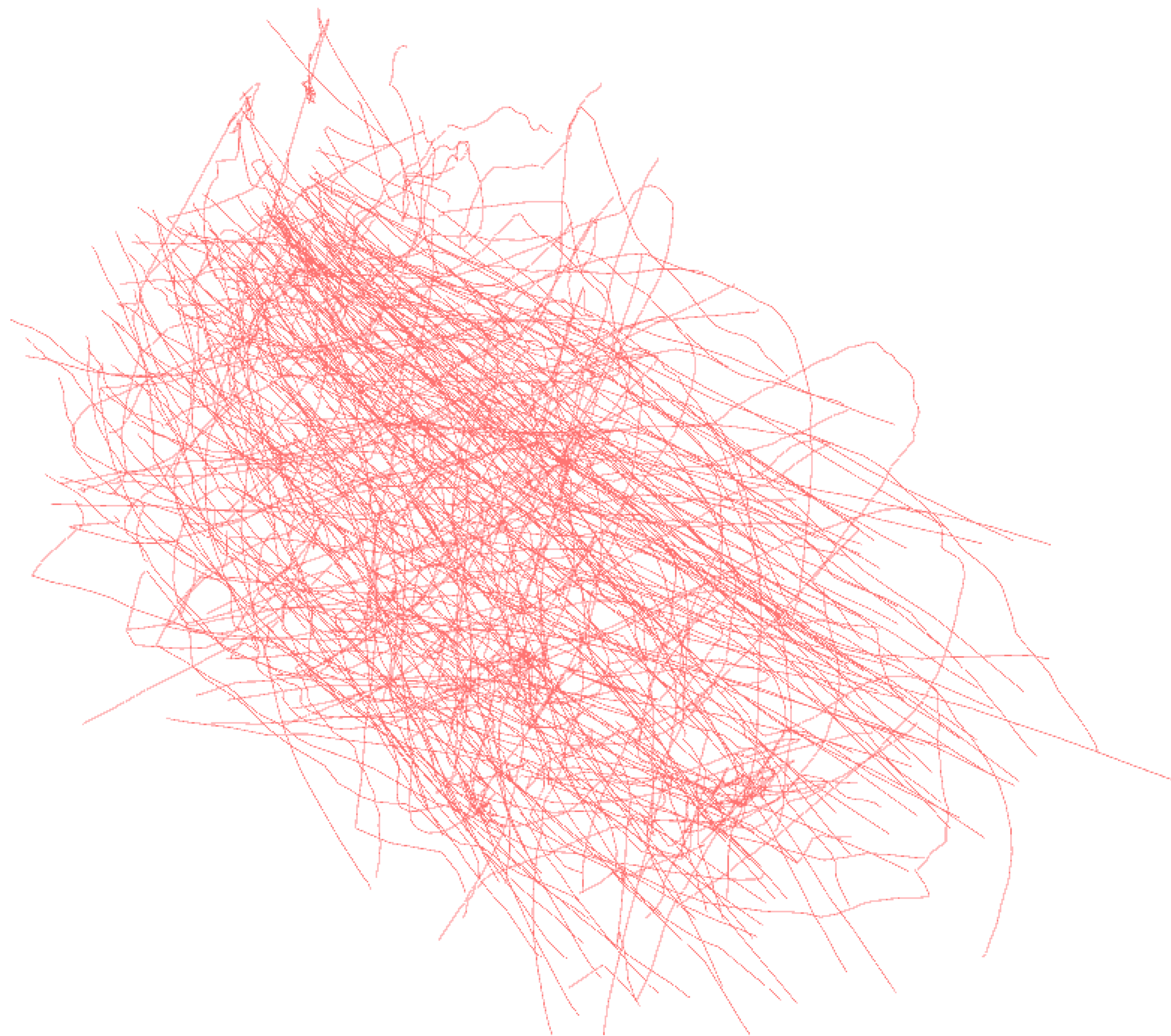


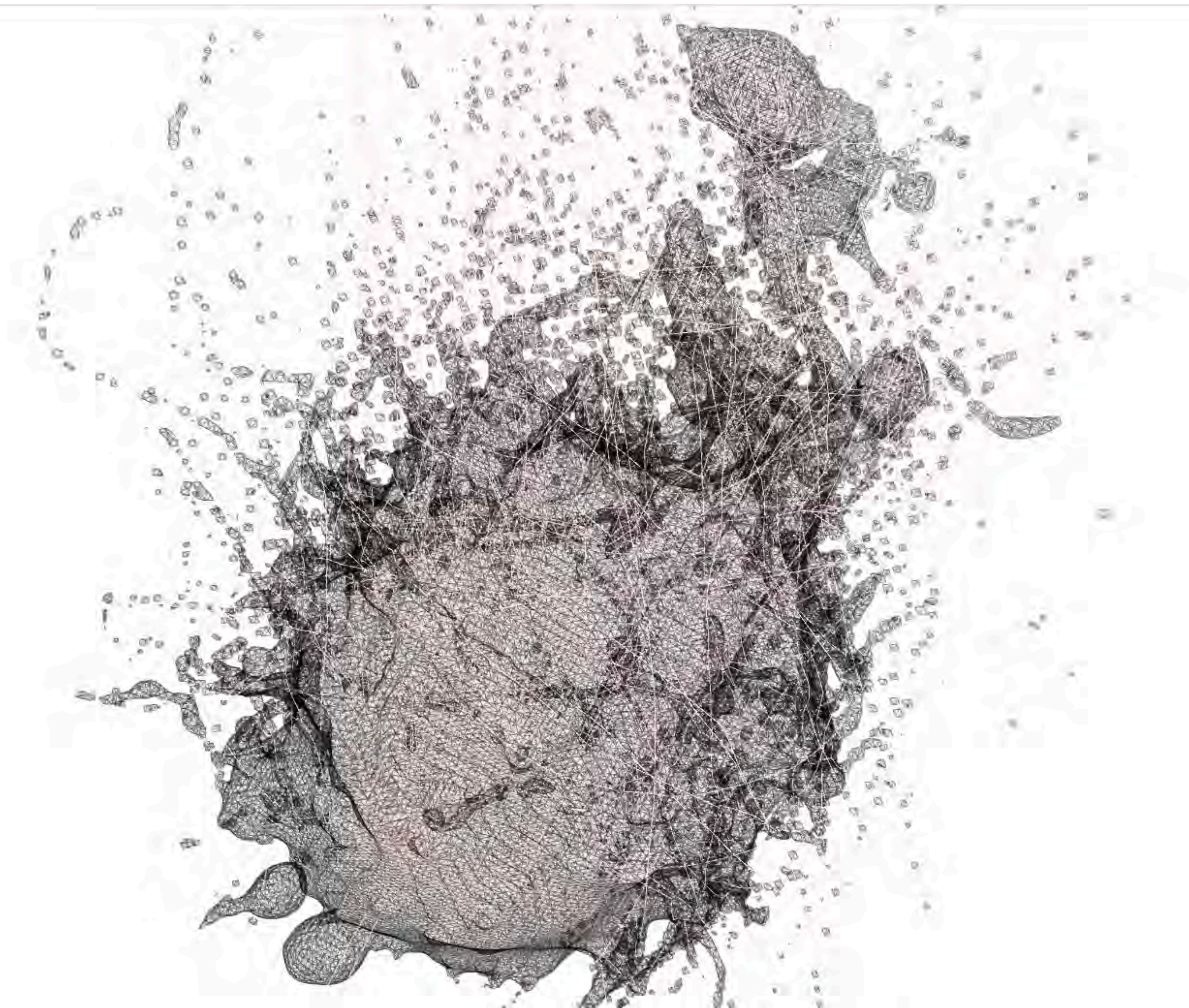
zoom

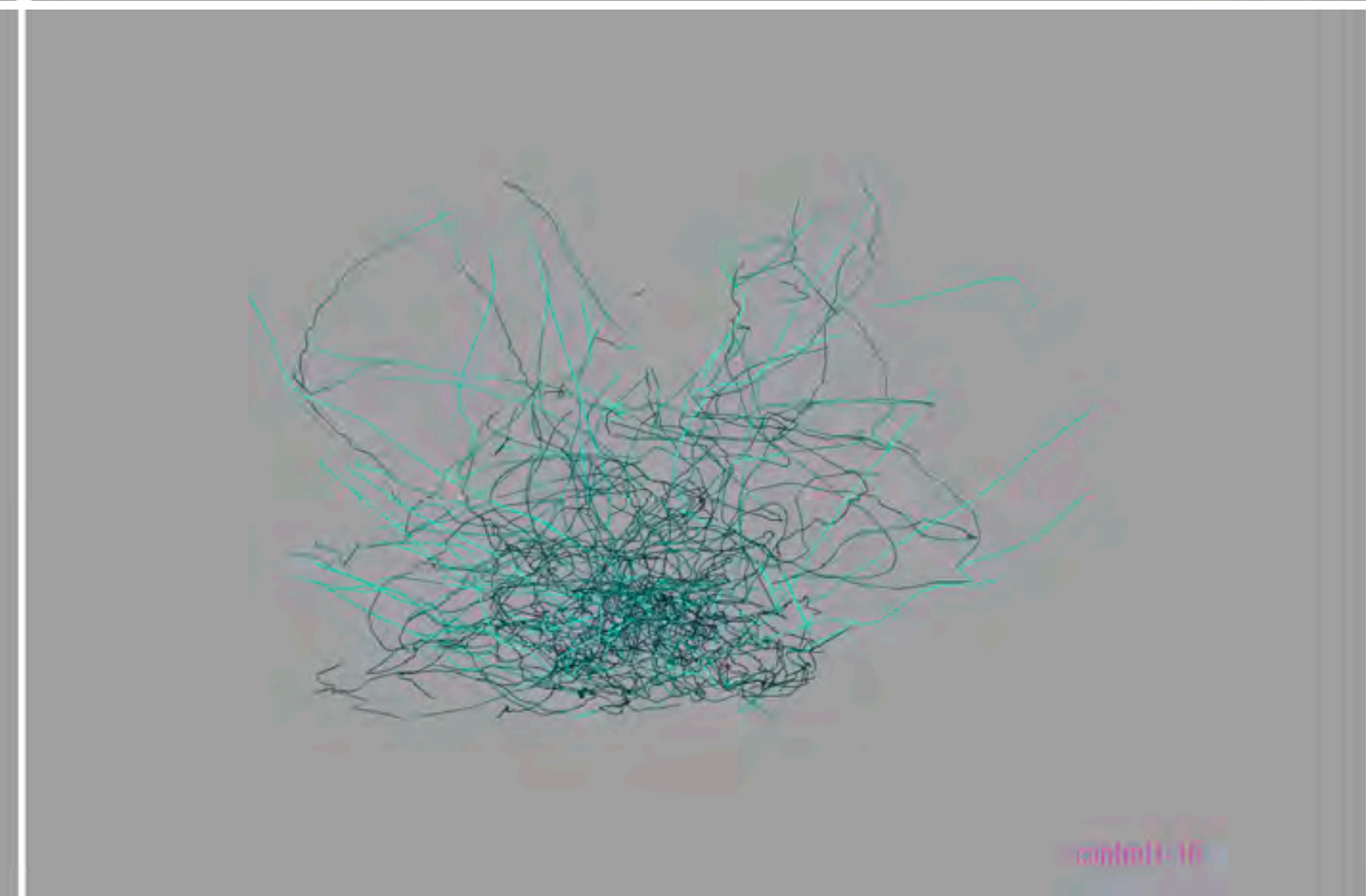
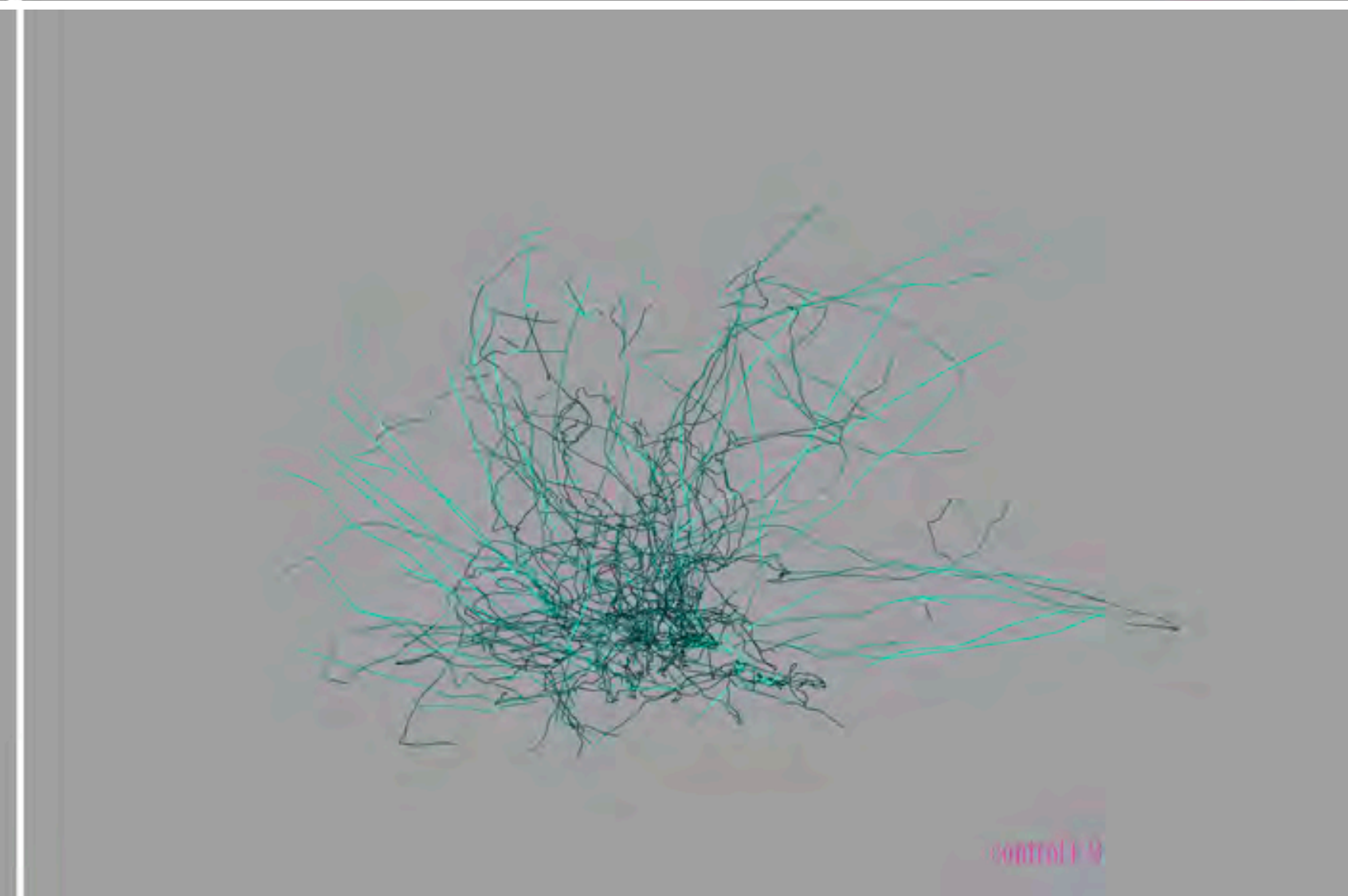
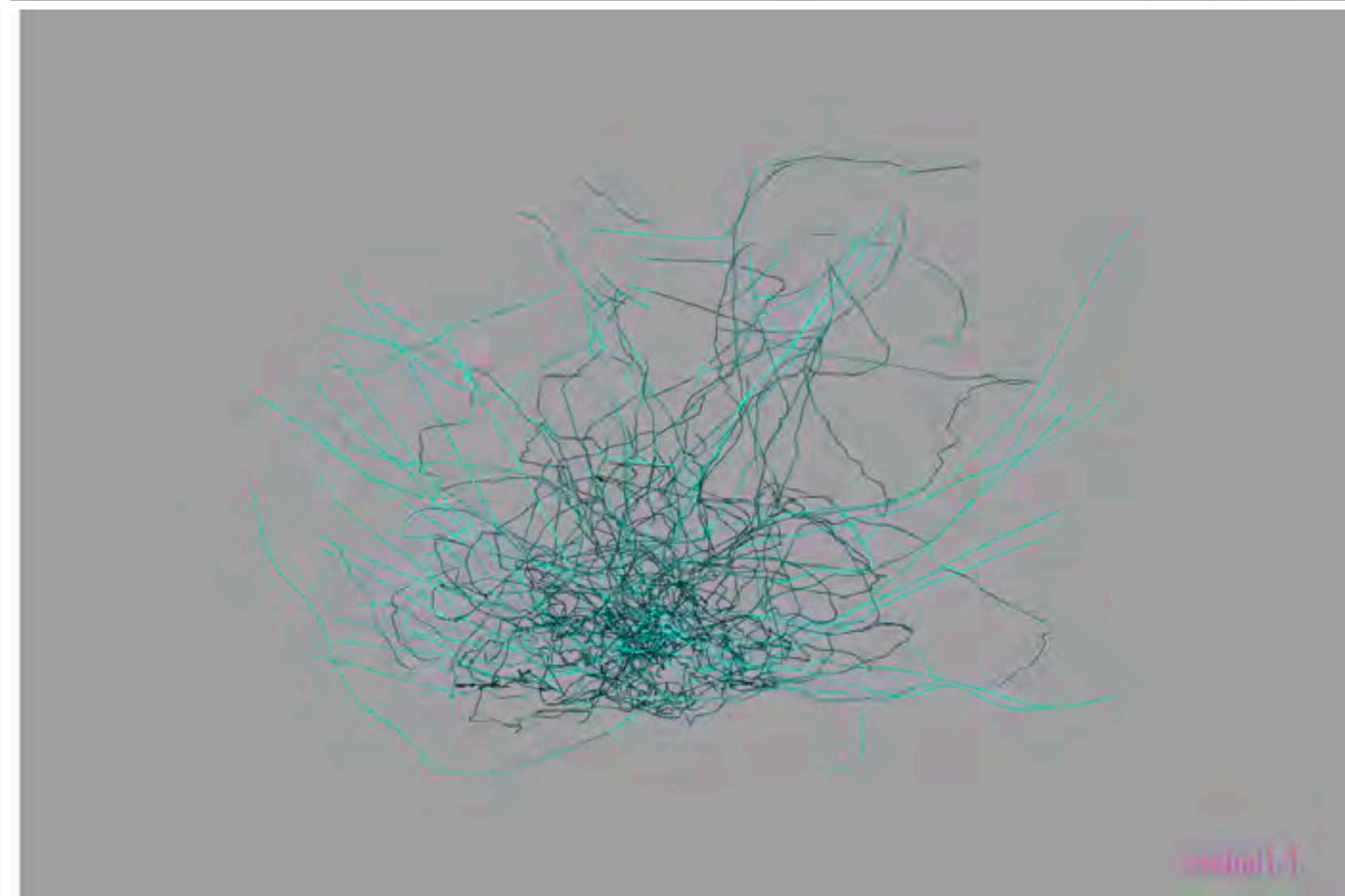
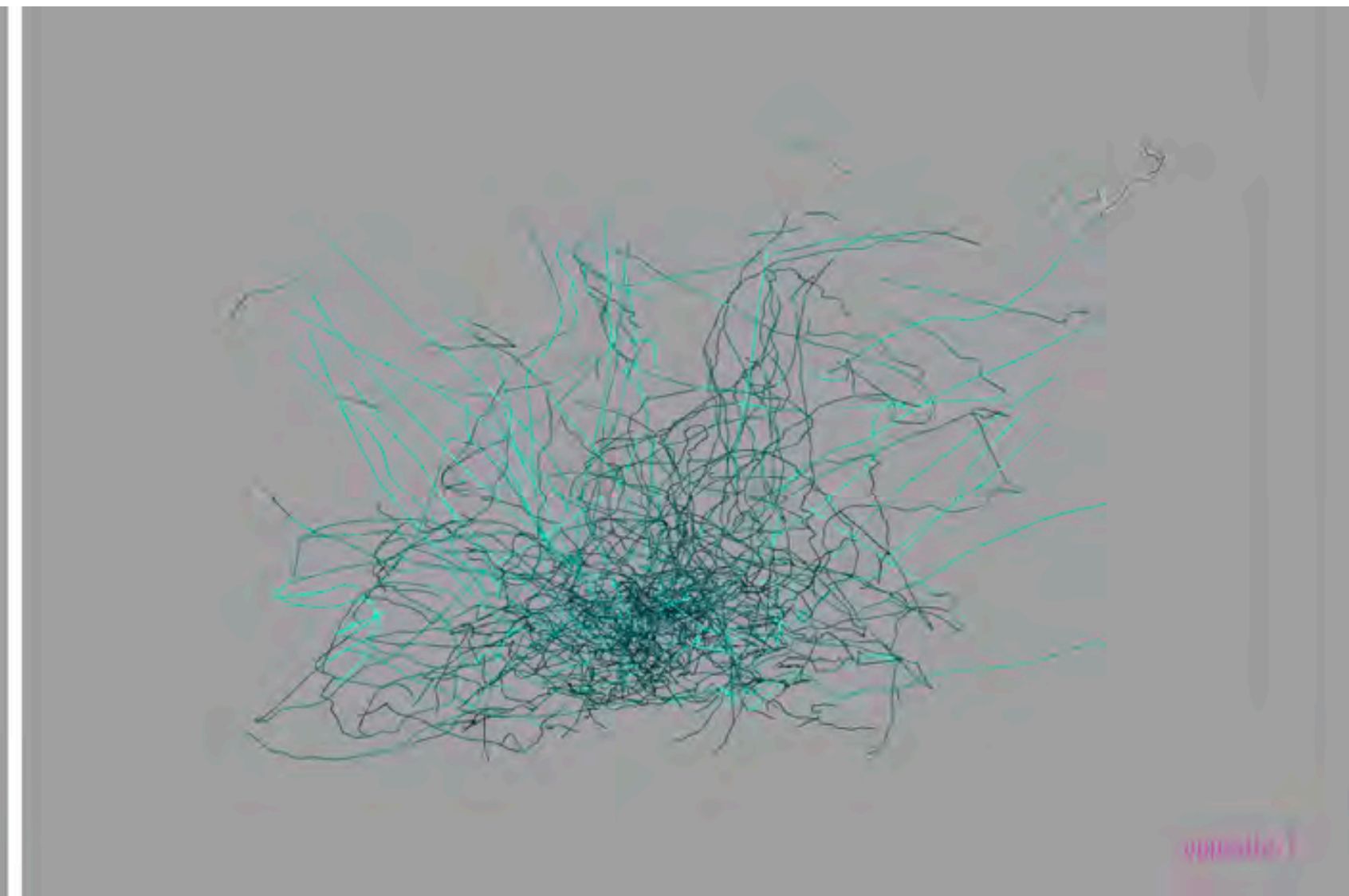
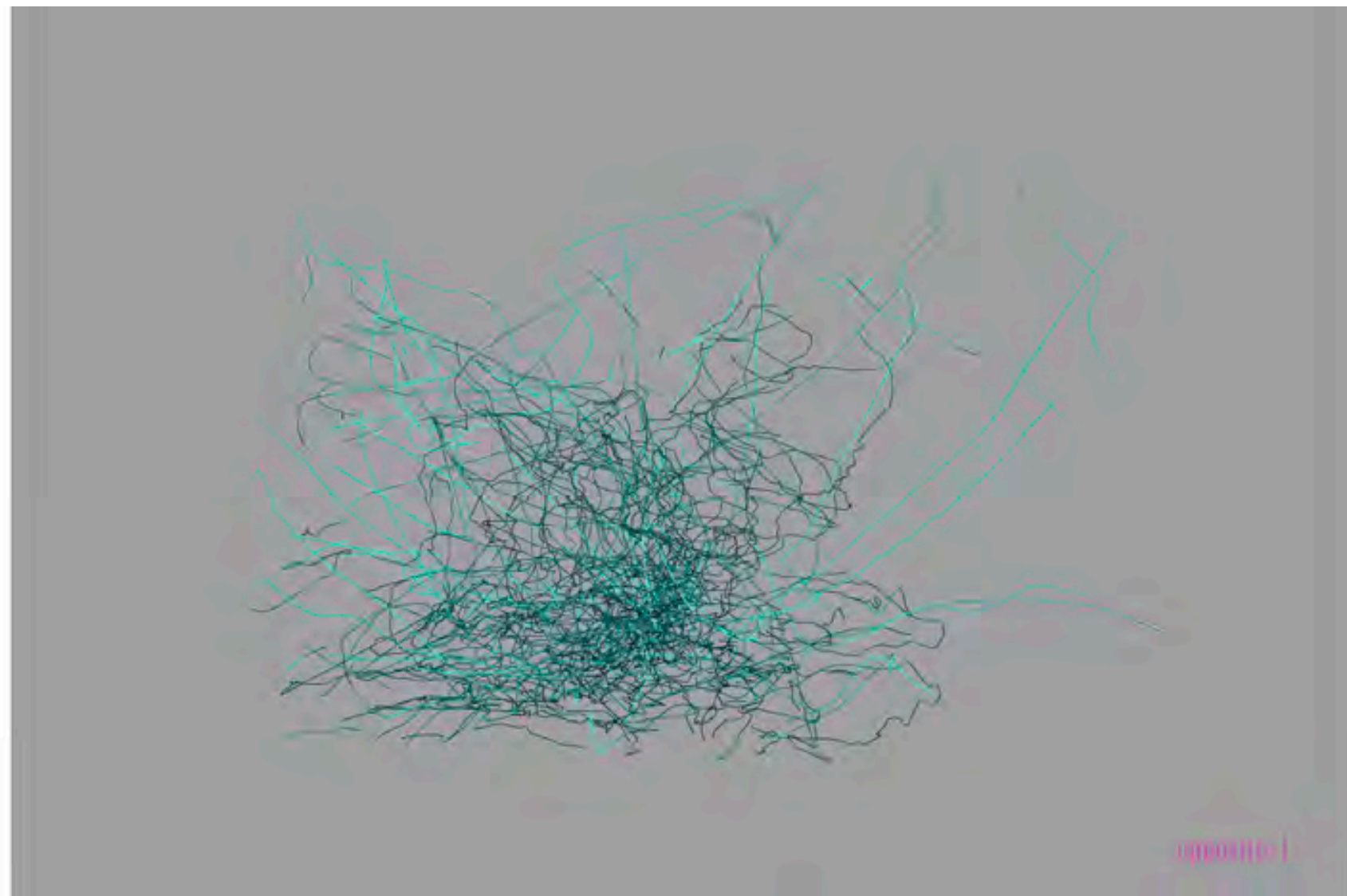
- superior
- izquierda
- frontal
- inferior
- derecha
- trasera
- animacion
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- control1 control22
- control1 control23
- control1 control25
- control1 control26
- control1 control28
- control1 control29
- control1 control210
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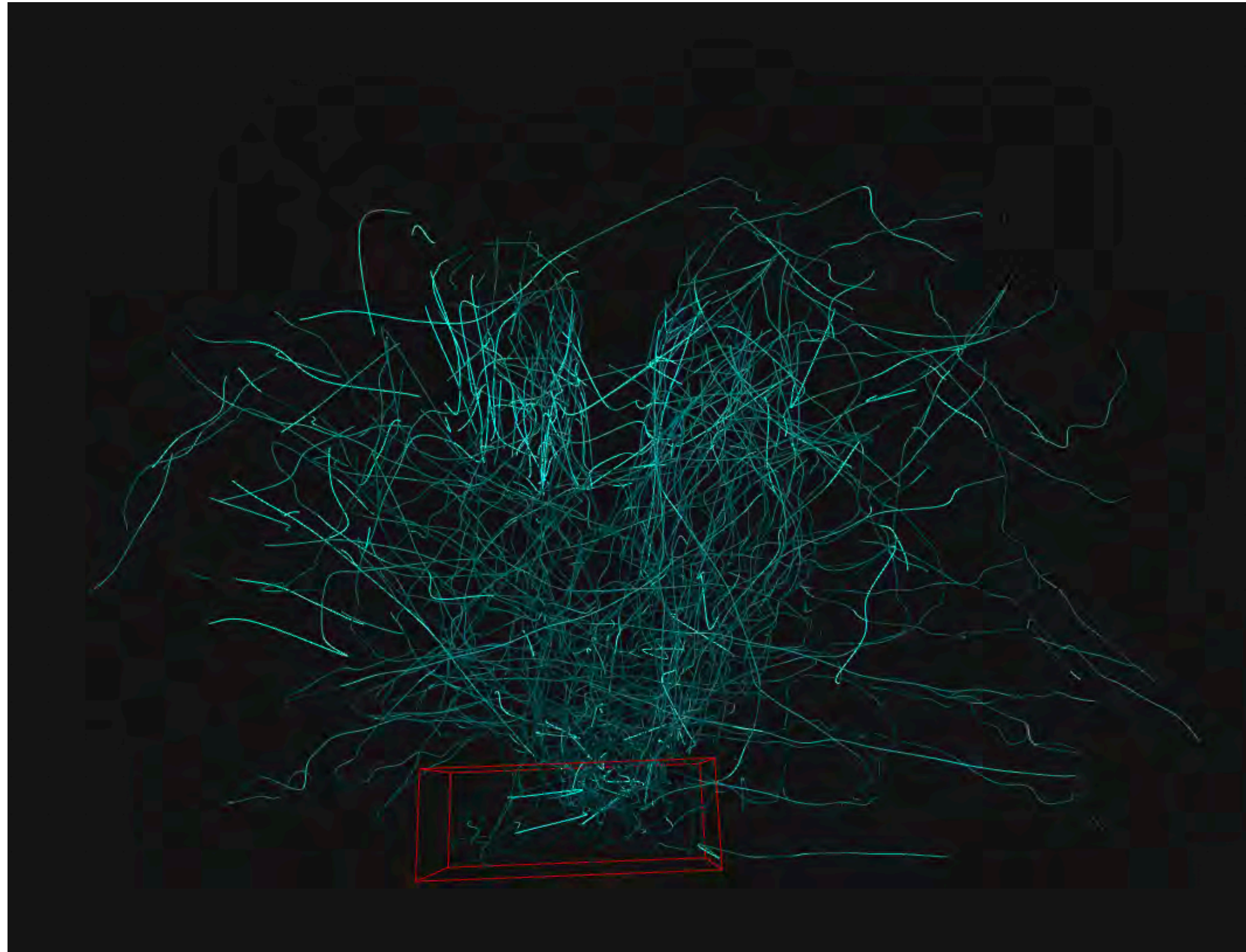
Color value relative to speed of flight
 Red areas show flight concentration in time & space



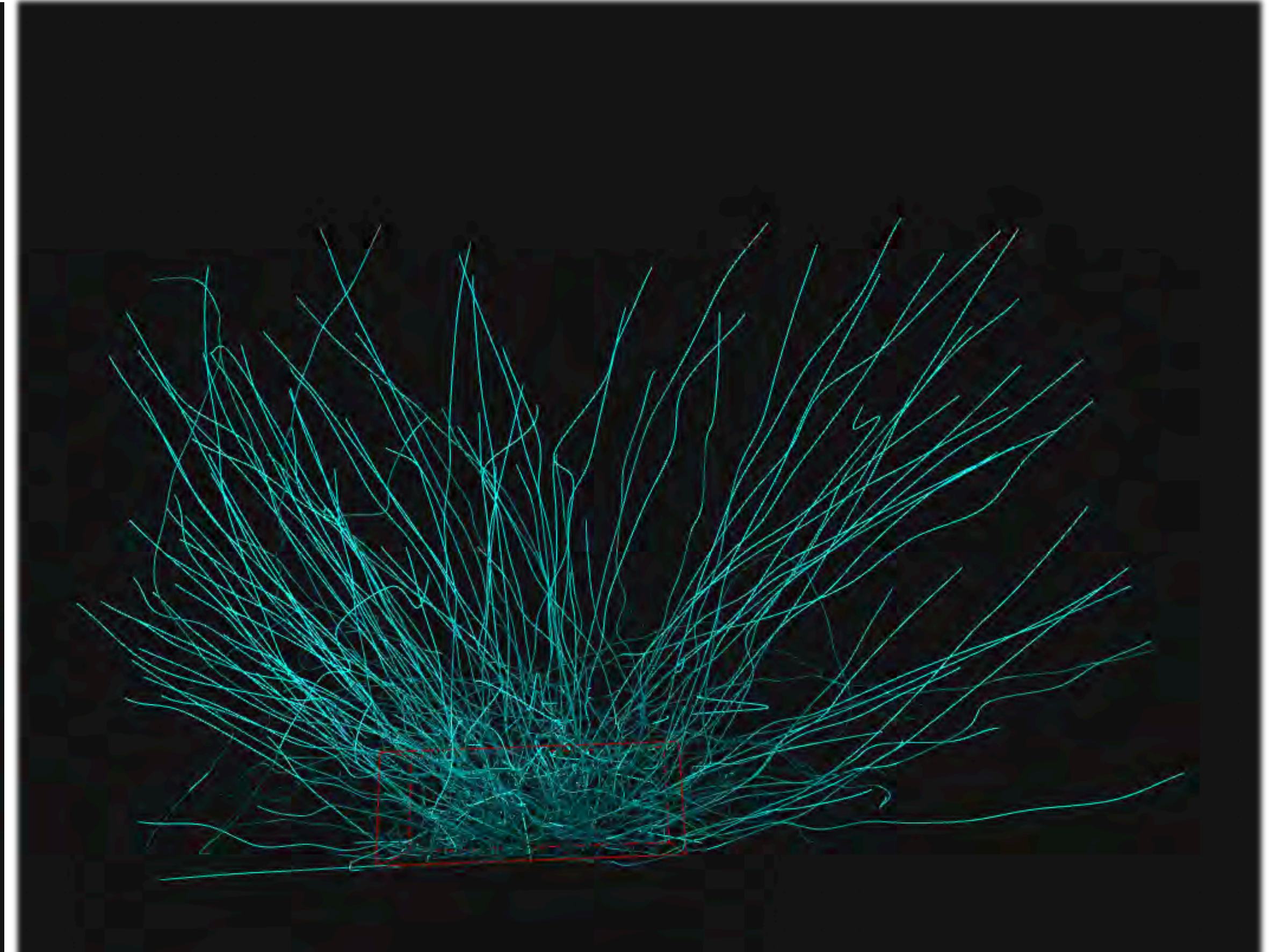




Visual Analysis in Bee flights:



Incoming flight trajectories

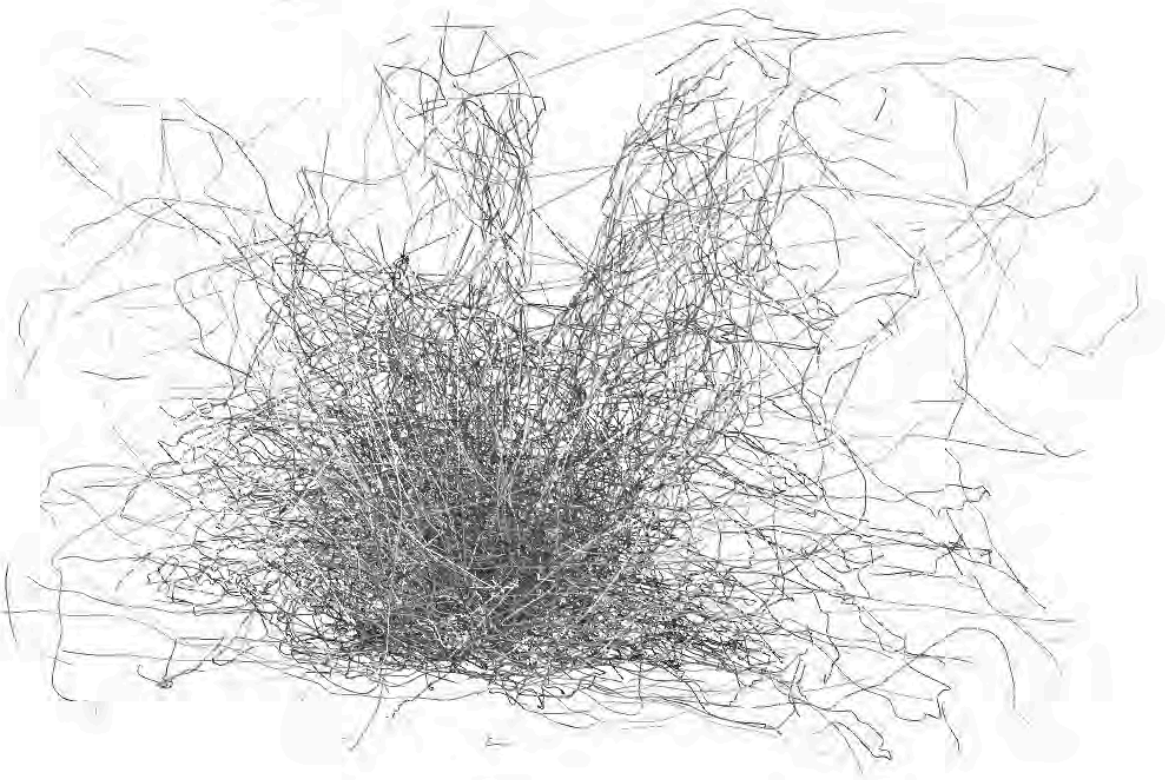


Outgoing flight trajectories

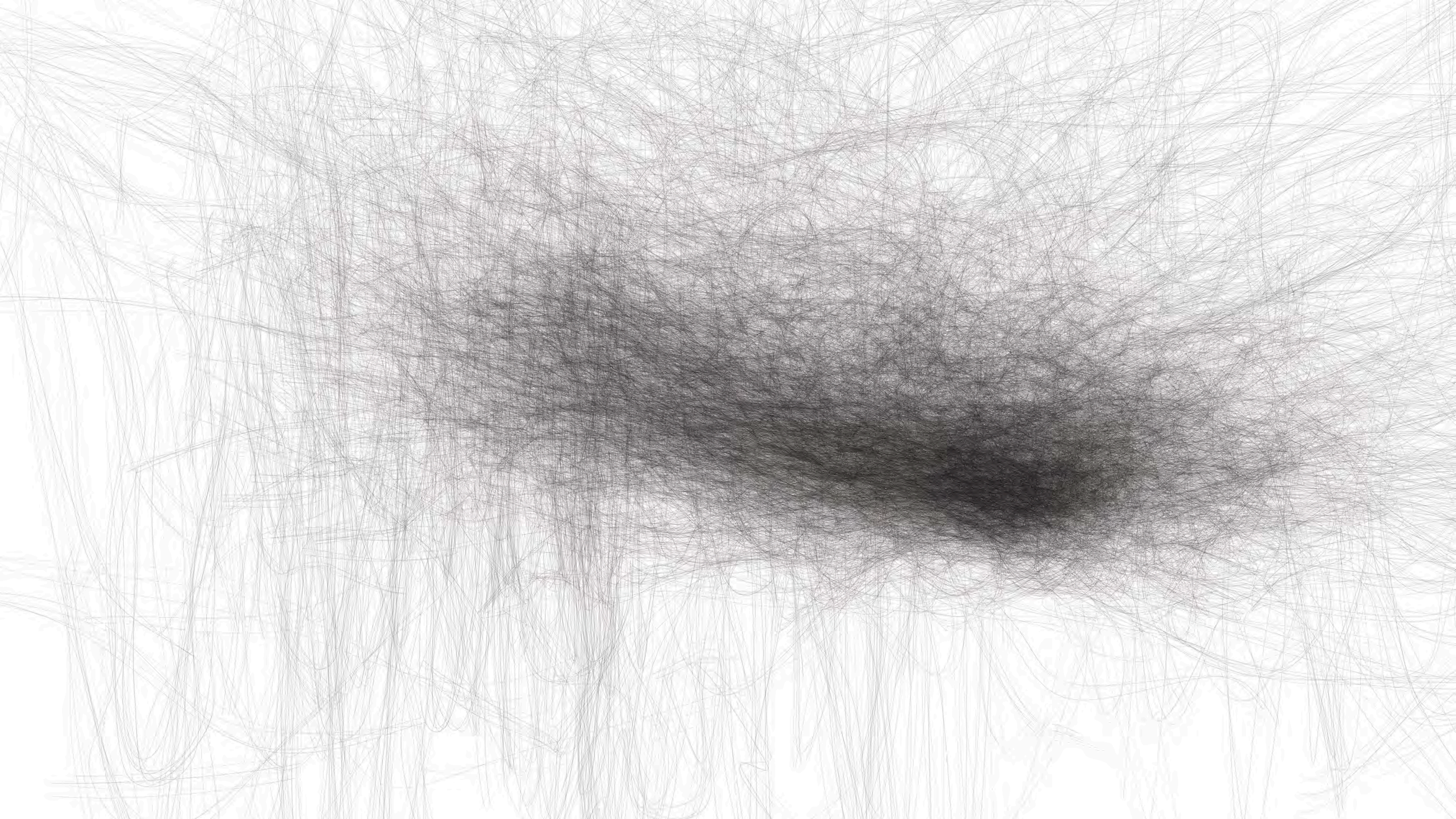

```
6.7503405
abajas_dev_Trazas_09 ram_control easing
zMaxSubcube=cubeSide;
zMinSubcube=0;
int i;
while ((xMaxSubcube-xMinSubcube)>=(maxX-minX))
{
  cx=(xMaxSubcube+xMinSubcube)/2;
  cy=(yMaxSubcube+yMinSubcube)/2;
  cz=(zMaxSubcube+zMinSubcube)/2;
  if (px[3]>cx)
  xMinSubcube=cx;
  if (px[3]<=cx)
  xMaxSubcube=cx;
  if (py[3]>cy)
  yMinSubcube=cx;
  if (py[3]<=cy)
  yMaxSubcube=cx;
  if (pz[3]>cz)
  zMinSubcube=cx;
  if (pz[3]<=cz)
  zMaxSubcube=cx;
}
int q=int(min(xMinSubcube, 0, cubeSide-(cubeSide-xMinSubcube), 0, cubeSide));
int w=int(max(yMinSubcube, 0, cubeSide-(cubeSide-yMinSubcube), 0, cubeSide));
int e=int(min(zMinSubcube, 0, cubeSide-(cubeSide-zMinSubcube), 0, cubeSide));
densidadanalista[q][w][e]=densidadanalista[q][w][e]+1;

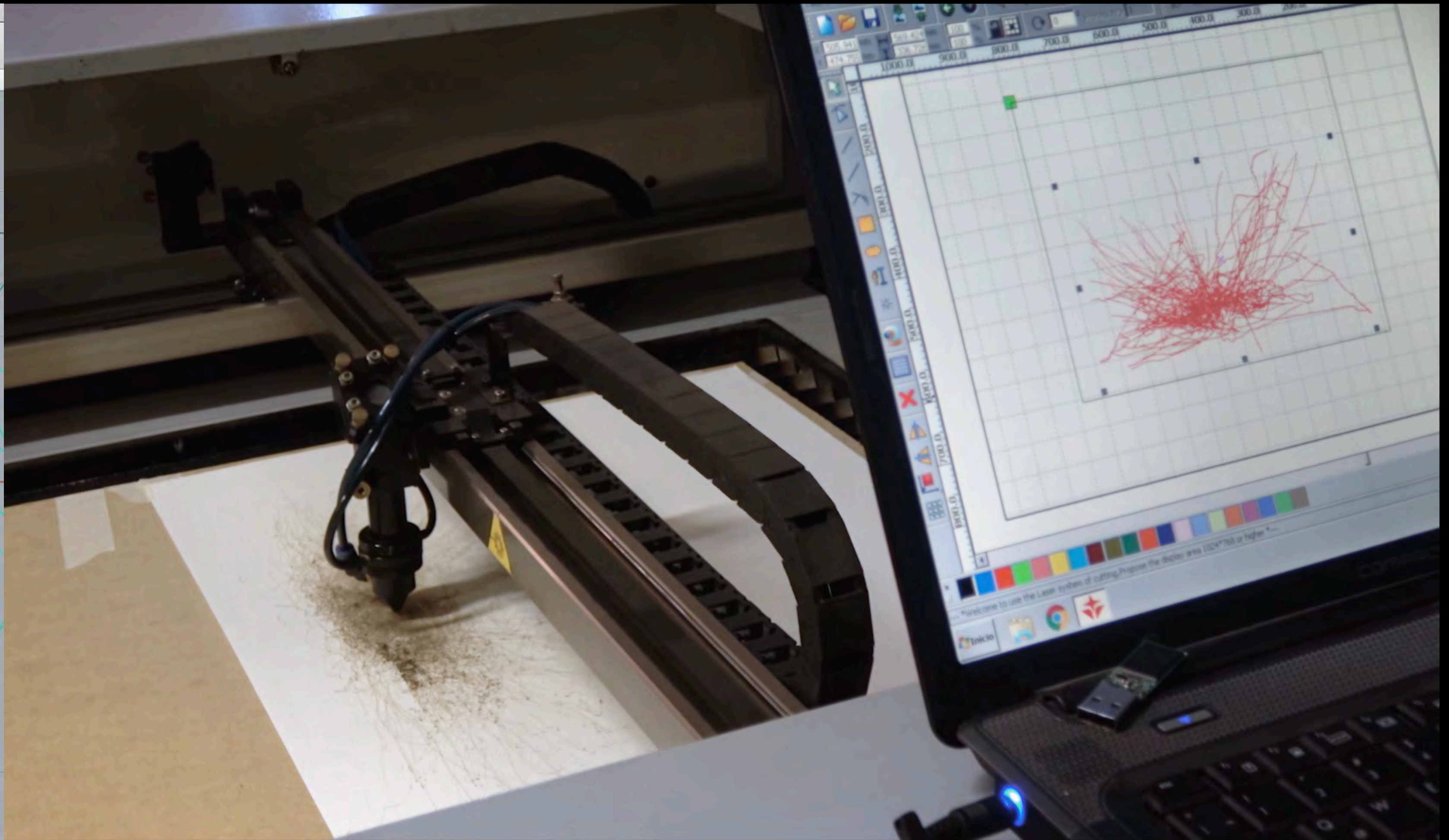
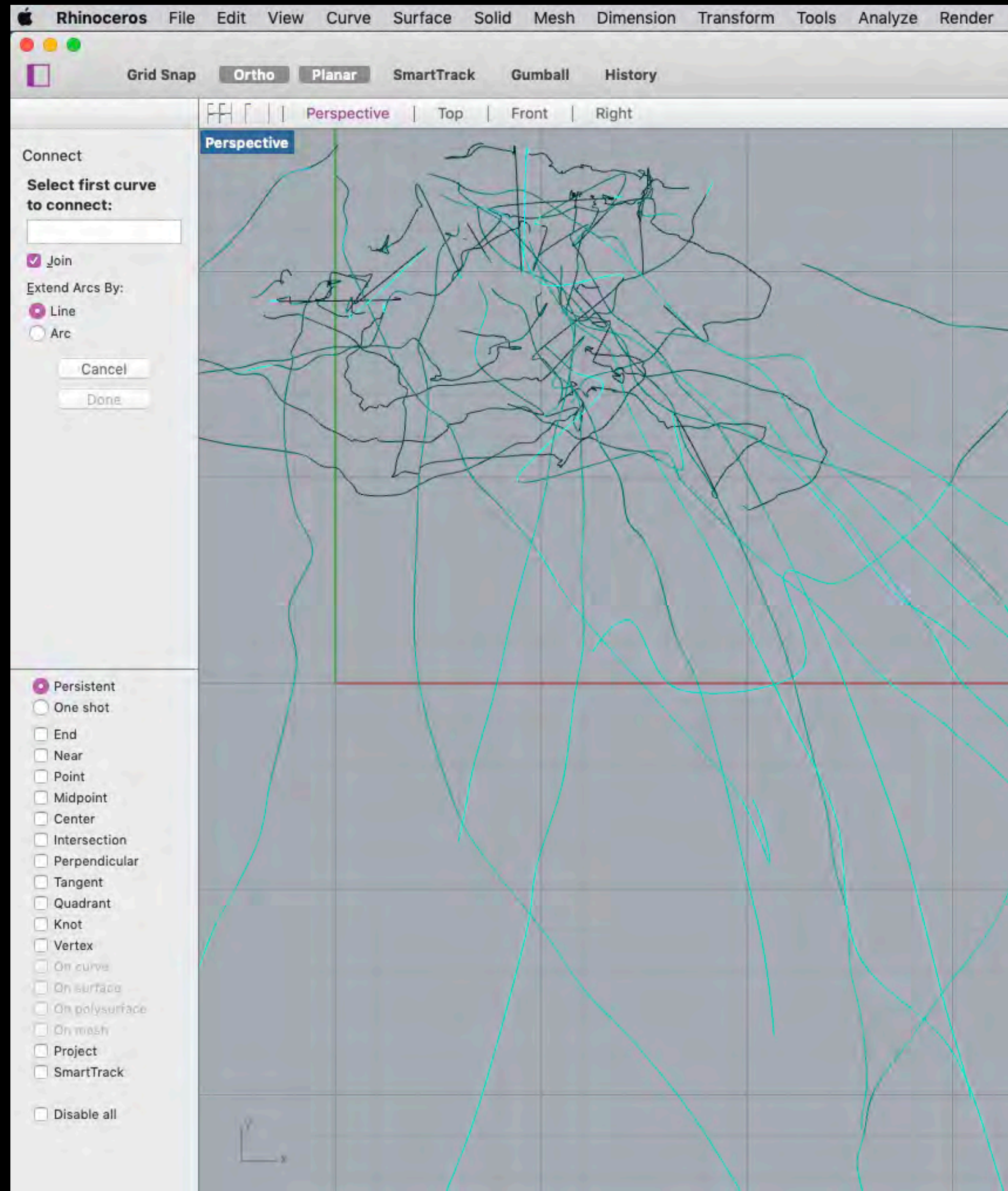
int aux=0;
colorline(0, 180, 180, 180);
stroke(0, 0, map(vsd[3], minV, maxV, 180, 180));
//strokeStyle(strokeWidth(10));
//colorMode(HSB, 255, 255, 255);

if(x<100&&w>95)para generar copas
strokeStyle(1);
//
if (x[3]>(comp1+1)&&xts1)/convertir a x[3] a
if (mousePressed && (mouseButton == RIGHT))
{
  if(idto:px[3]>maxX/2, py[3]>maxY/2, pz[3]>maxZ/2)
  line(px[3]-maxX/2, py[3]-maxY/2, pz[3]-maxZ/2,
  px[3]+maxX/2, py[3]+maxY/2, pz[3]+maxZ/2);
  else
  if(x>maxX/2&&w>maxW/2 && x2>maxX/2)
  if(y>maxY/2 && y2>maxY/2)
  if(z>maxZ/2 && z2>maxZ/2)
  line(x1, y1, z1, x2, y2, z2);
}
```

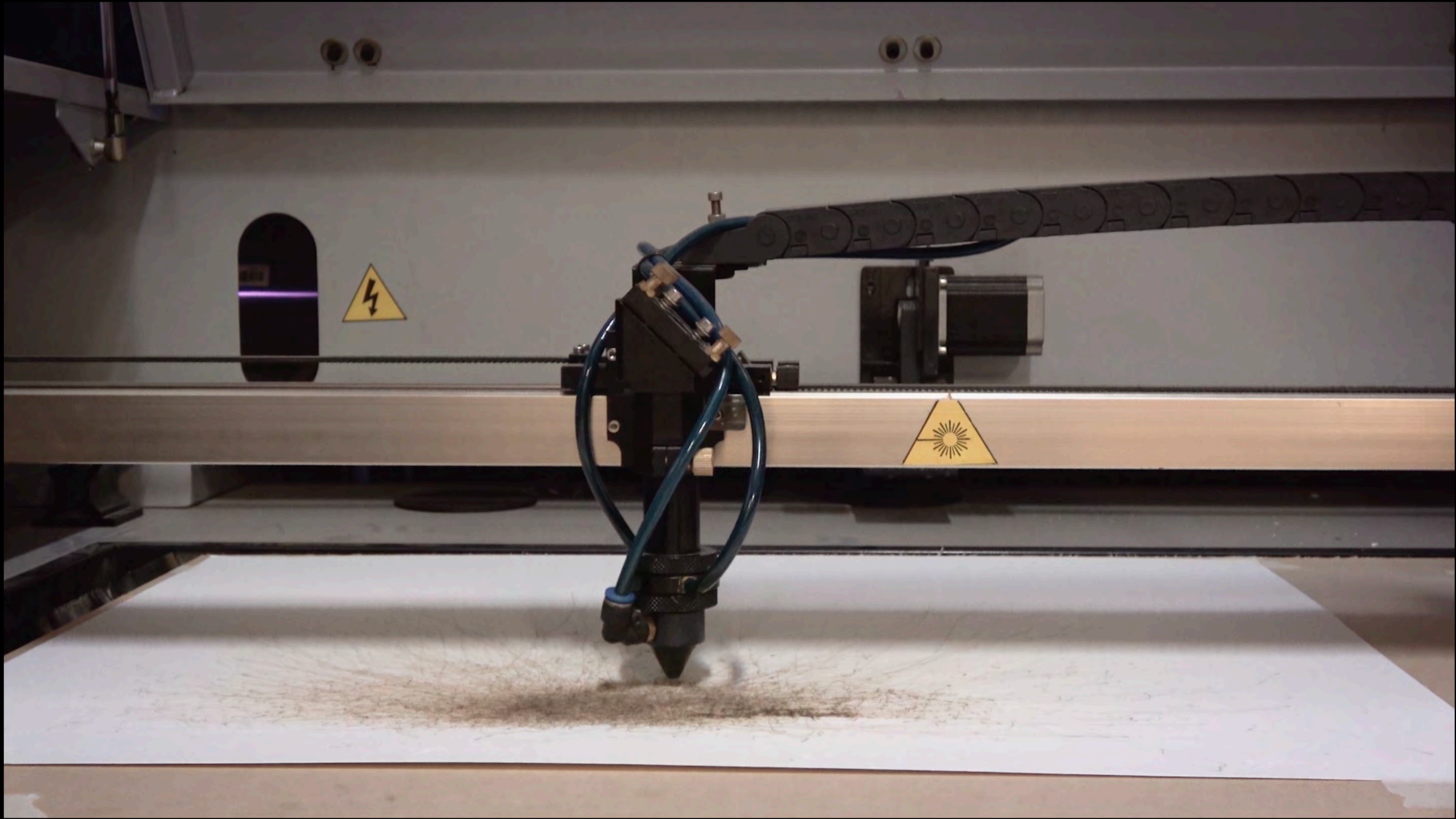












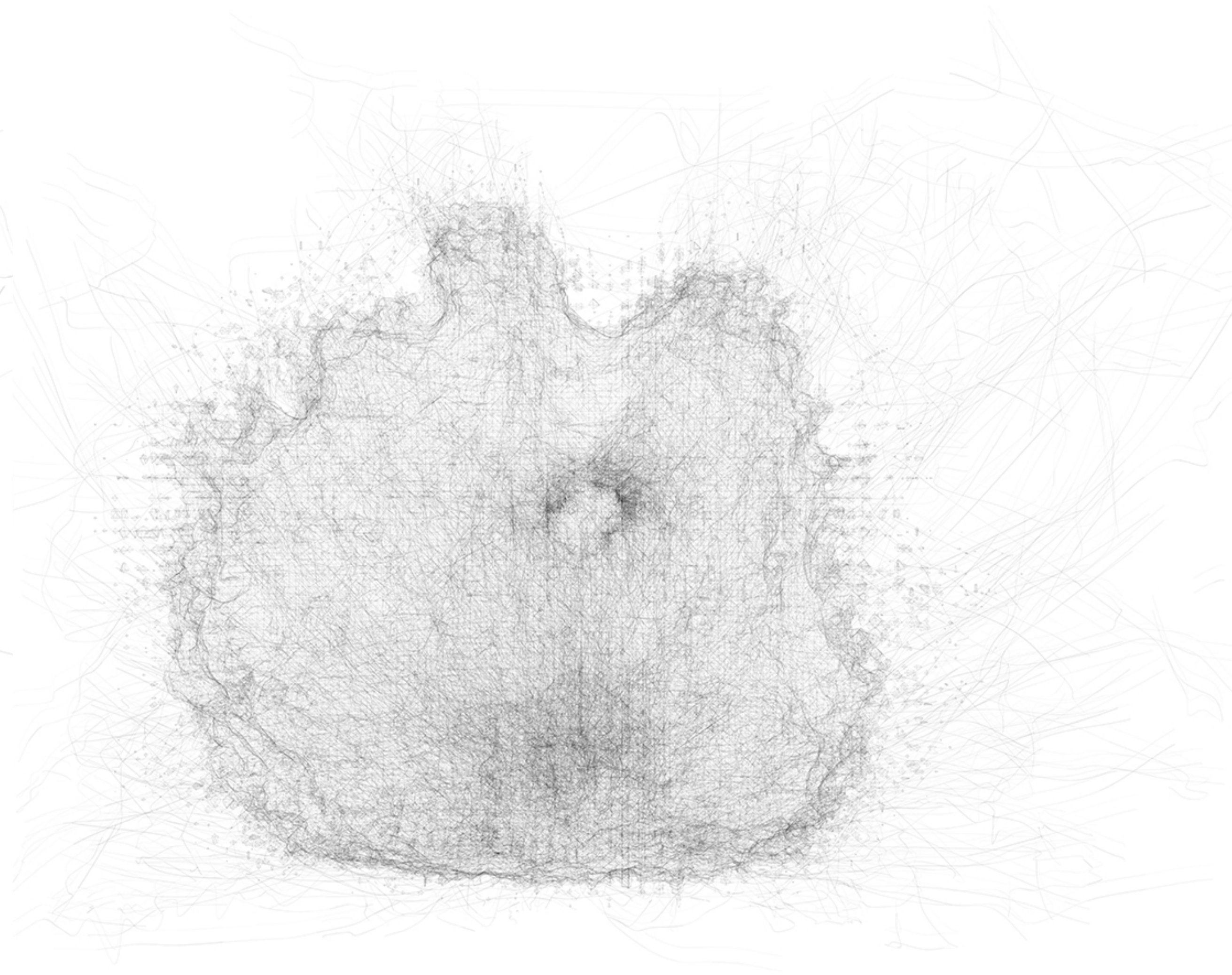
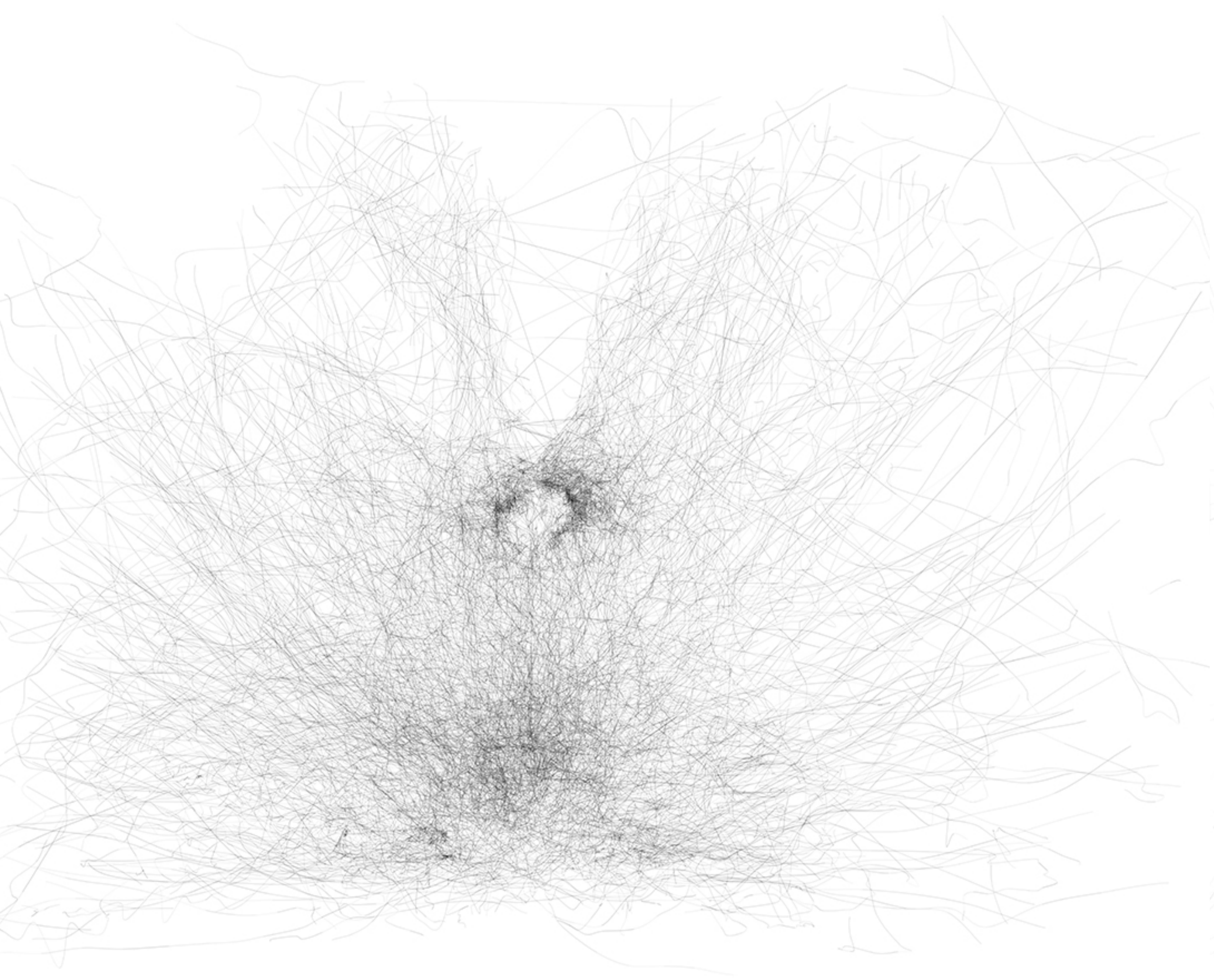


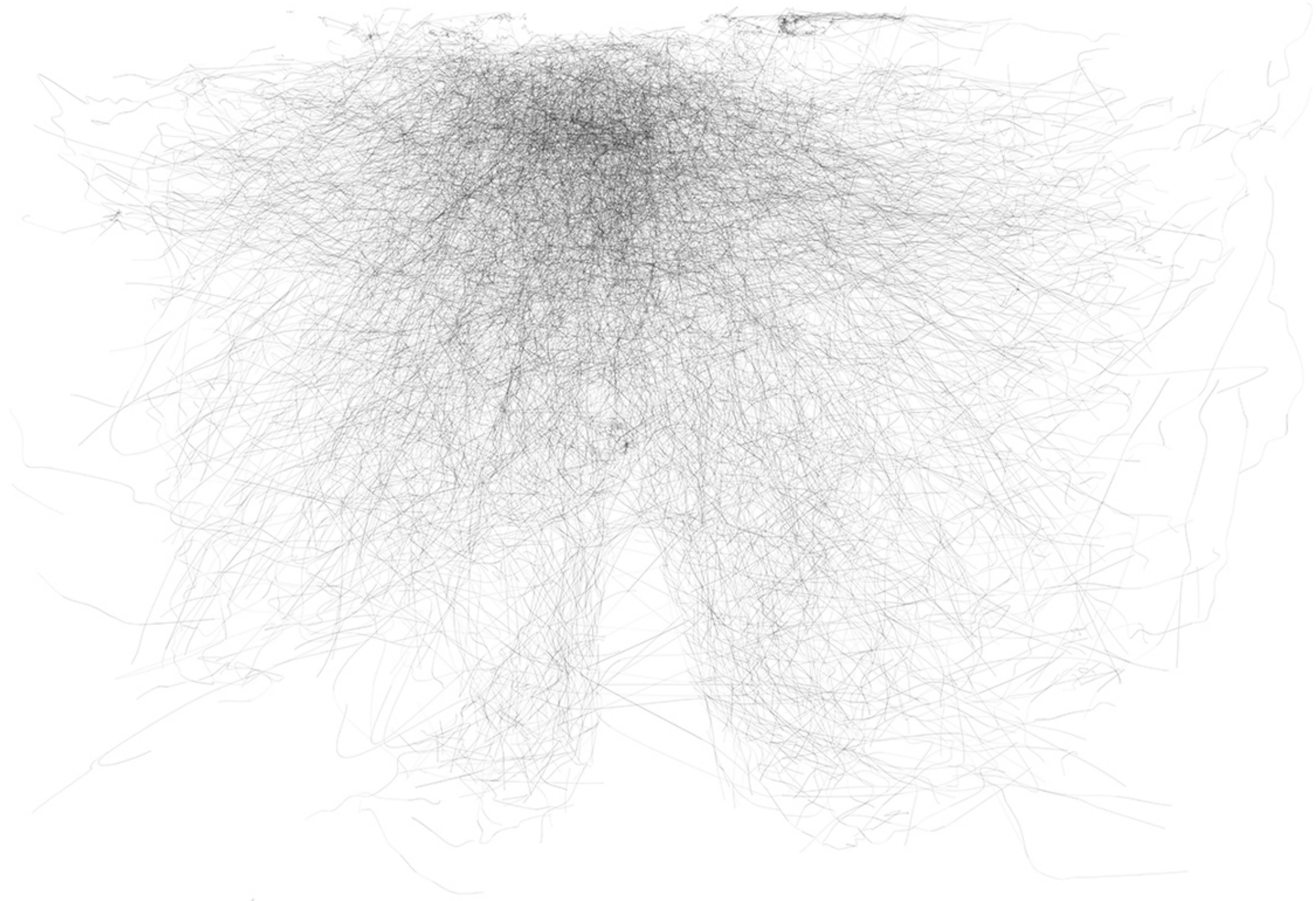


Mg. Carola Dreidemie

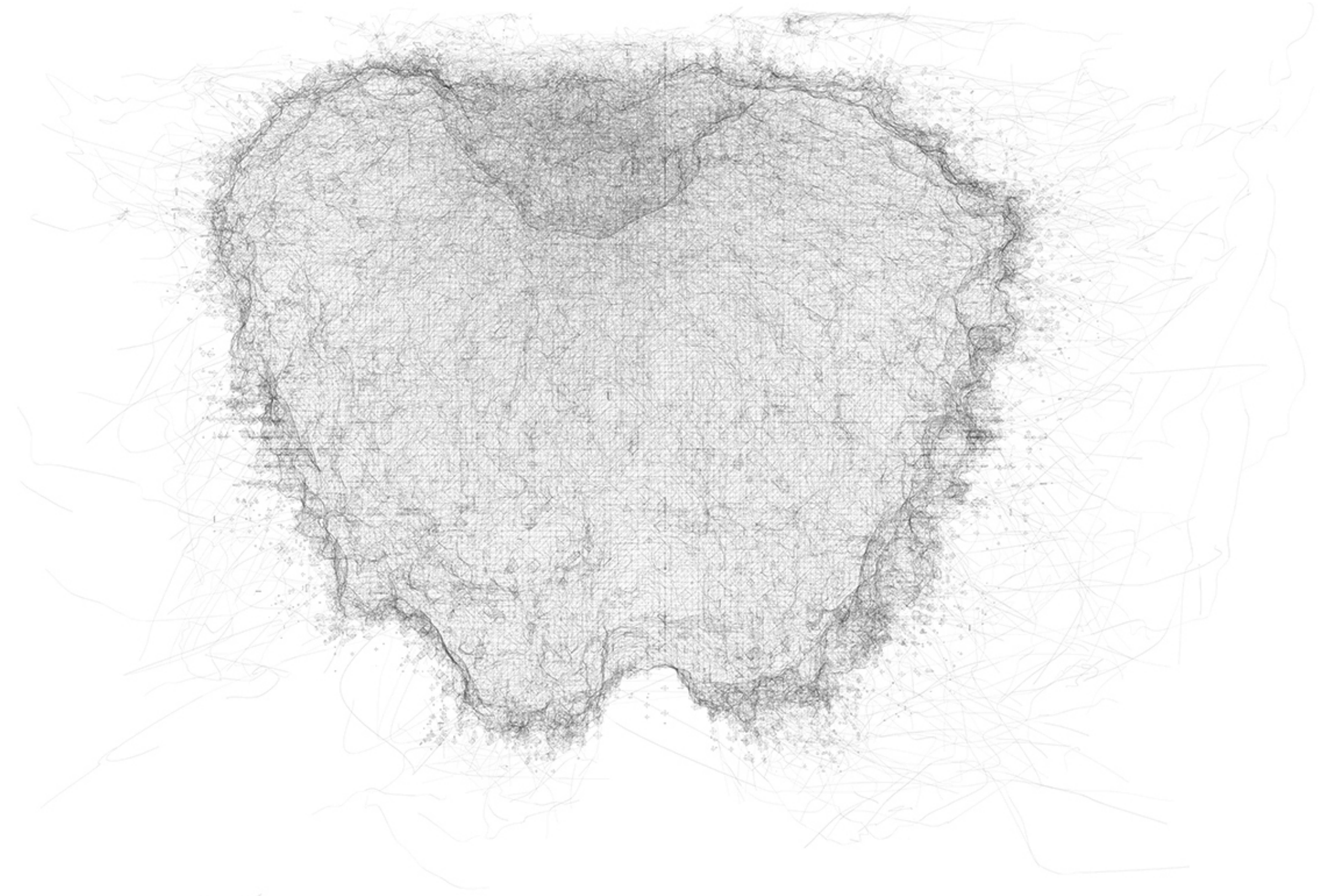
Directora LVCC UNRN
Bariloche, Río Negro, Argentina



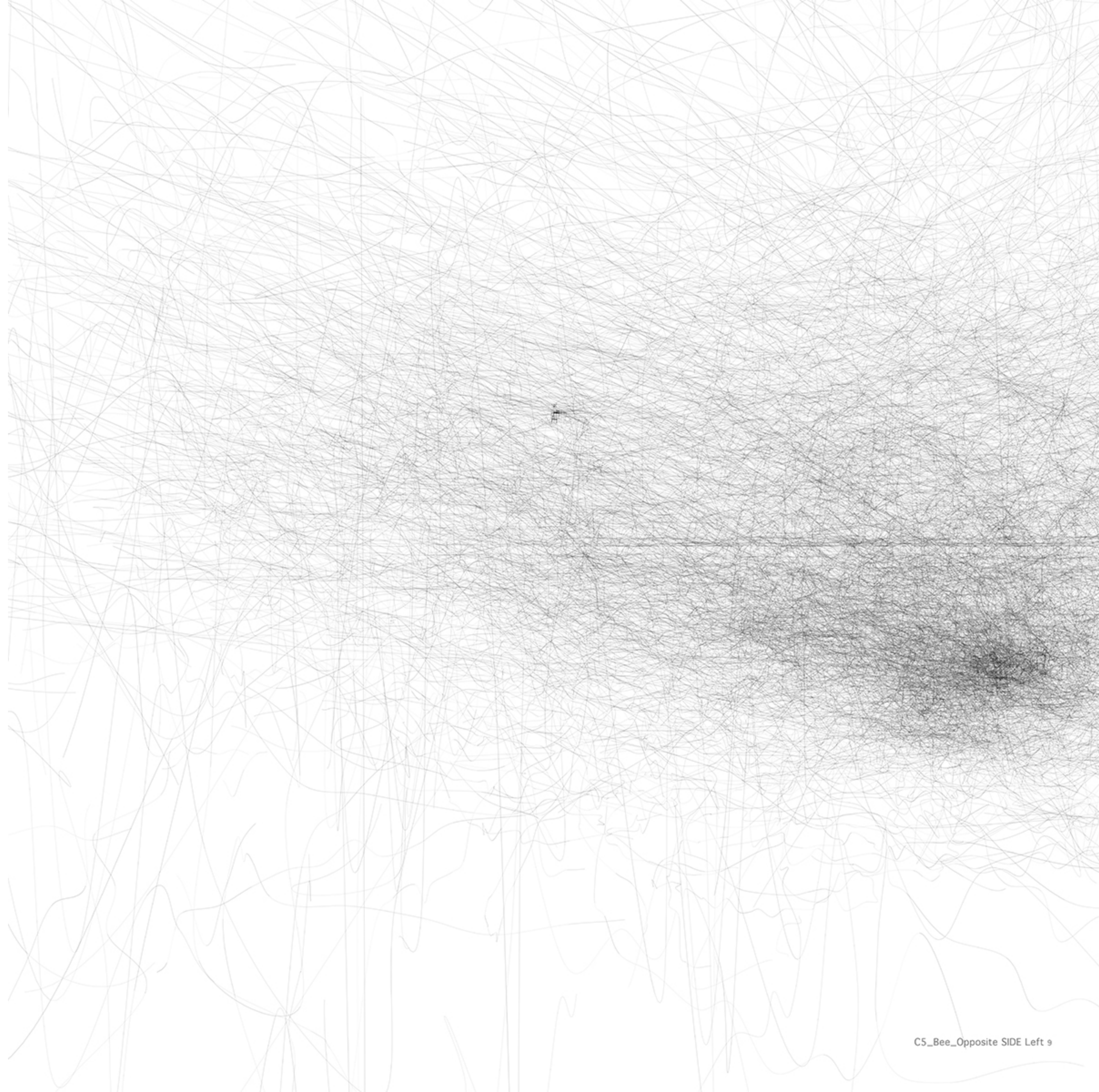




2

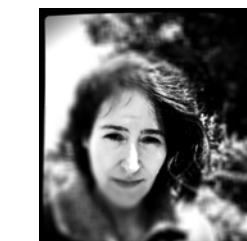


2



Policémies

SOFTWARE ART AND SENSITIVE CONTINUUM: SPACES OF LATENCY BETWEEN LIVING SYSTEMS



DREIDEMIE, Carola
www.caroladreidemie.com

Thesis Subject

To translate flight data into drawings and 3D computer renderings, carrying on the complex motion dynamics, spatial and temporal relationships. To propel an aesthetic, sensible and critical visual analysis of living systems while examining historically and critically our methods and devices that guide and limit our conceptual structures of seeing.

Introduction

Art involving computers, computation, computational logic, or their architectures is commonly known by various terms such as Media Art, Software Art, or New Media. Digital Art specifically references the digit as the medium for transmitting and encapsulating information. Software Art integrates both the digit and artistic expression within the programming process. The code or software, constrained by the limitations of the machine, becomes the raw material of art, influencing the creative process and production methodology. This amalgamation of Fine Arts and Technology facilitates a dialogue between divergent methods of research and knowledge production. Utilizing computer programming as an artistic medium introduces novel aesthetics and fosters innovative scientific and conceptual inquiries.

In Shannon-Weaver's model of systemic communication transmission¹, the message is abstracted from its inherent meaning and detached from physicality. This mathematical framework quickly expanded to analyze communication across various domains, including animal and human contexts. Data assumes a versatile form. As K. Hayle elucidates, "Information requires a degree of analogizing before human comprehension... it also depends on specific material conditions for perceptual and cognitive processing."²

¹ C.E. Shannon. A Mathematical Theory of Communication, The Bell System Technical Journal, Vol. 27, pp.379-423, 623-656, July, October, 1948



The work adopts an interdisciplinary research-creation approach, integrating critical theory and historical analysis. It involves analyzing data derived from the activities of social insects. This interdisciplinary endeavor necessitates ongoing dialogue, collaboration across research domains, fieldwork, observation, hardware evaluation and construction, software development, and artistic production. Current studies in Environmental Humanities, Post-humanism, Animal-Computer Interaction, and Media Archaeology contribute to enriching this inquiry.

"IF THE DOOR TO PERCEPTION WERE CLEANSED, THEN EVERYTHING WOULD APPEAR TO MAN AS IT IS - INFINITE."³

³ William Blake (1793) en Bill Viola, Reasons for Knocking at an Empty House



"THERE ARE THOUGHTS WE CAN ANTICIPATE, GLIMPSED IN THE DISTANCE ALONG EXISTING THOUGHT PATHWAYS."⁴

⁴ Beginning After the End. In Dark Ecology. For a Logic of future Coexistence. Morton, T. Columbia University Press 2016.

Production

REPRESENTING: Wolfgang Ernst, in 'Else Loop Forever. The Un-timelessness of Media, elaborates on media temporalities. Some of the temporalities are tied to sequential processes and internal functions in computer hardware, other ones are performed by algorithms in computation that allow for recursive functions and a few 'real time' operations. All of them tweak and stretch our perception of the 'real' timepassage. Media, as he states it, performs a "micro-dramaturgy" of temporal properties. Ernst introduces an interesting term: Representing. A term that couples a representation with something sensed. This term 'sense' stands in-between knowing and anticipating, and involves the senses in accordance with what is acknowledged and known, and with what is expected or projected.

The term 'Representing' of the qualities mentioned, is particularly interesting for this study as it appears evident that it is an acting condition present in living systems dynamics. An action of representation disposed of any kind of assurance or of certainty of the immediate future, lacking the information of a 'read future'. An action taken as a gamble, as a leap of faith. For computation, this is handled through statistical approximation, averaging, hierarchy-sizing, scaling up.

First Results

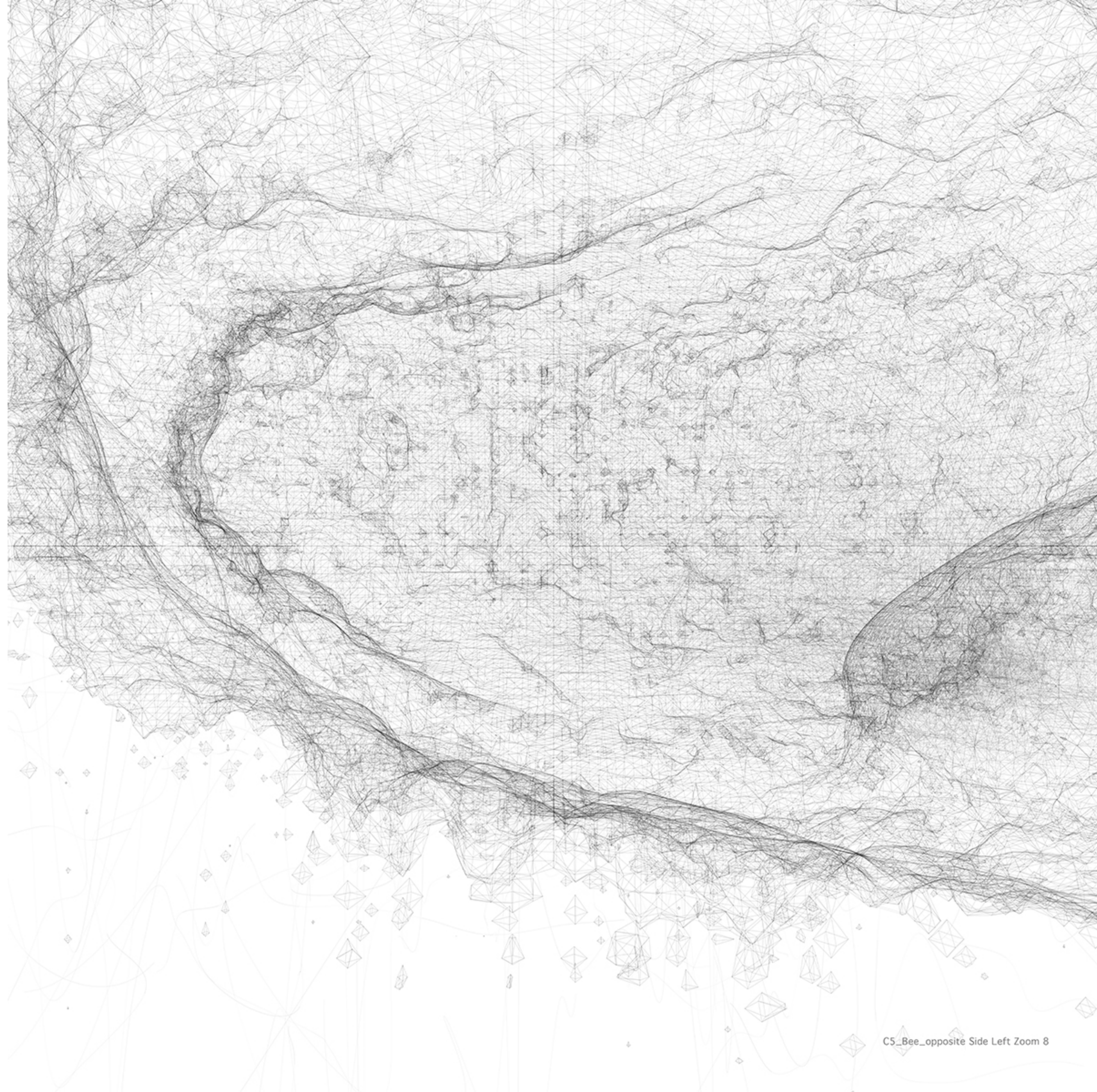
In the disassembling of the affecting variables and conditions of the raw data material, the study in the first year inquired on the computer as a medium and looked into data and time management. Specifically:
DATA: a-Data as Information: Precision. Scale. Direction. Choice. Range. b-Coding: Analogue to digital translation. Language. Procedures. Memory. Storage. Loss.
TIME: Media temporality. Representing. Statistical approximation. Averaging. Hierarchy-sizing. Scaling.

Art Production: Series of Six Diptychs. Large Format (100cm x 100cm) Digital prints. 2023

• Janet H. Murray. Inventing the Medium. In Nick Wardrip - Fruin, Noah; Montfort, editor, The new media reader, pages 3 – 11. The MIT Press, Cambridge, United States, 2003. • Bill Viola. Reasons for Knocking at an Empty House: Writings 1973- 1994. Page 301, 1995. • John Van Neumann. The computer and the Brain, 1958. • Allan Turing. Computing Machinery and Intelligence, 1950. • Friedrich Kittler. Thinking Colours and/or Machines, 1996. • C.E. Shannon. A Mathematical Theory of Communication, The Bell System Technical Journal, Vol. 27, pp.379-423, 623-656, July, October, 1948. • Douglas Rushkoff. Program or Be Programmed. Ten Commands for a Digital Age, 2011. • Jer Thorp. Living in Data. A Citizen's guide to a better information future. MCD NY 2021. • Wolfgang Ernst. "The Delayed Present - Media-Induced Tempor(e)alities and Techno traumatic

Bibliography

Irritations of "the Contemporary". Stern- berg Press, 2020.
• Aline Guillermet. Vera Molnar's Computer Paintings. Representations, 149(1):1-30, 2 2020. • Wolfgang Ernst. "Listening to Sonic Expressions with Media-Archaeological Ears" Sound Art Conference. Aarhus University, June 2016.
• Timothy Morton. Dark Ecology. For a Logic of Future Coexistence. Columbia University Press, New York, 2016. • N. Katherine Hayles. "My Mother Was a computer: Digital Subjects Literary Texts". The University of Chicago Press, Chicago, IL, United States, 2005. • Golan Levin. Is the Computer a Tool? In John Maeda, Creative Code, page 140. Thames Hudson Ltd., 2004. • Lev Manovich. New Media from Borges to HTML. In Nick Wardrip - Fruin, Noah; Montfort, editor, The new media reader, pages 13-25. The MIT Press, 2003.



Trajectoires éphémères. Ephemeral Trajectories.



3 Disciplines :: 3 Objectives

ECOLOGY

Post PhD fellow Fabrice Requier, UNRN-La Rochelle Université
Study in animal behavior w & w/o invasor

COMPUTER SCIENCE

Post PHD fellow, Guillaume Chiron, La Rochelle Université
Challenge: Ambitious task to achieve
through computer sciences

ART

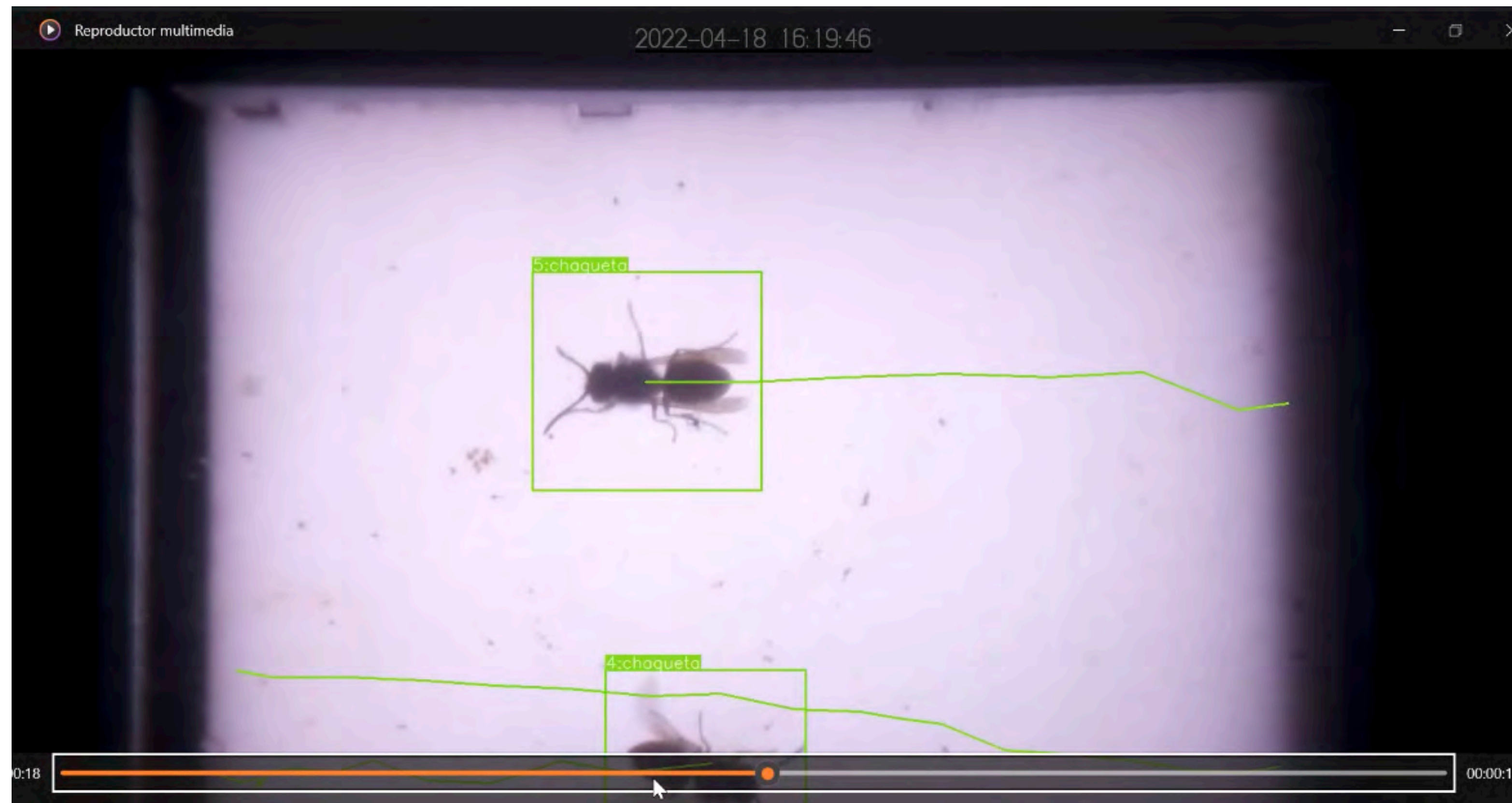
MFA Carola Dreidemie, LVCC-UNRN
New research through Art Practice and
Production

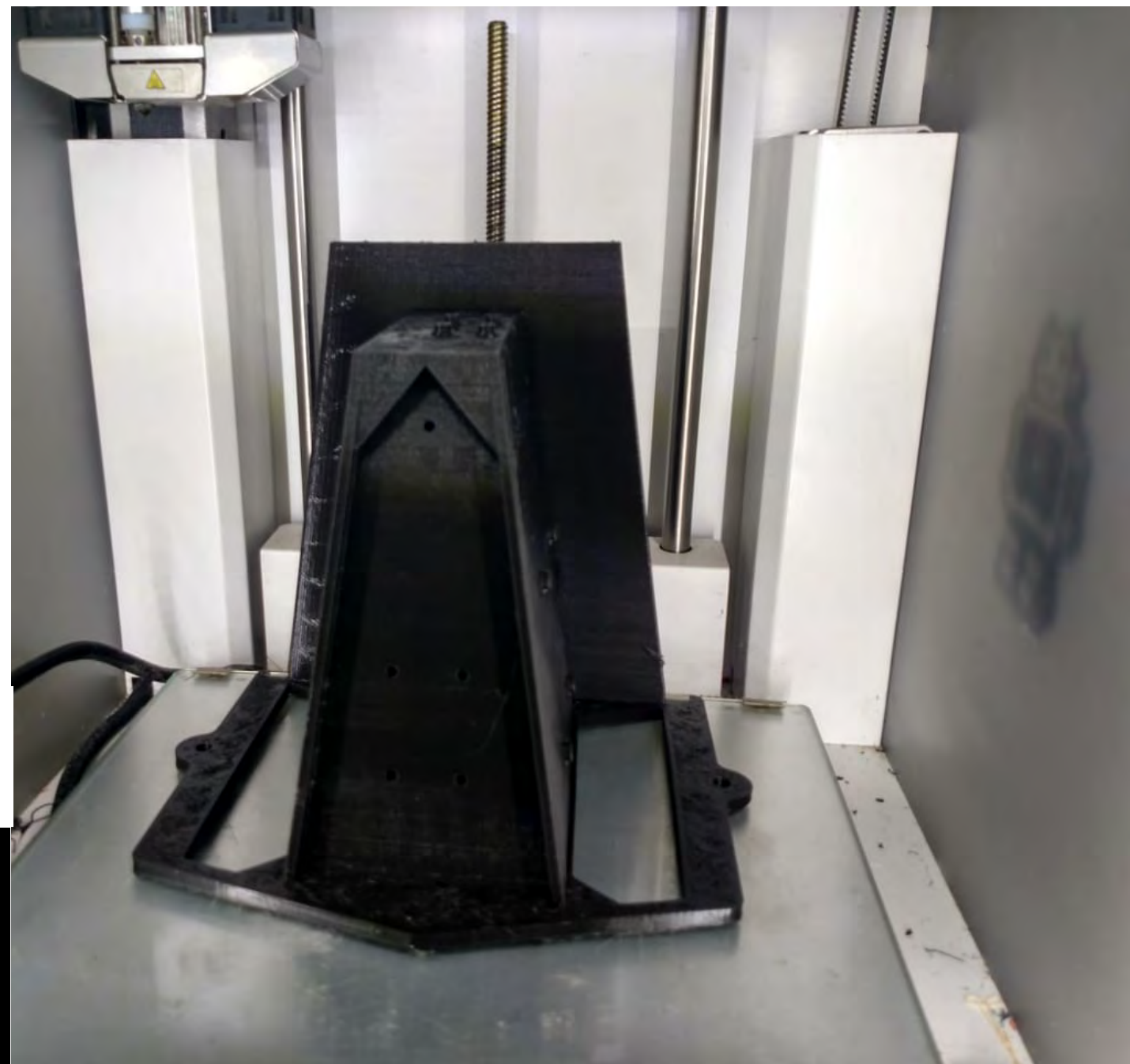
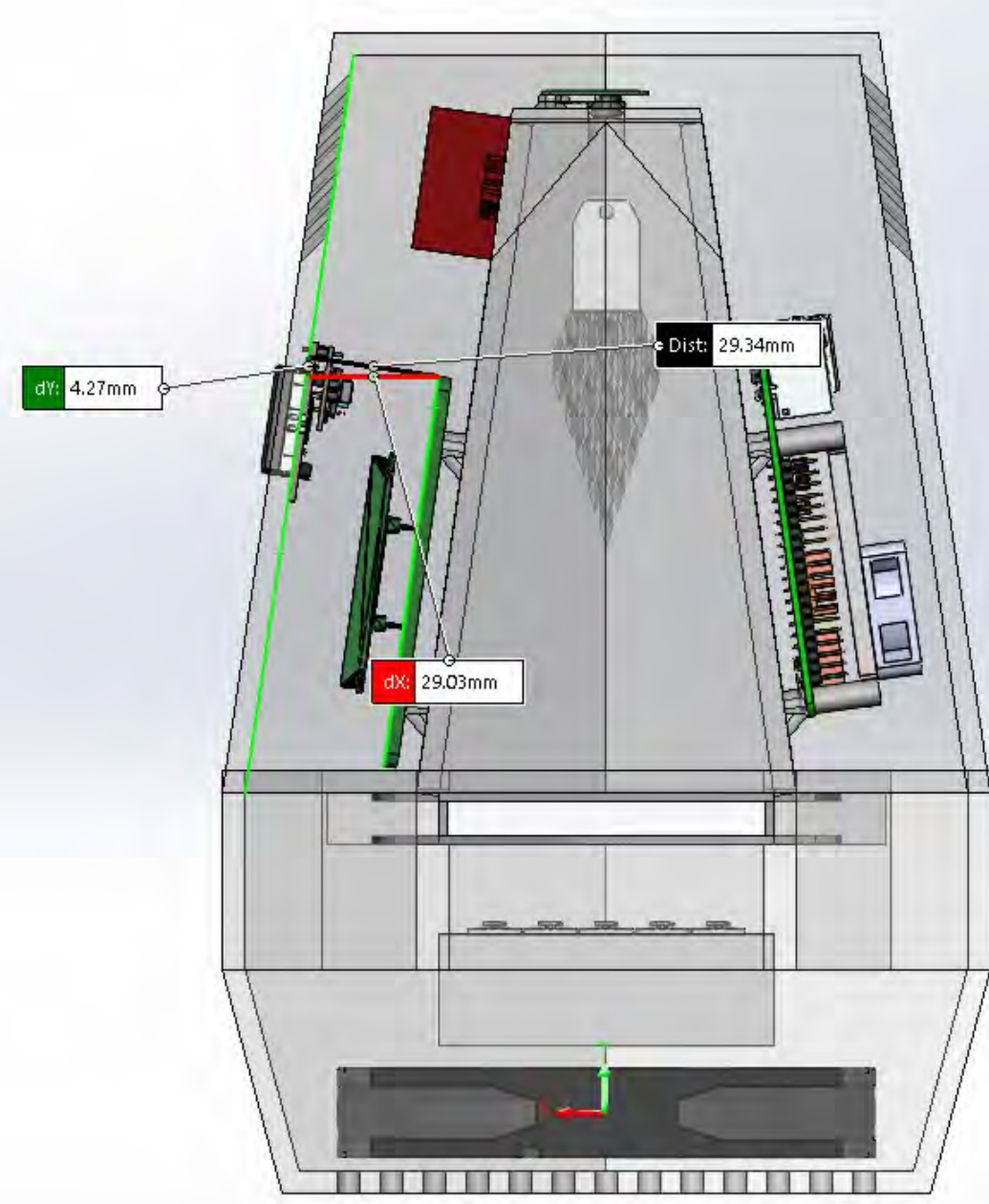
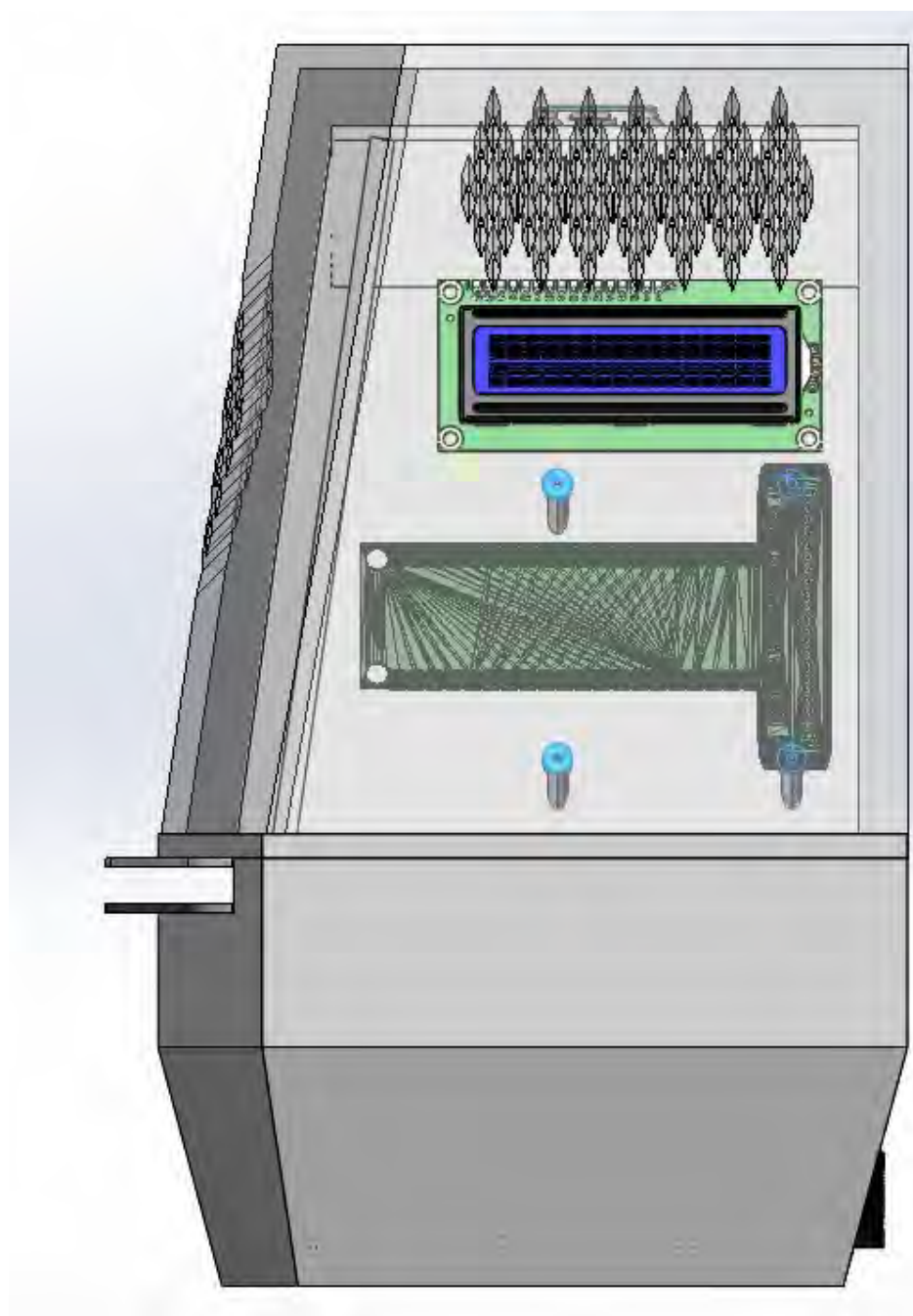


Automated Yellowjacket Nest Activity Monitor

Two main disciplines: ETHOLOGY & ART. Sub-disciplines: Electronic Engineering and Computer Science
Lead Researchers in Ethology: PhD. Andrés Martínez, PhD Maite Masciocchi (INTA)
Lead Researcher in Art: Carola Dreidemie (LVCC UNRN)

LVCC Technicians Fernan Inchaorza and Marian Basti.
LVCC Undergraduate Intern Agustín Cucurull.





UNRN | Universidad Nacional de Río Negro





1 Special Issue "Advances in Insect Biomonitoring for Agriculture and Forestry"- Ed: Jordan Cuff

2 **Advancing social insect research through the**
 3 **development of an automated yellowjacket nest-**
 4 **activity monitoring station using deep learning**

5 Martínez A. S.^{1*}; Dreidemie C.^{2,3}; Inchaurrea F.²; Cucurull A.²; Basti M.² and Masciocchi M.^{1*}

6 ¹ Grupo de Ecología de Poblaciones de Insectos, IFAB - Instituto de Investigaciones Forestales y
 7 Agropecuarias Bariloche (INTA - CONICET), Bariloche, Argentina.

8 ² LVCC Laboratorio de Visualización y Código Creativo. CITECCA Centro Interdisciplinario de
 9 Telecomunicaciones, Electrónica, Computación y Ciencias Aplicadas. UNRN Universidad Nacional de
 10 Río Negro, Argentina.

11 ³ Policémies - La Rochelle Université, La Rochelle, France.

12 *These two authors contributed equally to this work.

13 Corresponding author: Martinez A. S. andmarv77@gmail.com

14 **Running title**

15 Automated social wasp traffic monitoring station

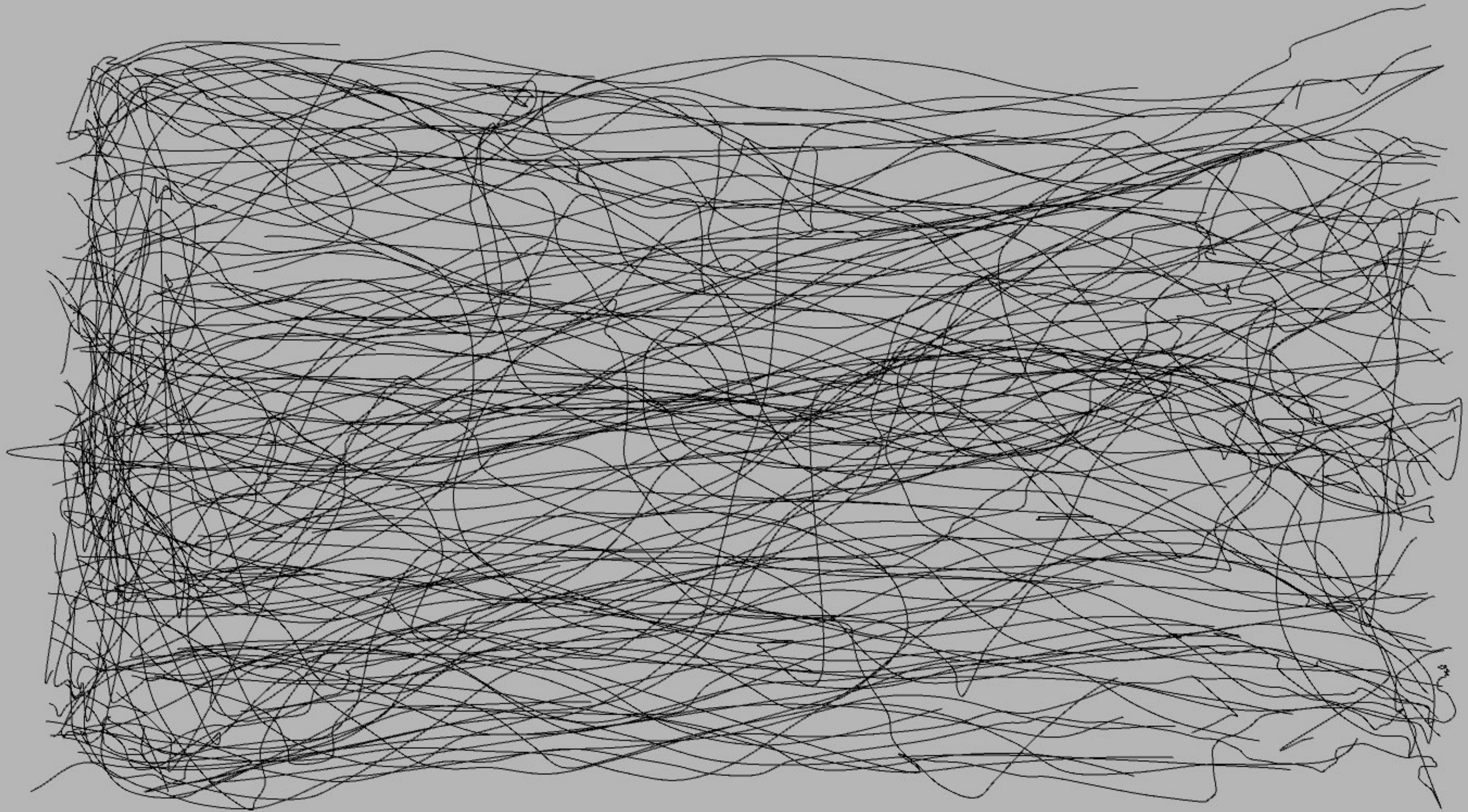
16 **Keywords**

17 Automatic caste recognition, Automation, Big data, Machine learning, Neural network, Pest, Social
 18 insects.

19 **Abstract**

- 20 1. We describe the development and validation of an autonomous monitoring station that identifies
 21 and records the movement of social insects into and out of the colony.
 22 2. The hardware consists of an illuminated channel and a fixed camera to capture the wasps'
 23 activities.
 24 3. An ad-hoc post-processing software was developed to identify the direction of movement and
 25 caste of the recorded individuals.
 26 4. Validation results indicate that the model is robust in recognizing direction of movement of the
 27 wasps and identifying caste.
 28 5. This innovative tool holds immense potential for advancing ecological and behavioural research by
 29 providing researchers with rapid and easily accessible data.
 30 6. Understanding the activity patterns of individual wasps within the colony can yield valuable insights
 31 into factors influencing their growth, foraging patterns, and the behaviour of reproductive
 32 individuals. Ultimately, this information can be incorporated into effective management plans for
 33 controlling harmful social insect populations in both ecological and productive systems.



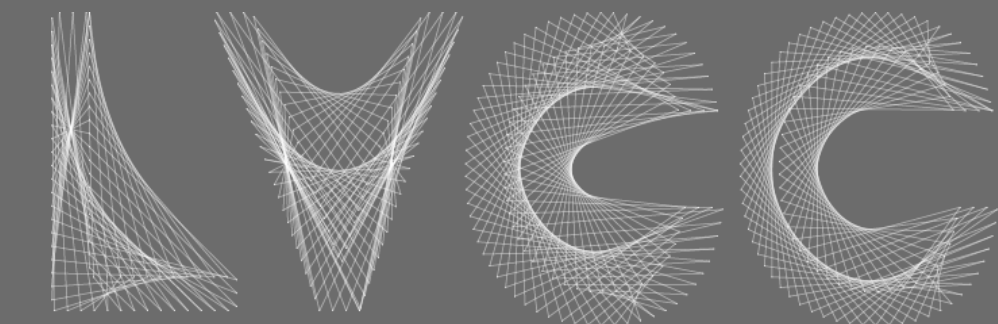



```
chaquetas 2d animacion con  
4 String filename=  
5 int maxx=0,minx=  
6 float maxv=0,mir  
7 float maxl=0,mir  
8 int group=4;  
9  
10 boolean record=f  
11 int nExport=0;  
12  
13 float [][][] t  
14 int [][] i  
15 String [][] t  
16 float [][] t  
17 int [] c  
18 int [] cou  
19 float paso=0;  
20 float cantLineas  
21 int total = 0;  
22  
23 void setup()  
24 {  
25 size(1600, 900  
26 JSONArray json  
27 println(json.s  
28 total = json.s  
29 for (int j = 0  
30 {  
31 JSONObject t  
32 times [j][0]  
33 times [j][1]  
34 temps [j][0]  
35 temps [j][1]  
36 JSONArray pt  
37 ids [j][1] =  
38 for (int i =  
39 {  
40 JSONArray  
41 traj [j][i]  
42 traj [j][i]
```



00:12 00:38

Navigation controls: back, play, forward, full screen, copy, and refresh icons.



Laboratorio de ID+i Visualización y Código Creativo

* created in 2014



LABORATORIO de Cómputo de alto rendimiento, Procesamiento de Datos y Visualización

OBJECTIVES

Investigación //
Desarrollo //
Diseño //
Producción //

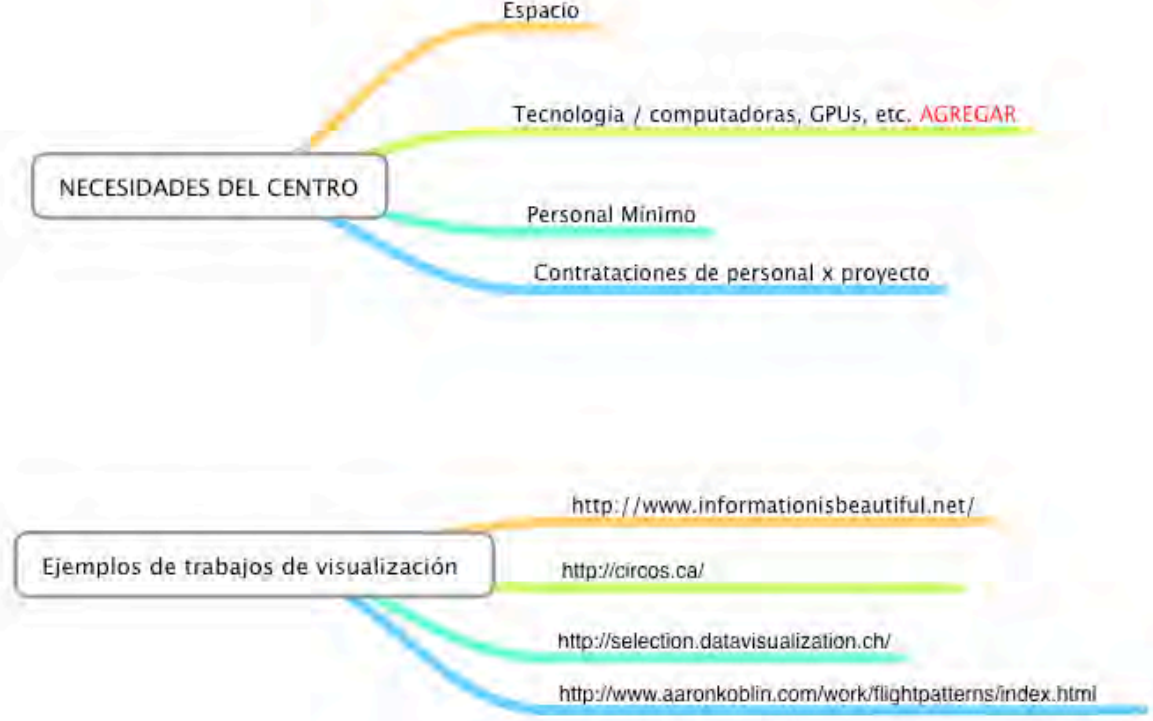
LÍNEAS DE INVESTIGACIÓN, DESARROLLO y PRODUCCIÓN

A. Desarrollo e investigación en COMPUTO PARALELO y DE ALTO RENDIMIENTO
B. Diseño y Producción de VISUALIZACIONES y SIMULACIONES. Investiga desarrolla, diseña y produce nuevos modelos de visualización apoyando investigaciones de cualquier área de conocimiento.
C. PROCESAMIENTO de grandes masas de DATOS (explotación de información) Investigación y desarrollo.

VISUAL and TECHNICAL SKILLS:



NEEDS:



PEOPLE:

PERSONAS PRIMARIAS

- Mg. Carola Dreidemie, Mg. Artes Visuales (Especialista en visualización de datos por programación)
- Dra. Mónica Denham, Ingeniería Informática (Especialista en computo de alto rendimiento y programación paralela)
- Dra. Paola Britos, Ingeniería Informática (Especialista en Procesamiento de datos)

OTRO DOCTOR O INVESTIGADOR Categoría 3 o +alta // Especialista Modelado 3D

OBJETIVOS:

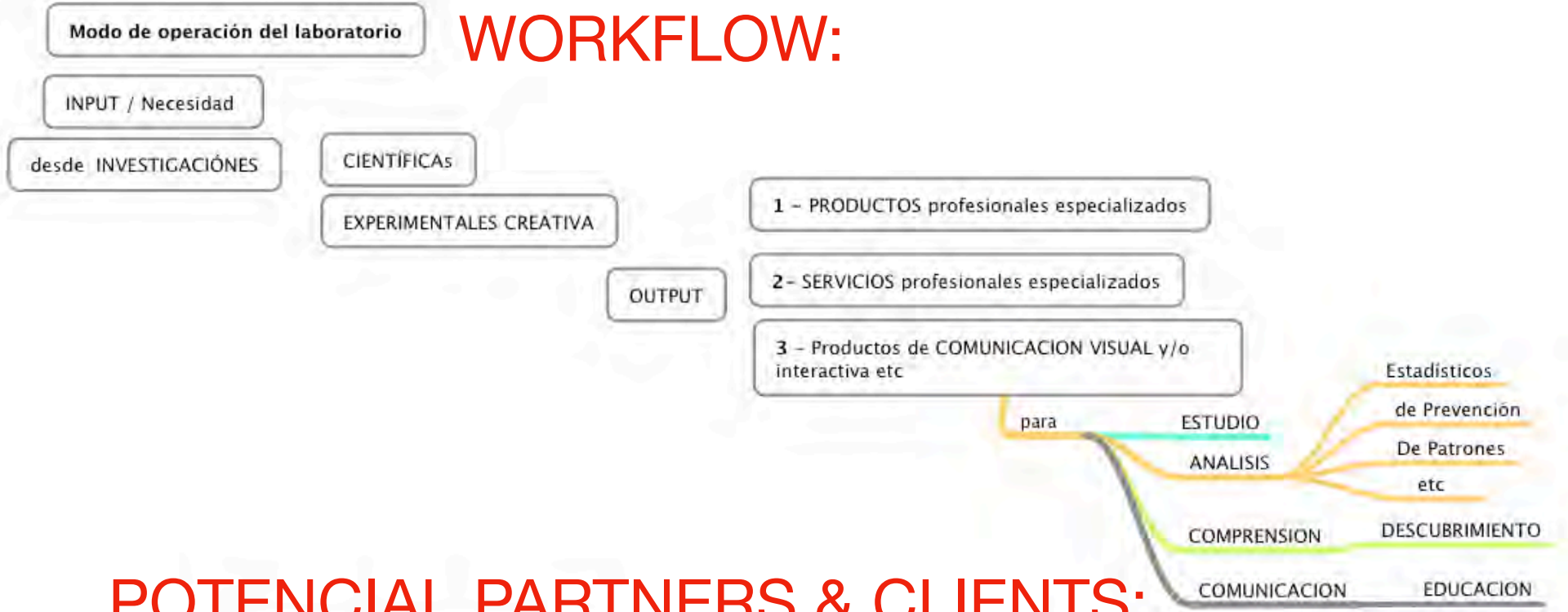
ESCRIBIR OBJETIVOS

POTENCIAL FUNDING SOURCES:

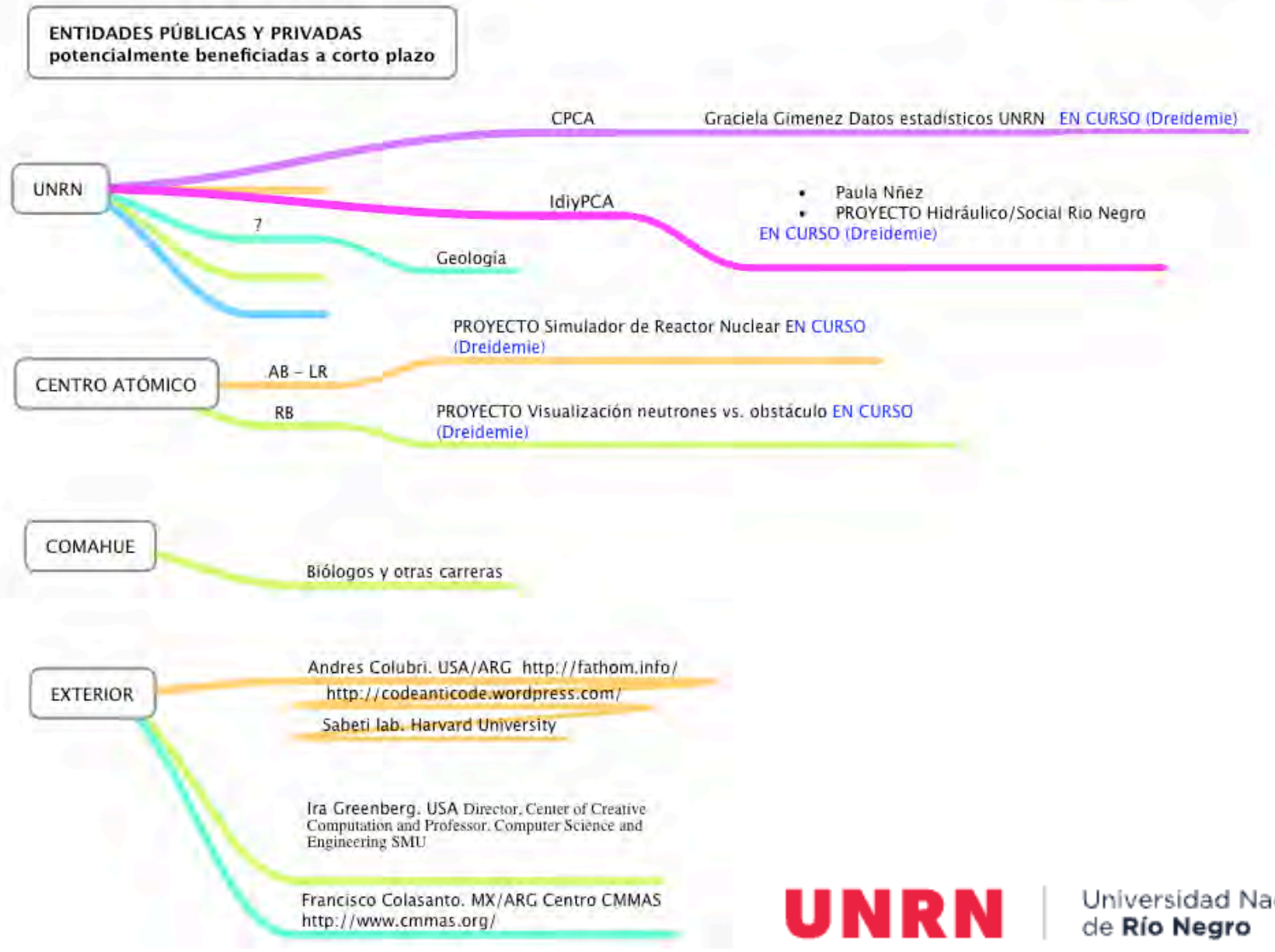


FONTAR Centros de Desarrollo Tecnológico (CEN-TEC)
El objetivo del componente es crear centros de desarrollo tecnológico y servicios que generen masa crítica en actividades de transferencia, I+D y servicios técnicos de alto valor agregado con I+D orientada a la producción y con amplio alcance a nivel territorial

WORKFLOW:



POTENCIAL PARTNERS & CLIENTS:



Incrementing biodiversity in productive farmland.

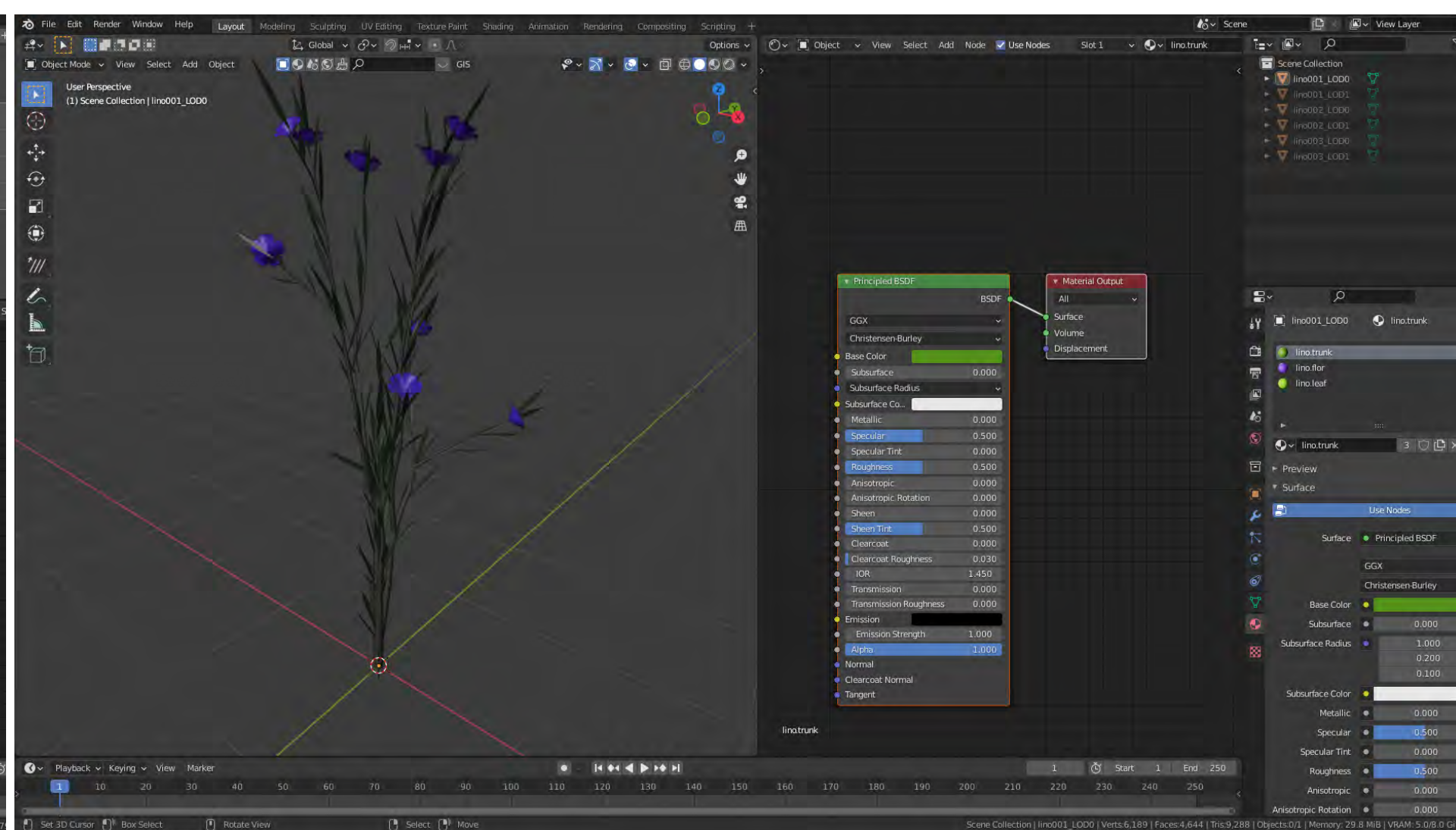
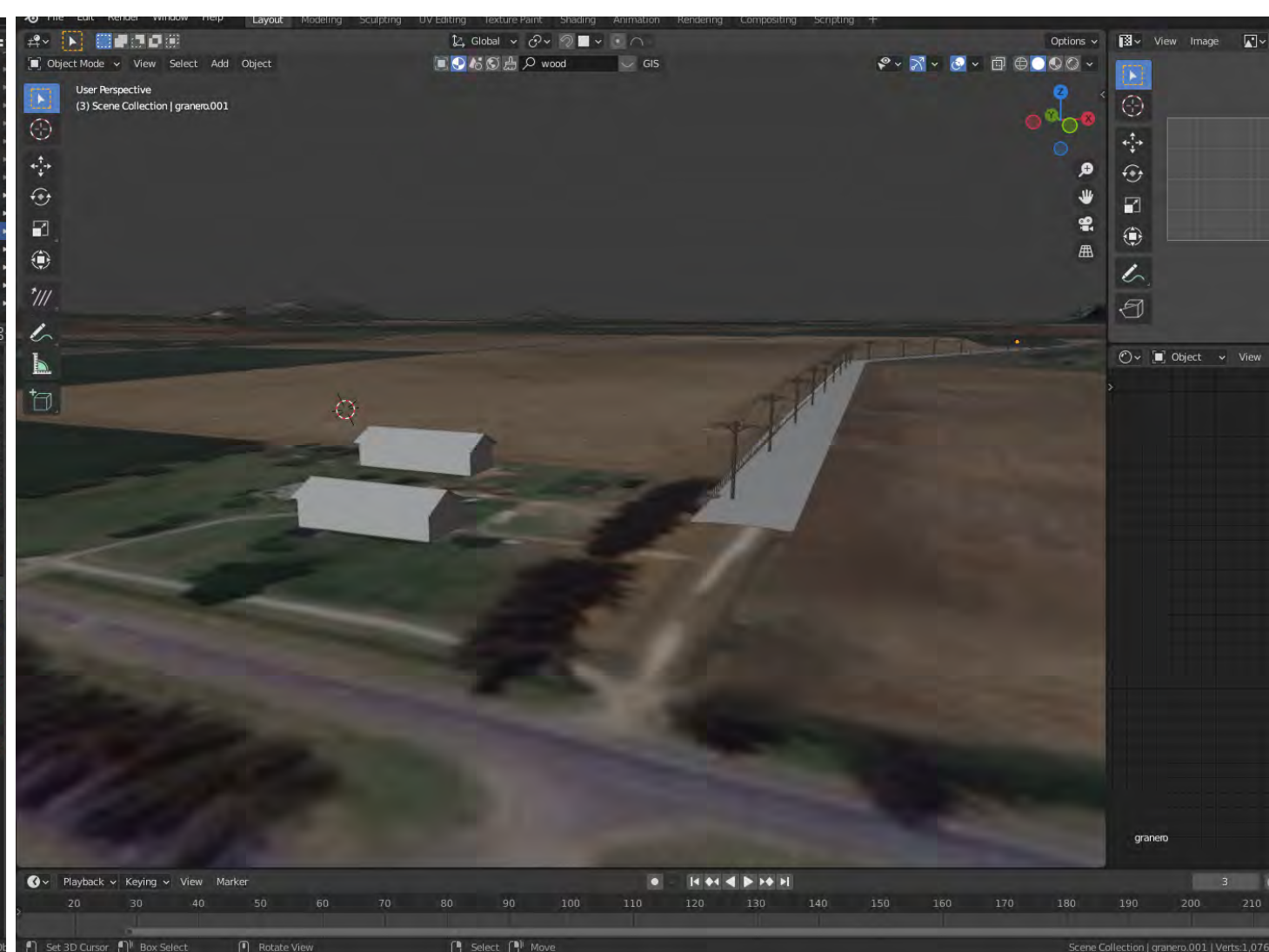
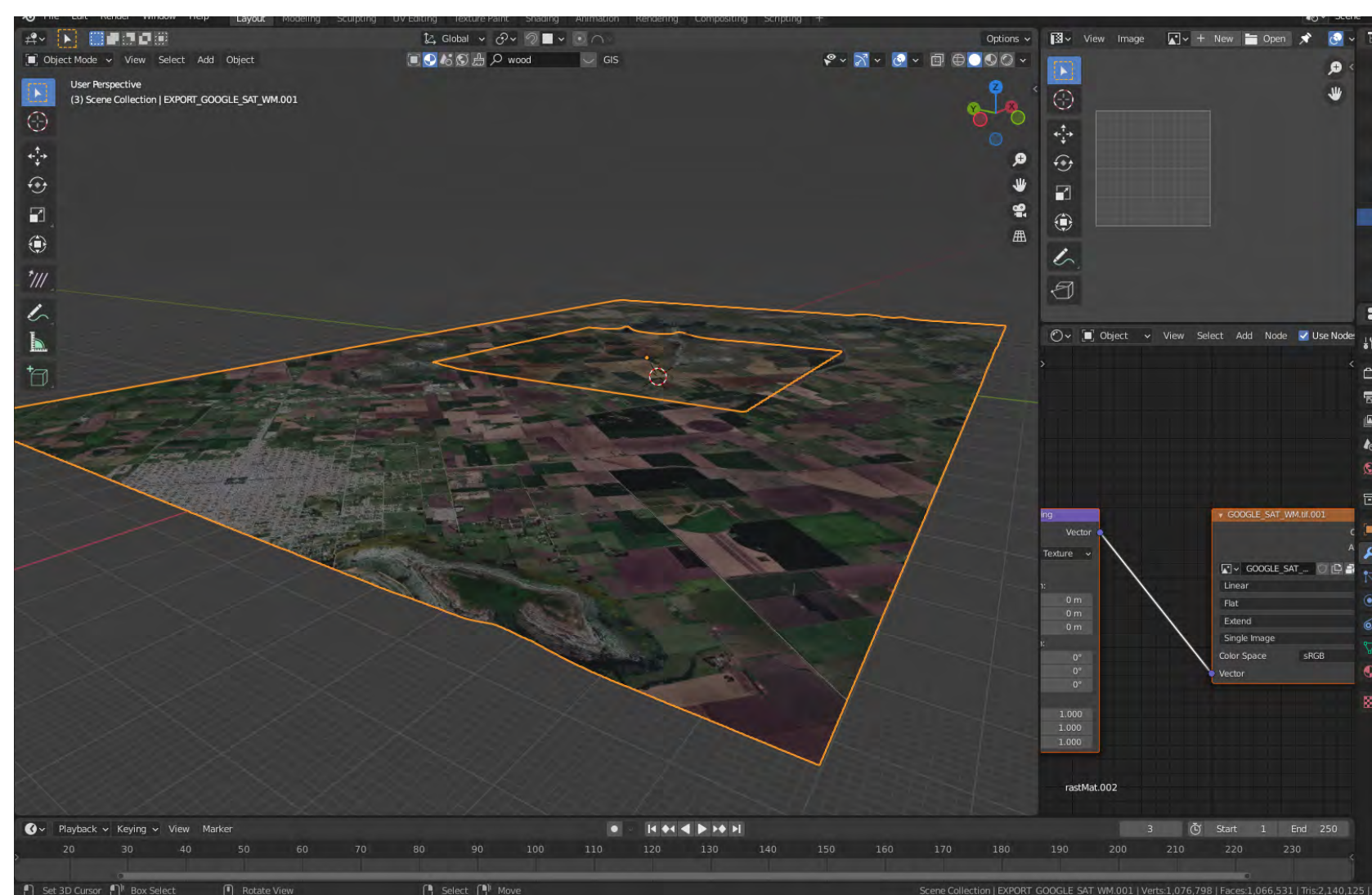
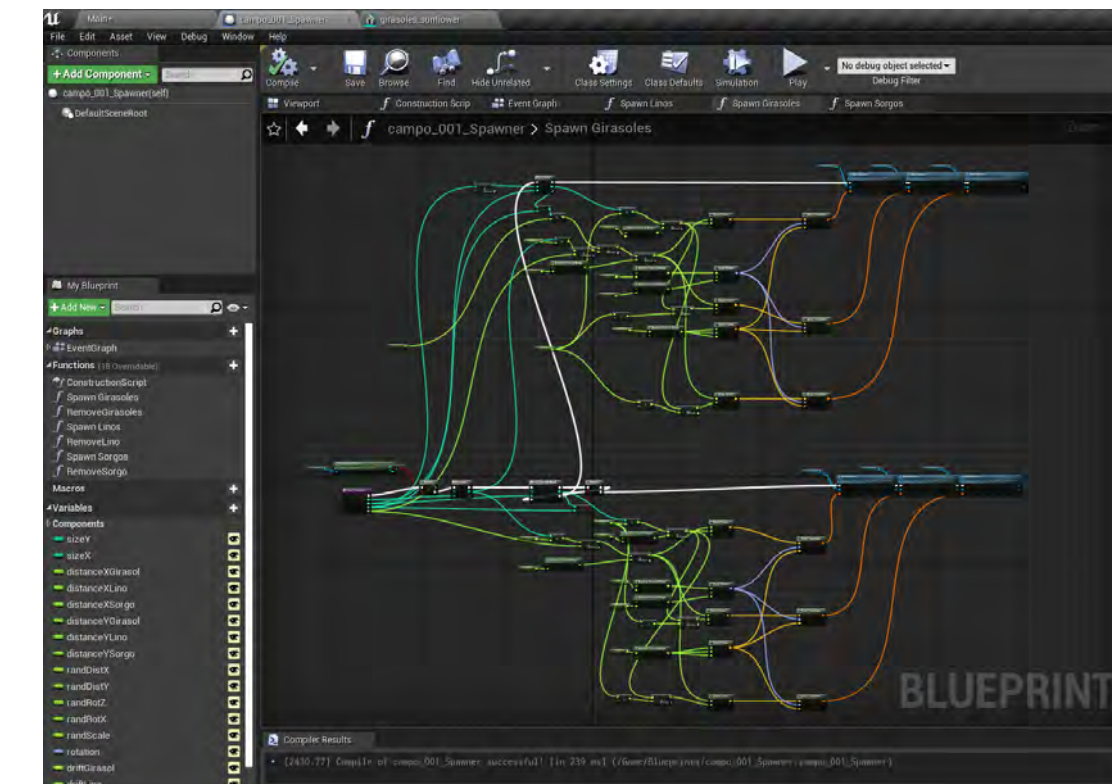


Lead Researcher Ing. Lucas A. Garibaldi
LVCC Researcher in Art: Carola Dreidemie

LVCC Technician Marian Basti.
LVCC Middle School Interns: Katja Pucher Baumann and
Franco Grattoni.

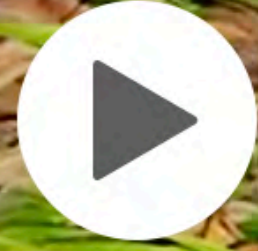
Visual communication for an audience
of policy makers and general public.

Applied advanced media tools for visual communication of research:
Blender for modeling. UnReal for interactivity design.
Adobe Suite for media editing and postproduction.
Various programming languages.



LIGHTING NEEDS TO BE REBUILT (56 unbuilt objects)

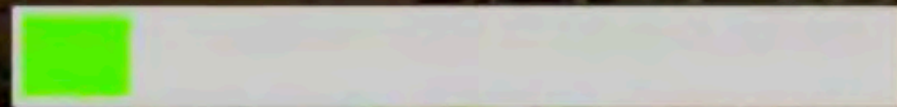
Quality of the scene is dependent on the quality of the lighting



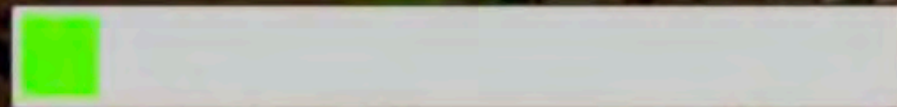
Contaminantes del suelo

Intensificación ecológica

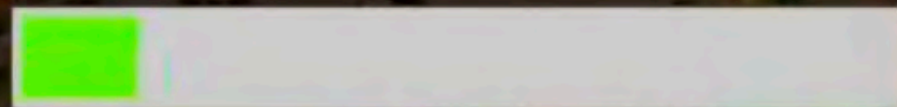
Pesticidas



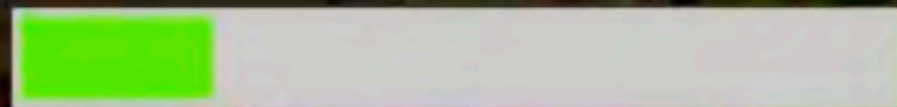
Herbidas



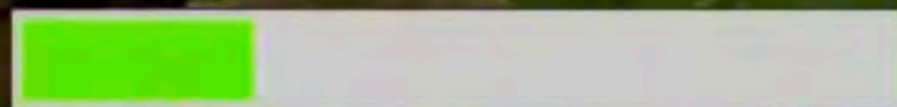
Maleza resistente



Anegamiento



Erosión

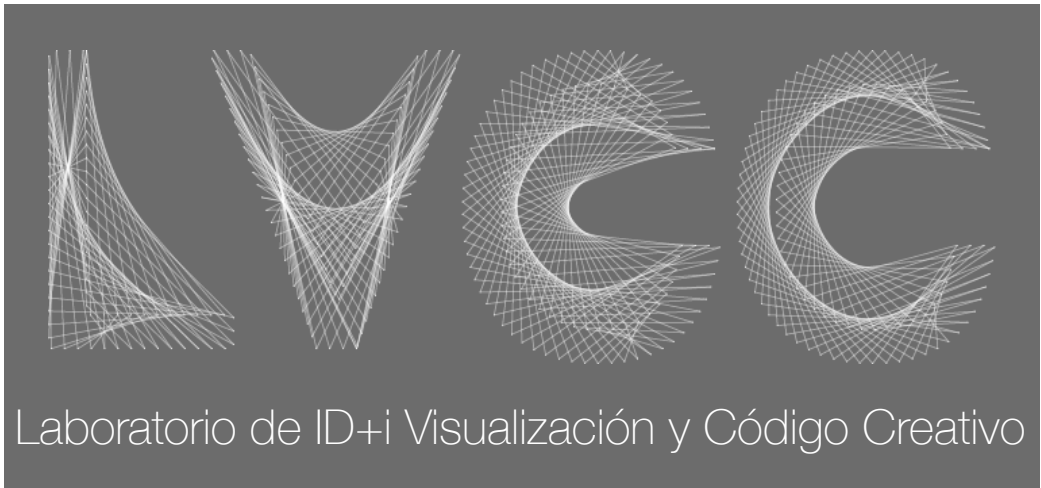


Universidad Nacional
de Río Negro

VolGIS: A volcano oriented GIS for multidisciplinary analysis.

Lead researcher: PhD. Student Roberto A. Guardo. Geophysicist.
Phd thesis co-director. PhD. Luca De Siena, University of Aberdeen.
LVCC Researcher: MFA. Carola Dreidemie. UNRN, Argentina
LVCC Visiting Researcher: MFA Andrés Colubri. Coder, 3D OpenGL.
Sabeti Lab, Harvard University, Broad Institute, MA, USA.

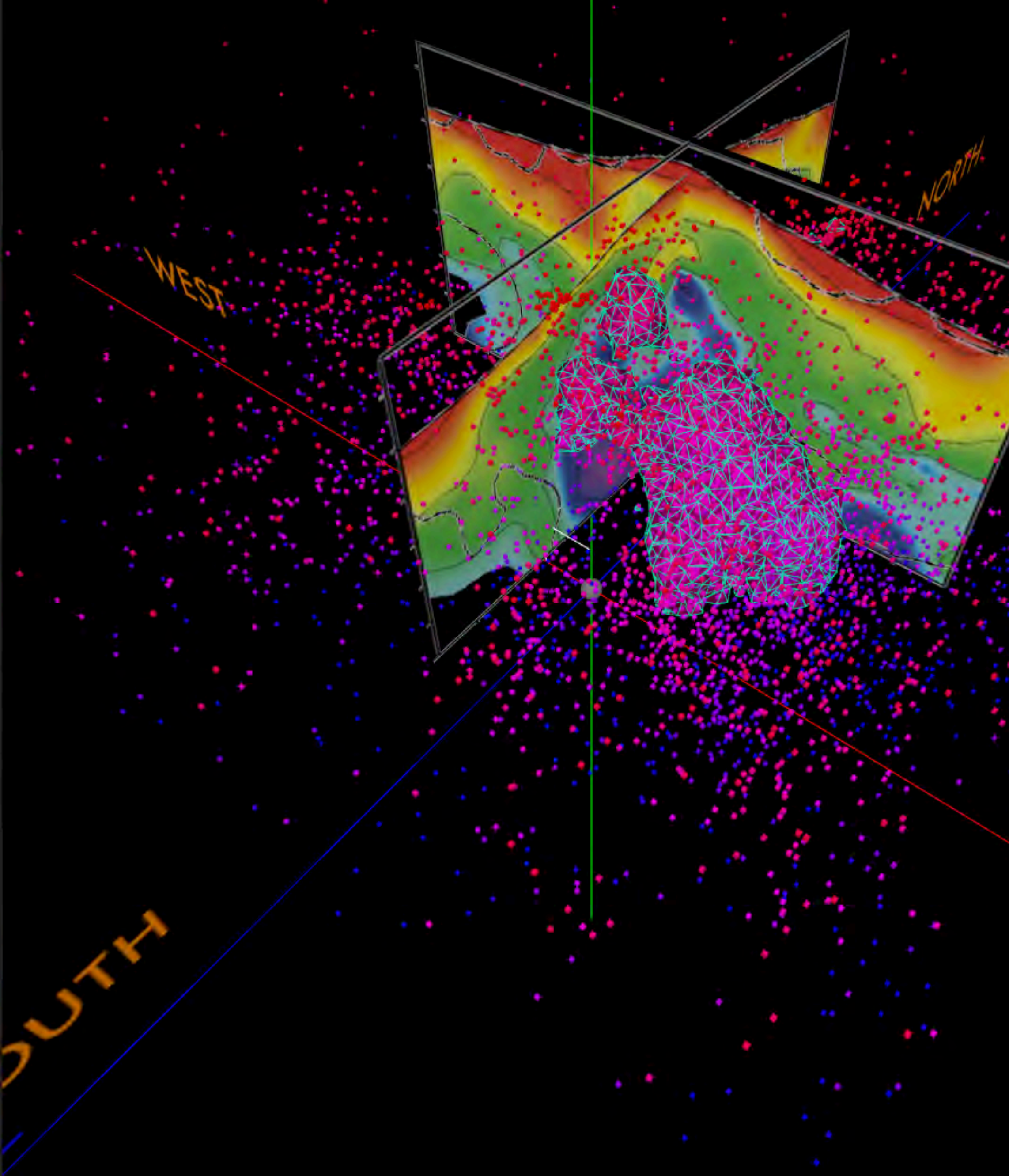
LVCC Technicians: Fernan Inchaurza & Ariel Uzal.



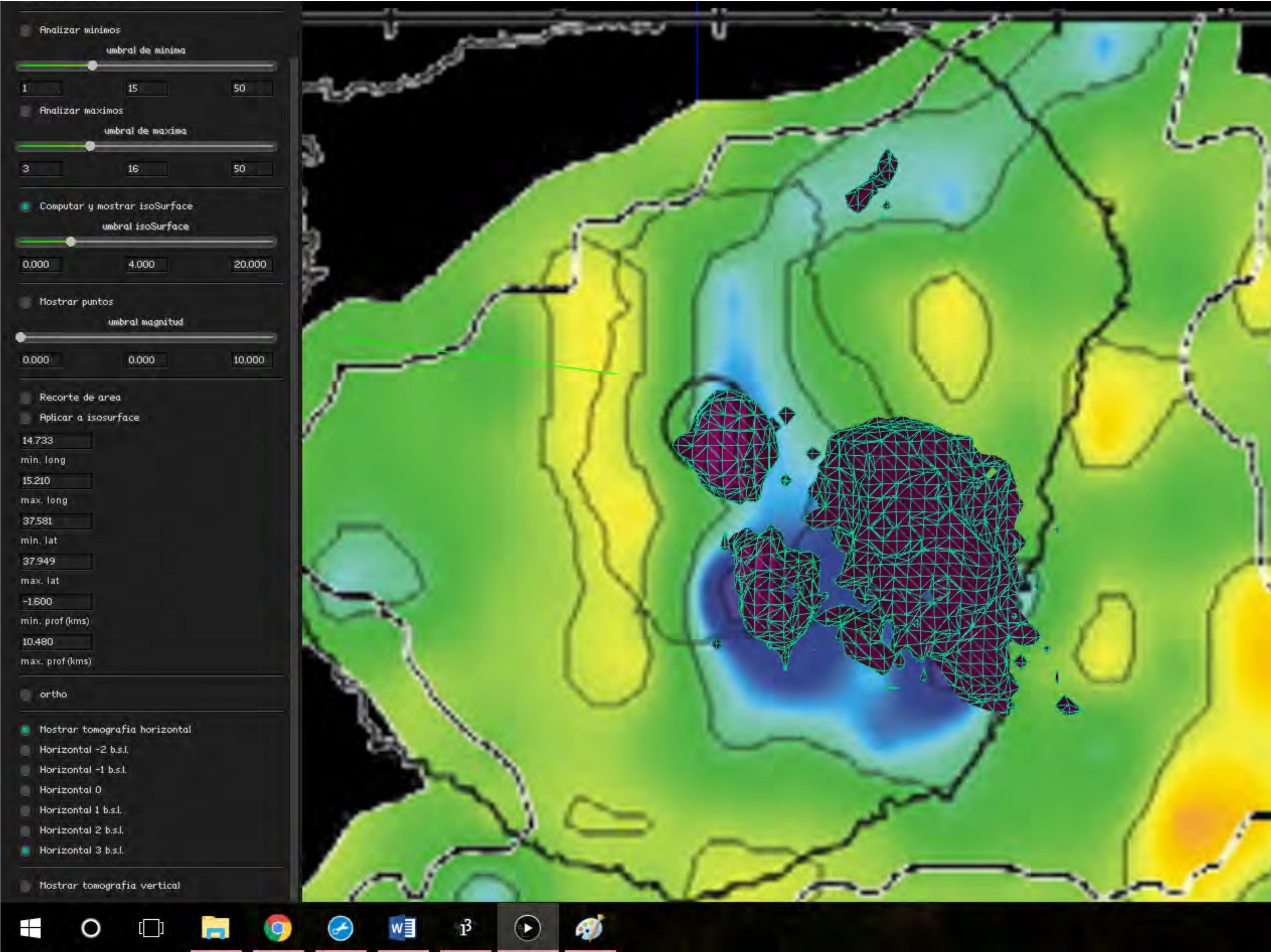
An open-source volcano oriented-GIS that offers the possibility to analyze, model and visualize volcano-related data in a user-friendly high-resolution visualization environment.

The interface includes several control panels:

- subdivisiones:** A slider and input fields (1, 87, 200) for map subdivisions.
- Map Drawing Tools:** Dibujar guías, Dibujar grilla, Dibujar nivel del mar, Dibujar Subdivisiones en gradiente.
- Navigation:** rotación, zoom, Control manual de rotación, Resetear cámara.
- Analysis:** Analizar mínimos, Analizar máximos.
- Minimum Threshold:** Slider and input fields (1, 15, 50) for 'umbral de mínima'.
- Maximum Threshold:** Slider and input fields (3, 16, 50) for 'umbral de máxima'.
- Isosurface:** Computar y mostrar isosurface, slider and input fields (0.00, 4.00, 20.00) for 'umbral isosurface'.
- Points:** Mostrar puntos, slider and input fields (0.00, 0.00, 10.00) for 'umbral magnitud'.
- Tomography:** Mostrar tomografía horizontal, Mostrar tomografía vertical.



VoIGIS: A volcano oriented GIS for multidisciplinary analysis.



- FEATURES:**
- 3D Environment
 - 4D Analysis
 - Grid Subdivision
 - Earthquakes visualization
 - Earthquake Density Analysis

Import Maps: DEMS and raster images.

Subdivisions

1 4 200

Meters per side: 50040.527

Meters per division: 12510.132

Number of events (CropBox): 2824 (0)

Show axis

Show grid

Show sea level

Gradient subdivisions

Free movement

Reset Cam

Analyze minima

Minima threshold

1 15 50

Analyze maxima

Maxima threshold

3 16 50

Compute and show isoSurface

Isosurface threshold

0.000 0.000 20.000

Show earthquakes

Magnitude threshold

0.000 0.000 10.000

Start animation

0 1 16

starting year starting month starting day

16 12 3

ending year ending month ending day

year

0 0 16

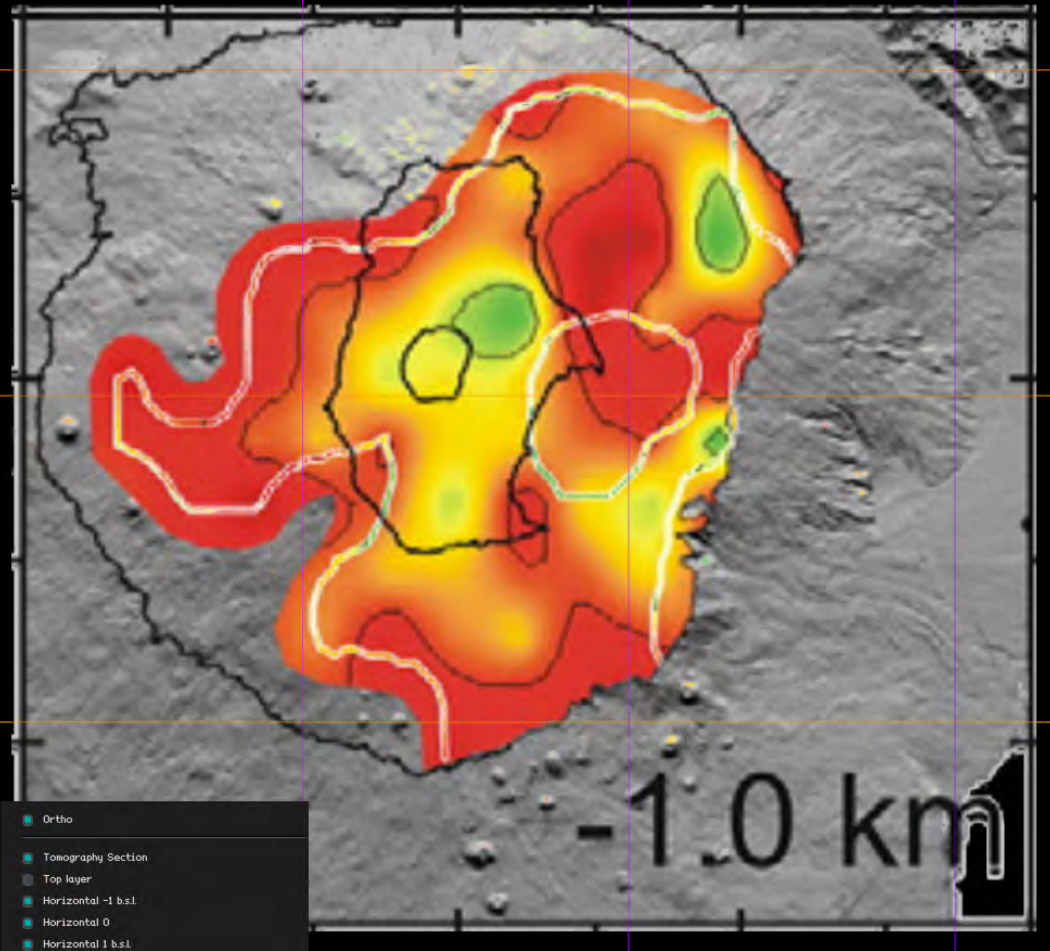
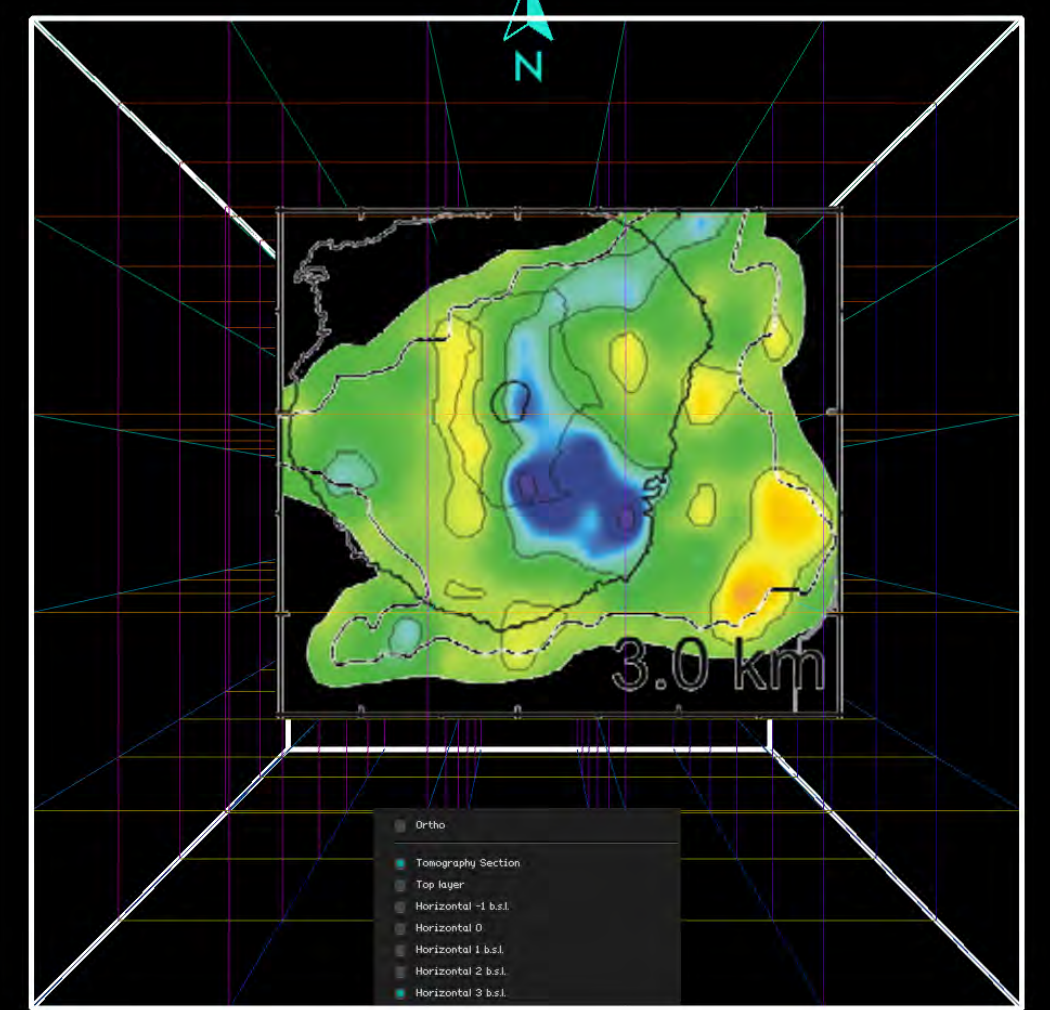
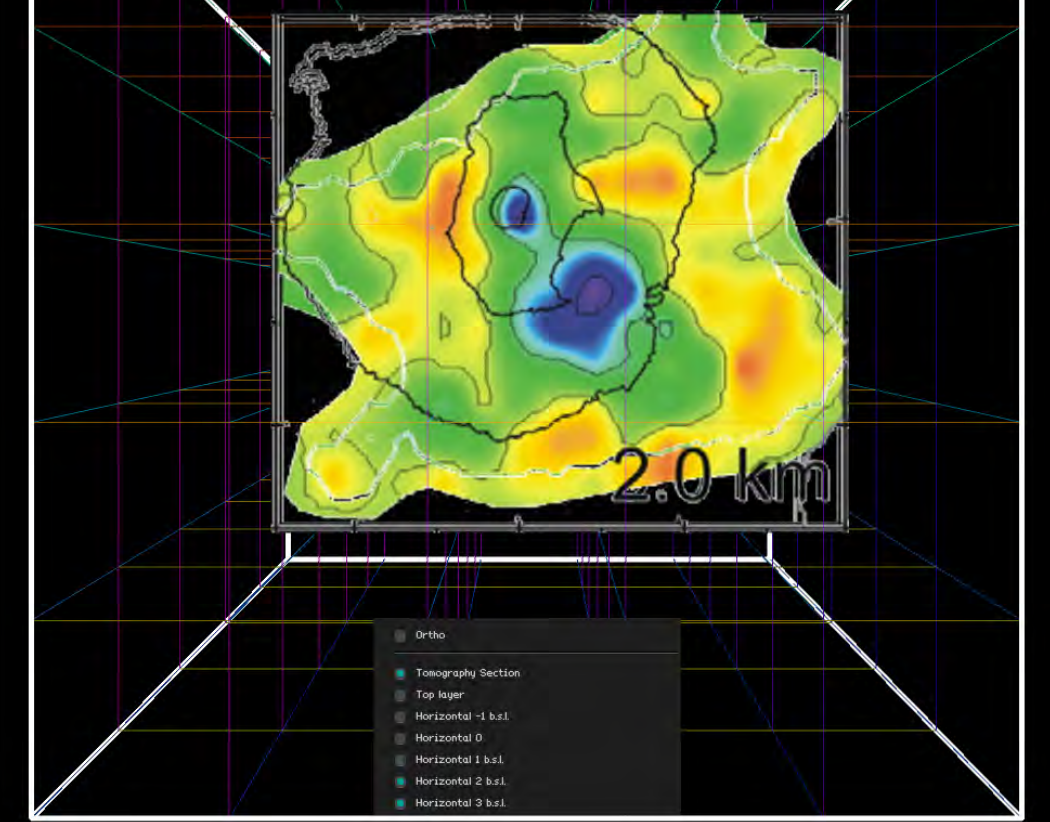
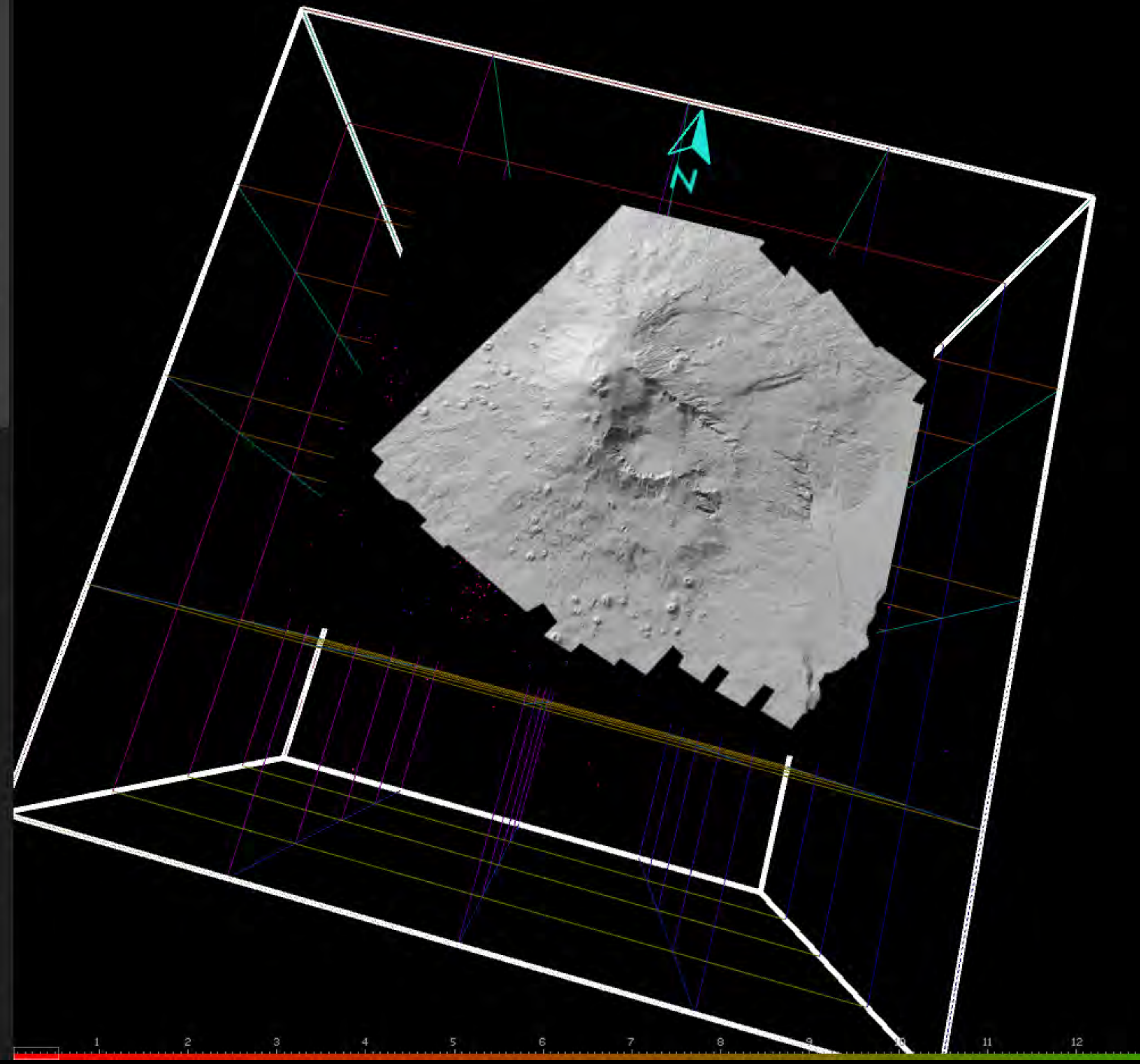
month

1 1 12

day

1 16 31

Crop box



Isosurface generation using Marching Cubes MC Algorithm (used for modeling in 3D)

Subdivisions

1 25 200

Meters per side: 50040.527

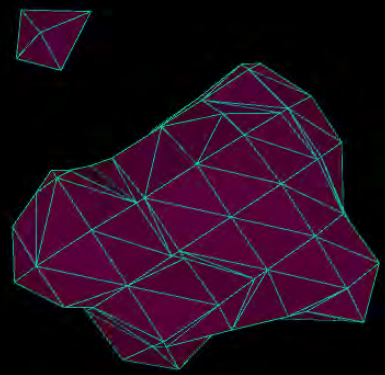
Meters per division: 2003.6211

Number of events (CropBox): 2824 (0)

Compute and show isoSurface

Isosurface threshold

0.000 2.000 20.000



Subdivisions

1 100 200

Meters per side: 50040.527

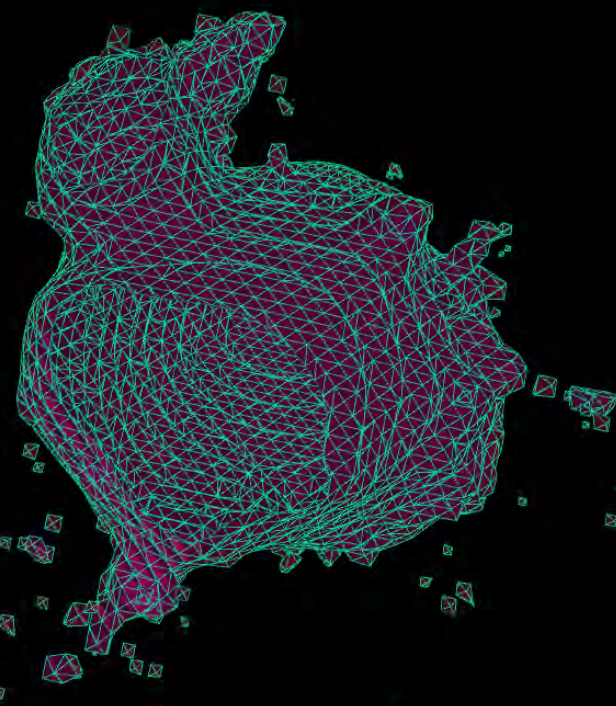
Meters per division: 5004.0527

Number of events (CropBox): 2824 (0)

Compute and show isoSurface

Isosurface threshold

0.000 1.000 20.000



Free movement

Reset Cam

Analyze minima

Minima threshold

1 15 50

Analyze maxima

Maxima threshold

3 16 50

Compute and show isoSurface

Isosurface threshold

0.000 3.199 20.000

Show earthquakes

Magnitude threshold

0.000 0.000 10.000

Crop box

Apply to isosurface

Add subcube

14.719

min. long

15.287

max. long

37.515

min. lat

37.881

max. lat

-1.600

min. depth (Km)

9.980

max. depth (Km)

Ortho

Tomography Section

Top layer

Horizontal -1 b.s.l.

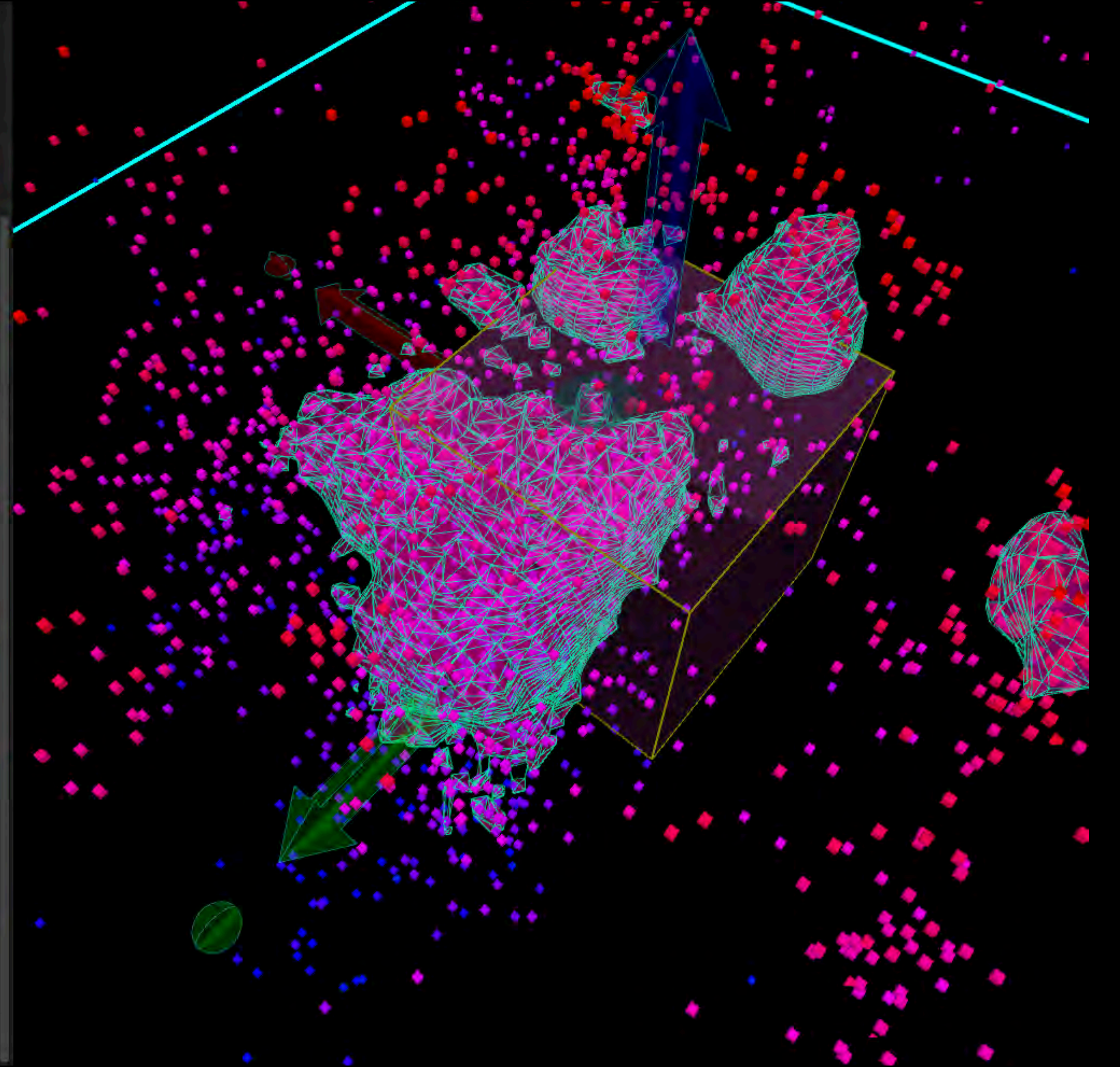
Horizontal 0

Horizontal 1 b.s.l.

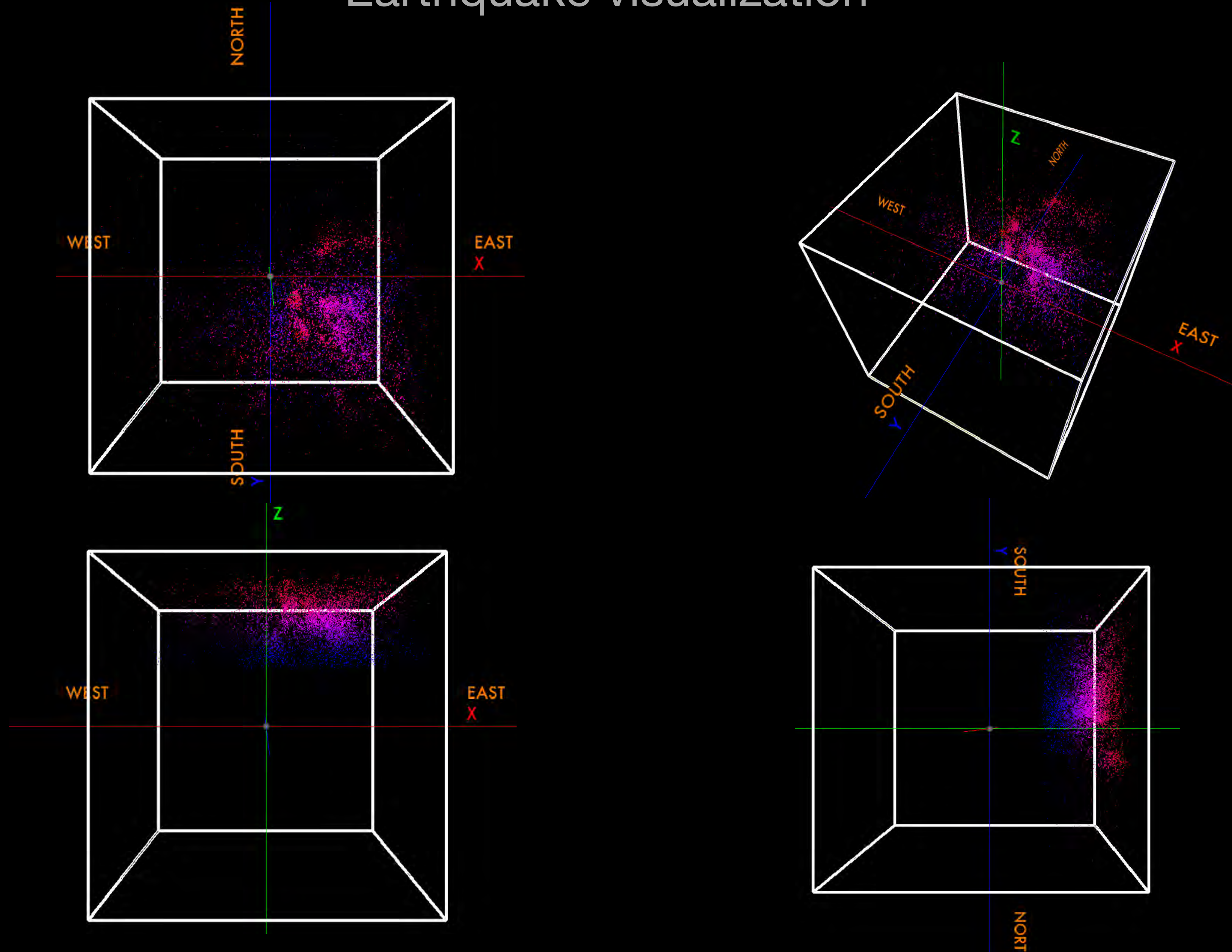
Horizontal 2 b.s.l.

Horizontal 3 b.s.l.

Tomography Vertical Section



Earthquake visualization



Grid Subdivision

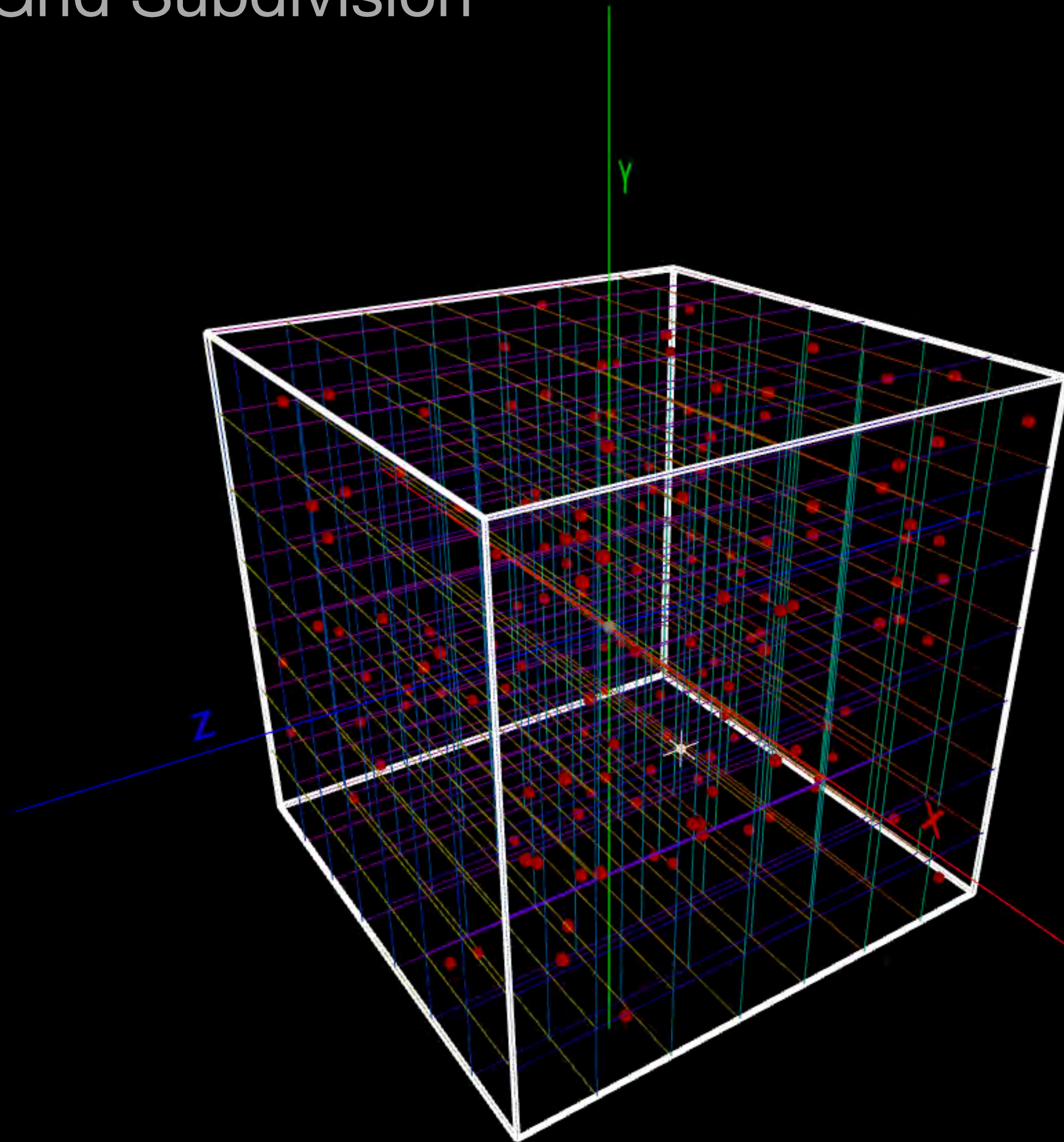
subdivisiones

1 7 50

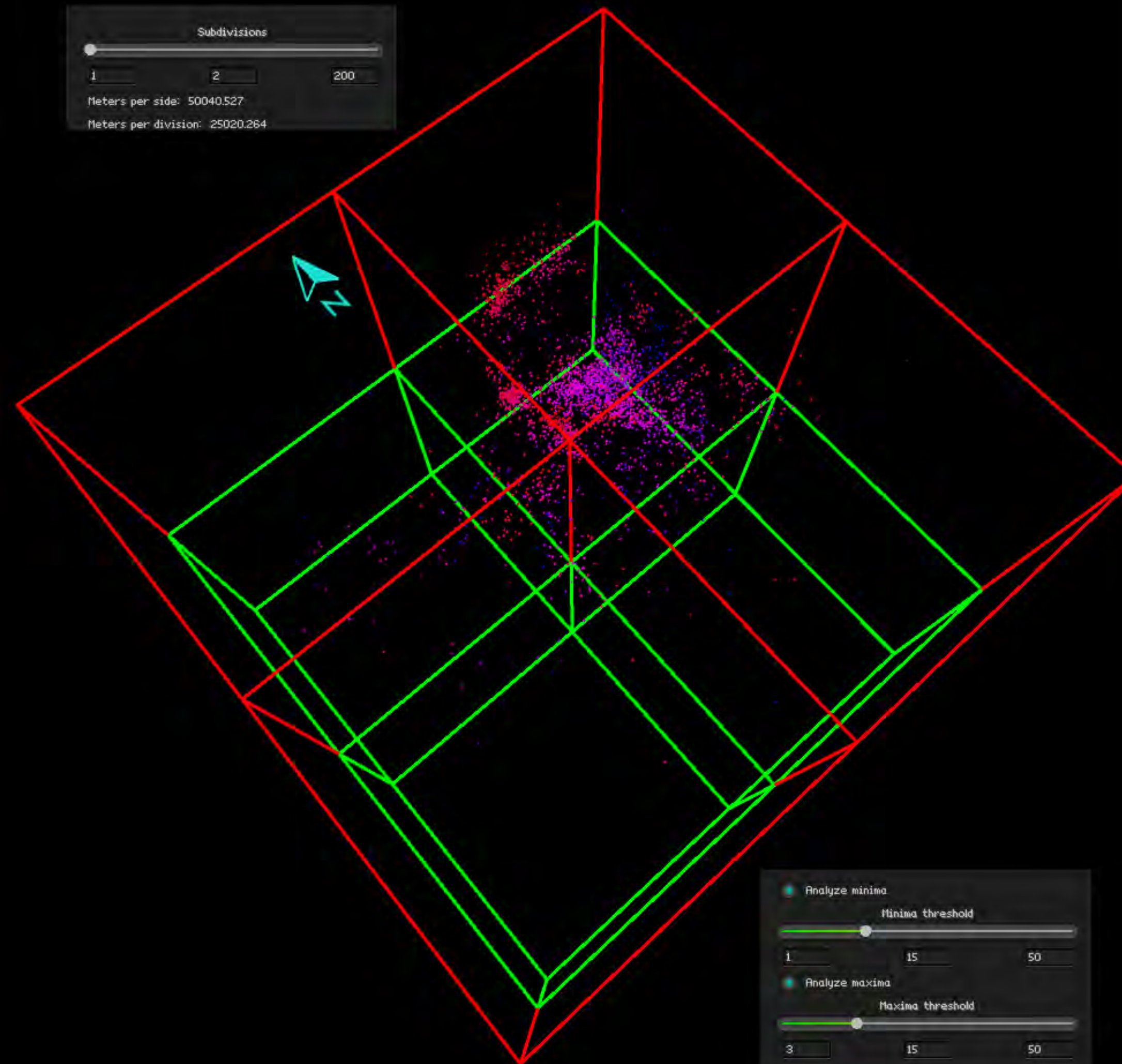
Kms. por lado : 50
Kms. por division : 7.142857
Mts. por division : 7142.857

Cantidad de puntos : 147
Punto seleccionado : 0

Dibujar guias
 Dibujar divisiones en gradiente
 Control de cámara



Density Analysis

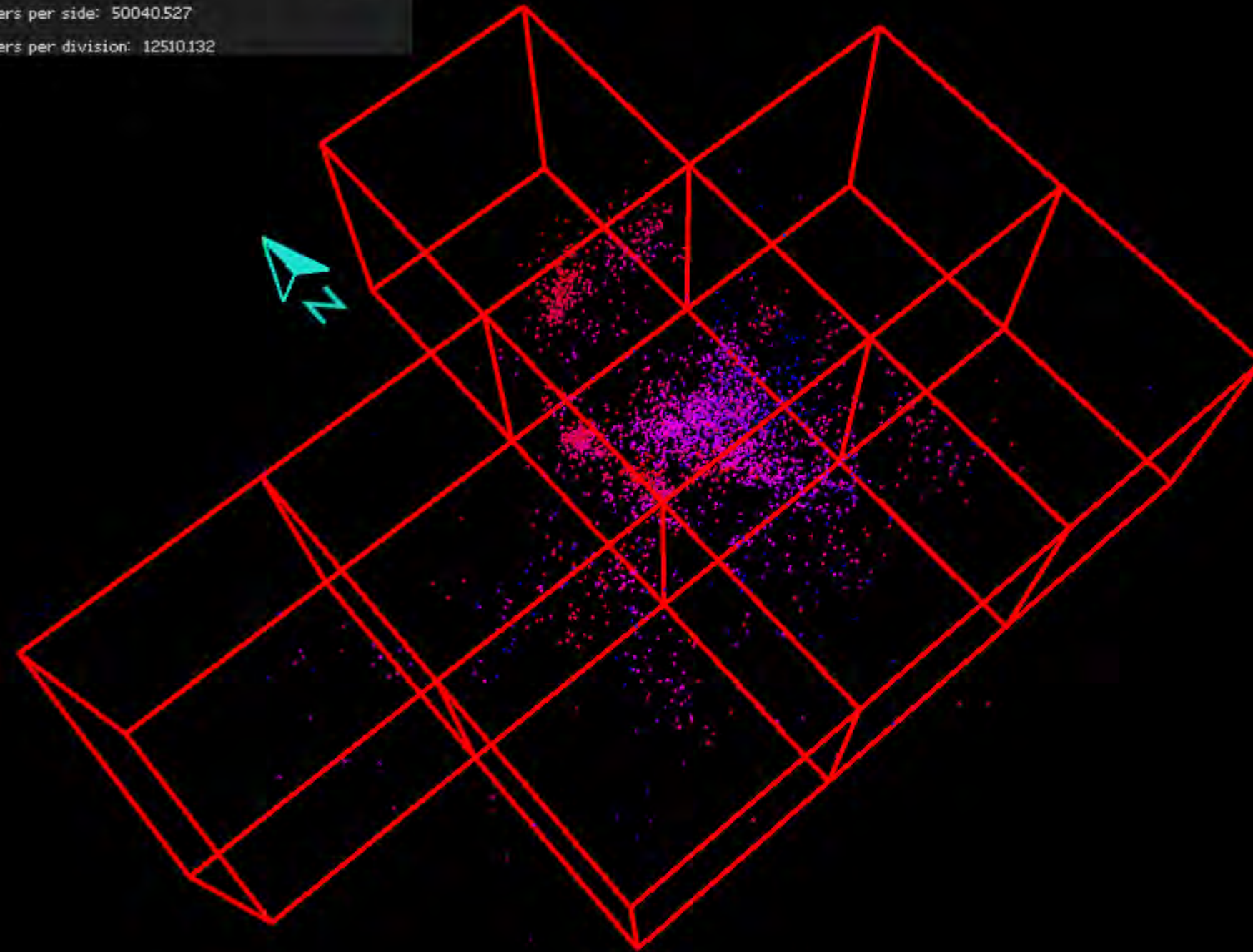


Subdivisions

1 4 200

Meters per side: 50040.527

Meters per division: 12510.132



Analyze minima

Minima threshold

1 15 50

Analyze maxima

Maxima threshold

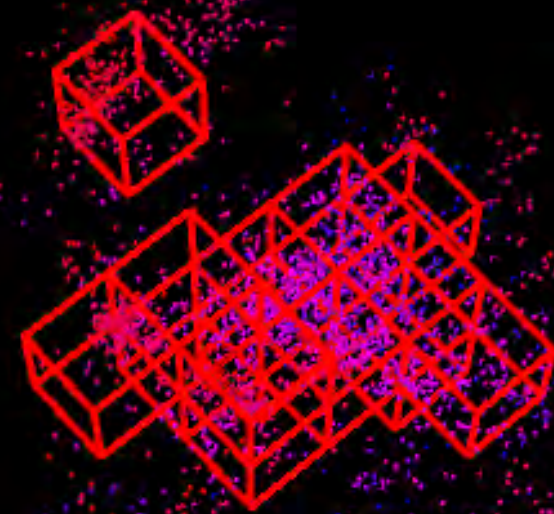
3 15 50

Subdivisions

1 16 200

Meters per side: 50040.527

Meters per division: 3127.533



Analyze minima

Minima threshold

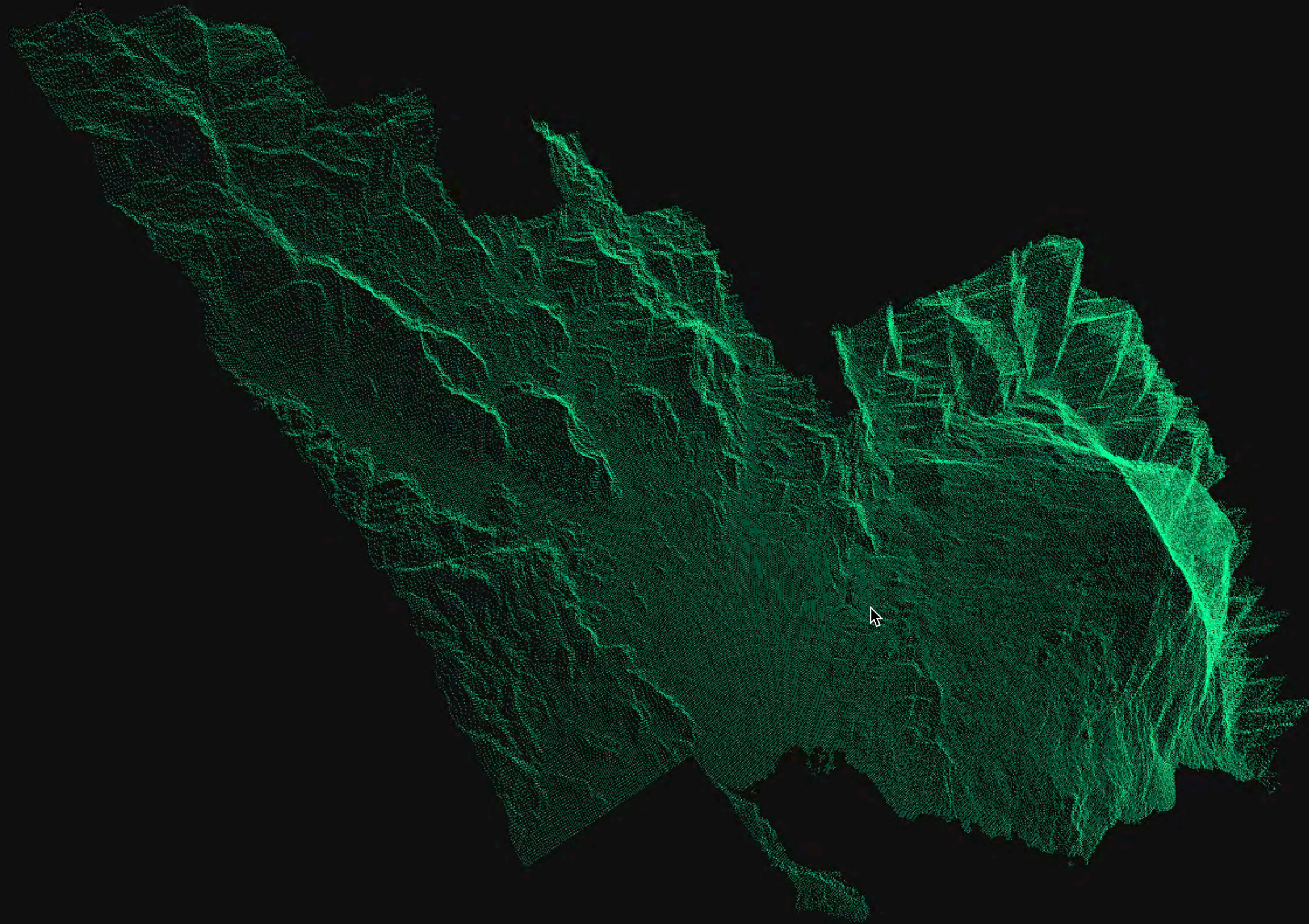
1 15 50

Analyze maxima

Maxima threshold

3 50 50

Etna Surface Test



Mt. Etna feeding system: a new 3D image constrained by earthquakes distribution and 3D modelling analysis in a customizable GIS.

R. Guardo^{a,d} (rguardo@unrn.edu.ar), A. Colubri^b, L. De Siena^c, C. Dreidemie^d

^a CONICET, Argentina; ^b Department of Organismic and Evolutionary Biology, Faculty of Arts and Sciences, Harvard University, Cambridge - USA / Broad Institute of Harvard and MIT Cambridge, USA;

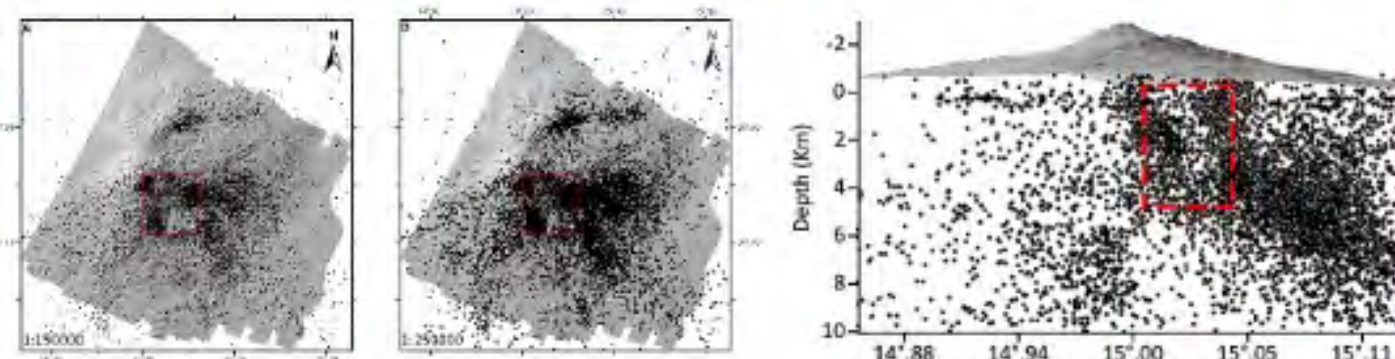
^c School of Geoscience, University of Aberdeen, UK; ^d Laboratorio de Visualización Grafica y Código Creativo, Universidad Nacional de Río Negro, Argentina.

Aim

Constrain the feeding system of Mt. Etna using the 3D earthquakes distribution integrated with an experimental GIS: "VolGIS"

Data, Method and Analysis

A low seismicity volume is visible when plotting the hypocenter distribution recorded at Mt. Etna between 2000 and 2016.

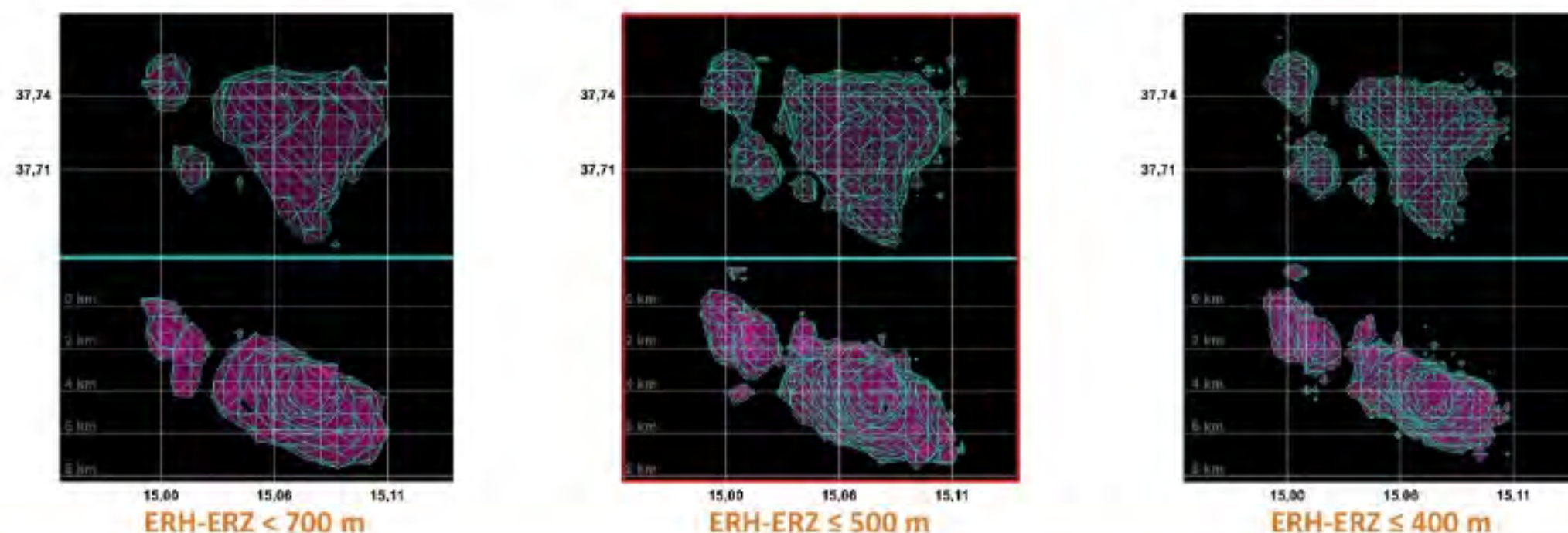


To constrain the low seismicity volume we used the marching cube (MC) algorithm, commonly used in medical imaging and computer graphics, in the framework of a novel volcano-oriented GIS (VolGIS).

How does MC works?

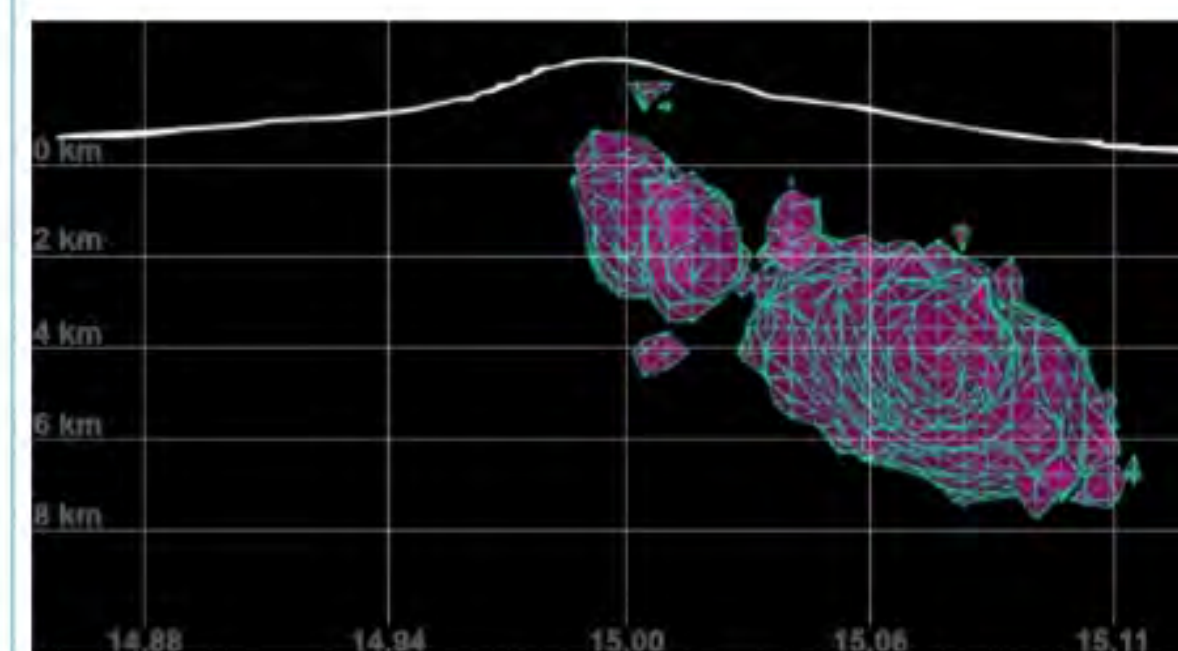
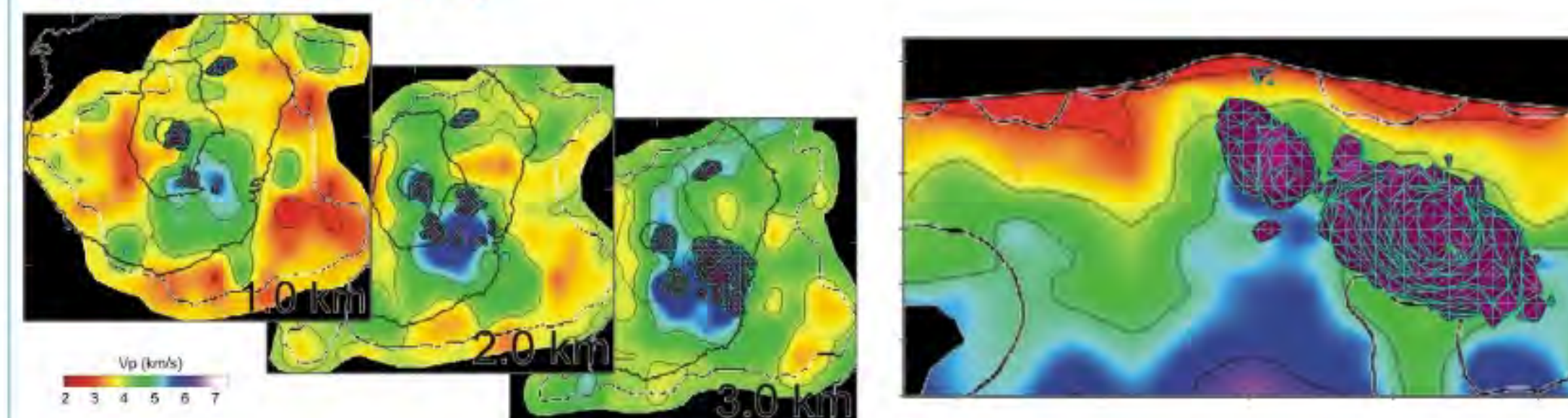
Given a point cloud and a grid, the contribution of each point in the cloud to the vertices of the grid is computed using an inverse of the distance dependency. This result in a scalar field defined over the grid vertices i , by adding up all the cloud points j : $W(i) = \sum_j \frac{1}{d(i,j)^2}$ A threshold value T is chosen to assign: 1 to each vertex in the grid if $W(i) > T$, 0 otherwise.

We select three datasets, depending on the earthquake localisation error (ERH and ERZ) obtaining high-seismicity patterns that maintain their shape and position when using the MC algorithm.



Results and Conclusions

The high-seismicity bodies correspond to a high- V_p body (P-wave velocity of about 6 km/s) detected by all the tomographic studies performed at Etna since 1998 (in the figures we use the maps of Alparone et al. 2012).



Both the bodies and the aseismic volumes located west of them are interpreted as a portion of the feeding system, where the rocks pass from a brittle fracture to a plastic deformation system. The clusters highlight a sliding plane with a dip angle of $\sim 30^\circ$ (mainly located below the Valle del Bove area).

Given their shape and position, an interpretation in terms of magmatic intrusions confirms their implications for the flank instability, proposed by previous authors (e.g. Murray et al. 2018).

We conclude that the MC algorithm supports an interpretation beyond the resolution of tomographic imaging, which is often affected by irregular sampling and interpolation process.

Flock of sheep grazing activity:

Tracking during periods of day and night.

Behaviors and locations relative to the moon cycle.

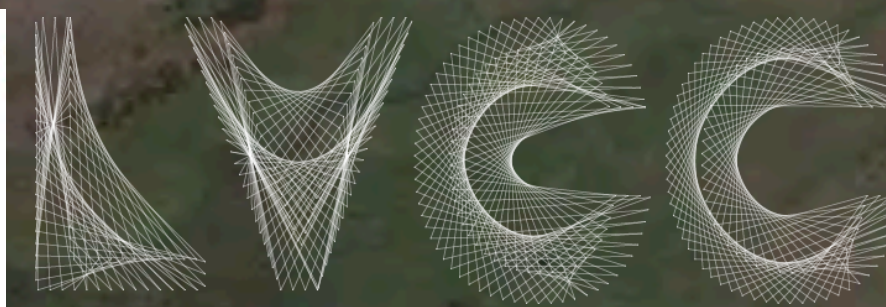
Laboratorio ECOTONO, INIBIOMA-CONICET, Univ. Nac. del Comahue, CCT Patagonia Norte; Grupo de Física Estadística e Interdisciplinaria, Centro Atómico Bariloche CAB-CONICET, LVCC Laboratorio de Visualización y Código Creativo, UNRN. 2016

—> shepherd dog

—> ewe

—> wethers

—> lamb



Laboratorio de ID+i Visualización y Código Creativo



Sueñan las Ovejas con androides eléctricos?

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[†] Grupo de Física Estadística e Interdisciplinaria, Centro Atómico Bariloche CAB-CONICET, Av. Bustillo 5900, Bariloche, Río Negro, Argentina.

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Resumen:

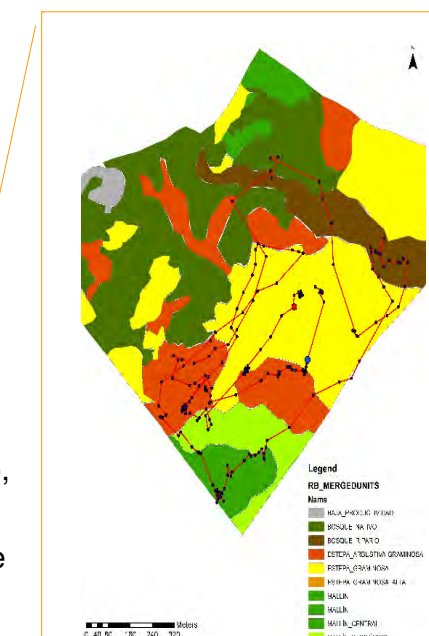
El uso de los recursos naturales por el ganado plantea el problema de cuales son las tasas de utilización que permiten un desarrollo sustentable. Este es un problema complejo donde intervienen un gran numero de factores extrínsecos tales como la heterogeneidad del terreno, los tipos de vegetación y los cambios ambientales, e intrínsecos tales como las necesidades energéticas del animal de acuerdo a su actividad. En este contexto analizamos cuantitativamente el comportamiento de 15 ovejas en una estancia de la estepa patagónica. Cada oveja se equipó con un dispositivo de GPS que permite su localización espacial en el terreno. A partir de los datos obtenidos a lo largo de dos meses de monitoreo se identificaron patrones de actividad para hembras, borregos, capones y un perro pastor. Los resultados muestran que dichos patrones están regulados principalmente por la presencia de luz, tanto del sol como de las diferentes fases de la luna.

Adquisición de datos



Se colocaron collares GPS que permiten obtener datos de posición de alta resolución espacial durante 6 meses, con una resolución temporal de 5 minutos. Se monitorearon 15 ovejas (5 hembras, 5 capones, 5 borregos) y un perro pastor, de un total de 200 ovejas.

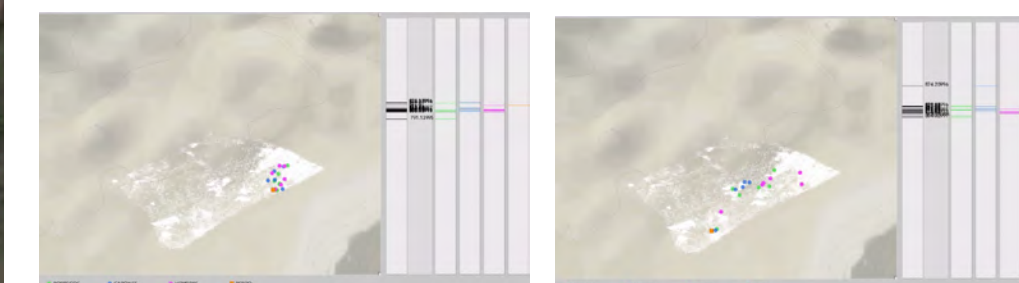
Cuadro de monitoreo



Vegetación: shr=estepa, rf=bosque ripario, cw=mallín central, pw=mallín periférico, gr=pasto, shgr=estepa y pasto, nf=bosque nativo.

Resultados: Visualización

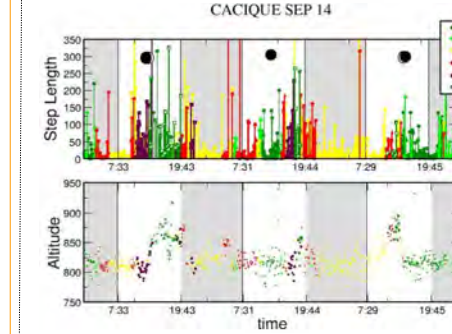
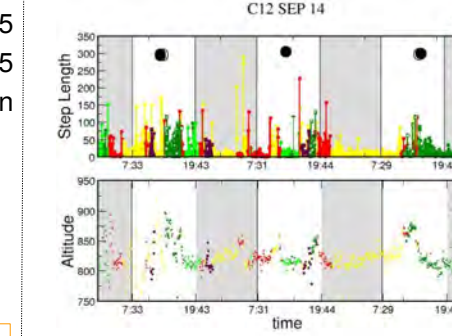
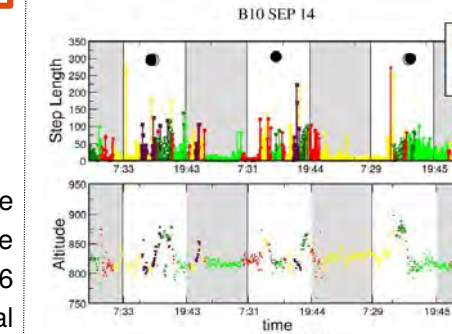
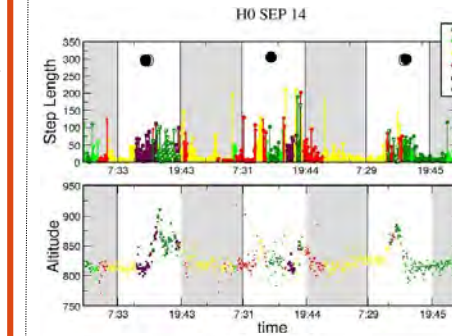
Se realizó un video para estudiar la dinámica espacio-temporal de las ovejas.



Resultados: altura y distancias recorridas

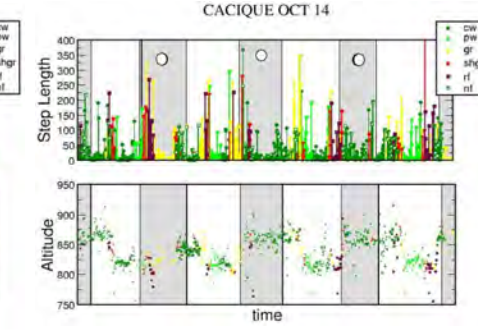
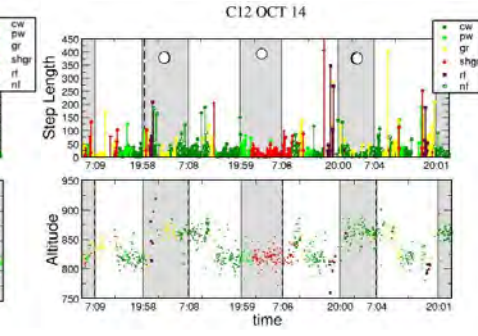
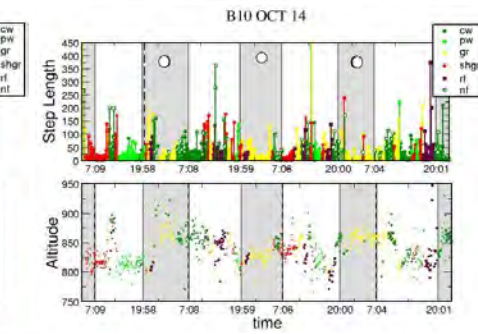
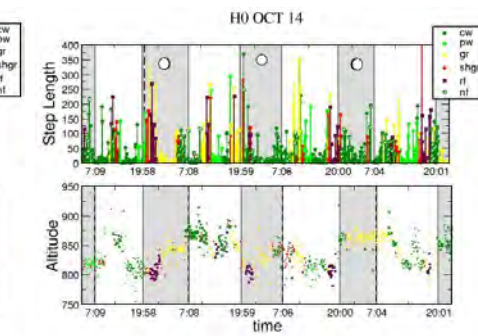
Luna Nueva:

Actividad sincronizada
Actividad diurna: patrón triangular



Luna Llena:

Actividad individual
Actividad diurna y nocturna



Conclusiones:

Se observó un comportamiento rítmico de las ovejas influenciado por la luz:

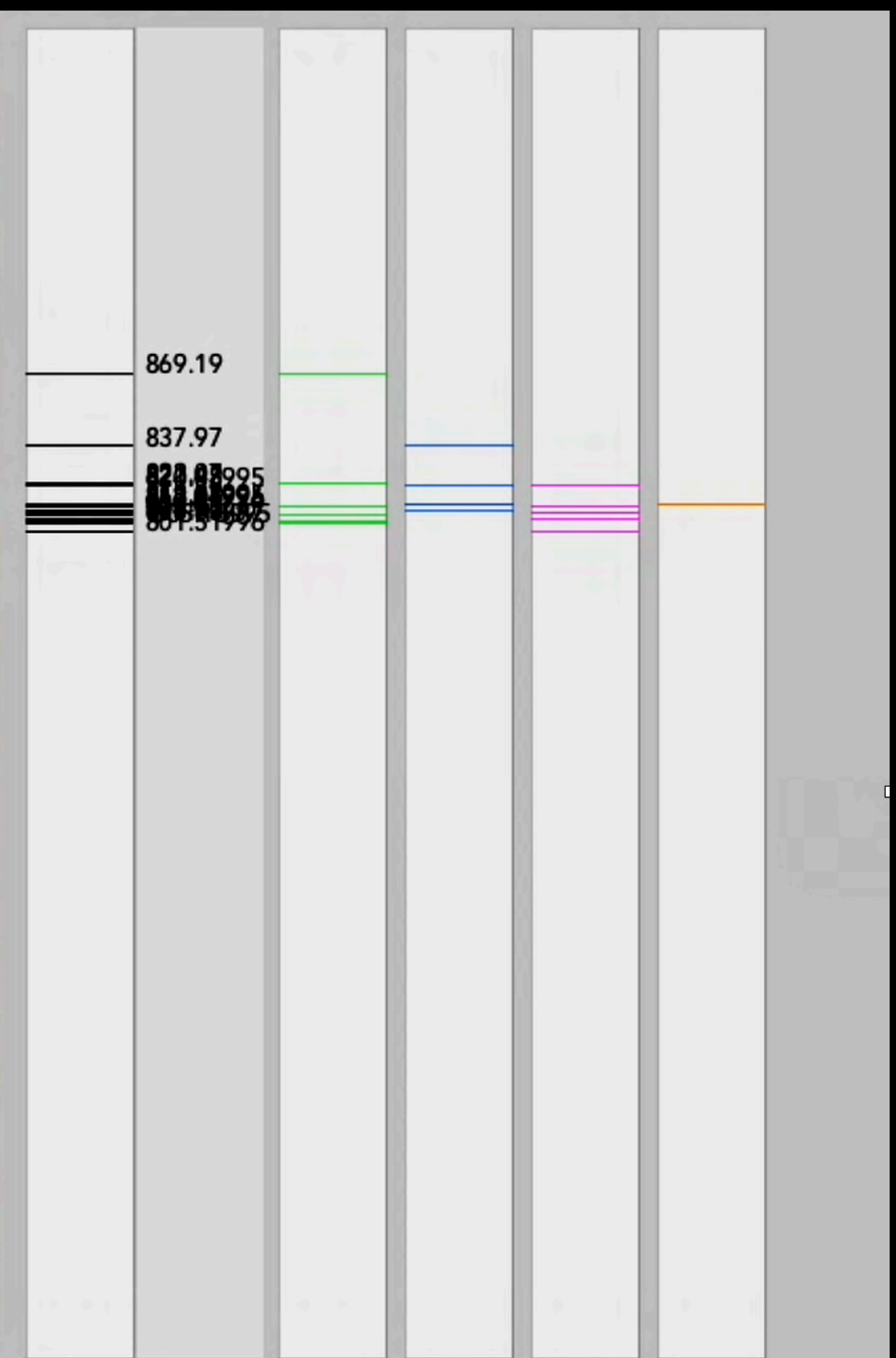
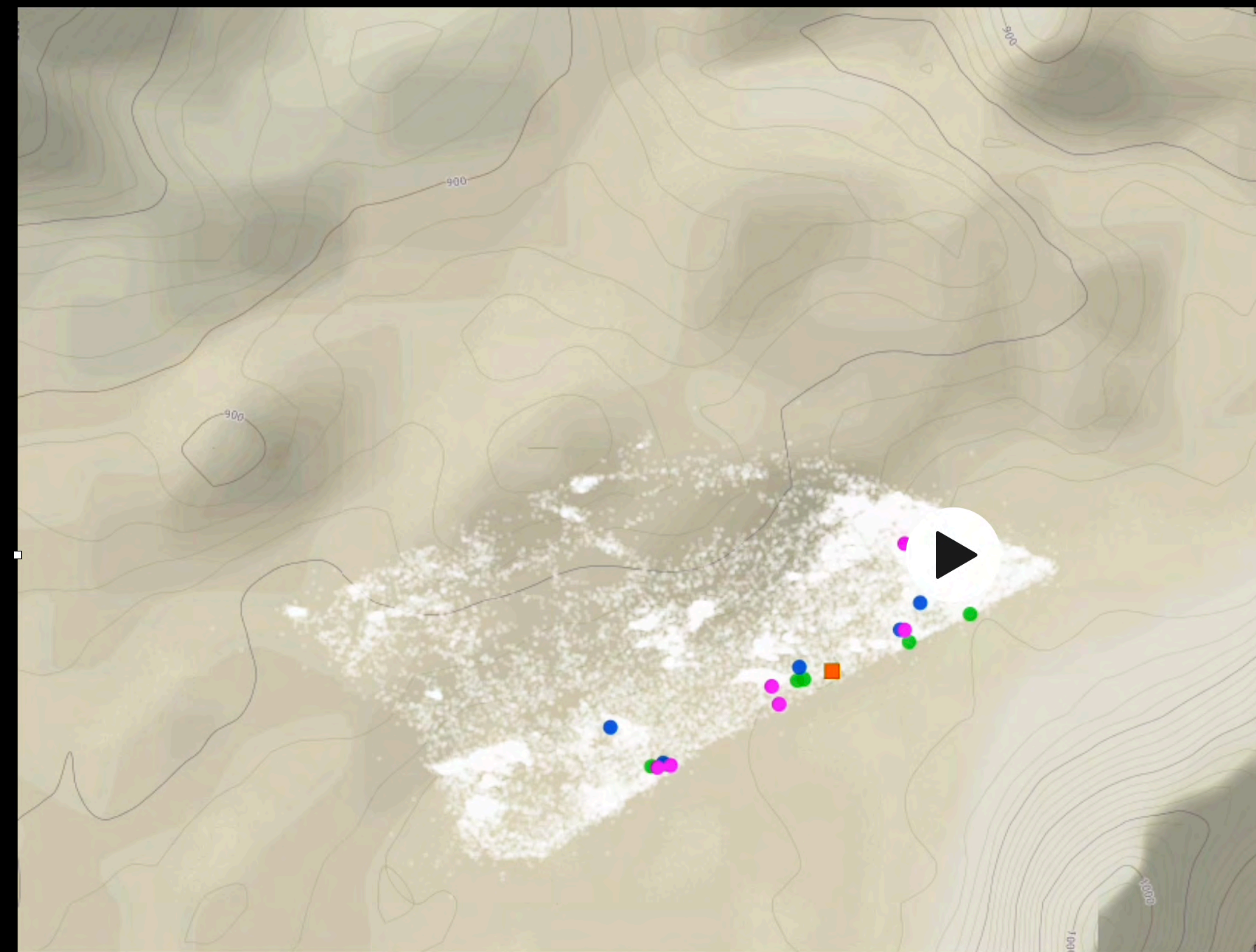
- En las noches oscuras de luna nueva las ovejas disminuyen su actividad y duermen a bajas alturas.
- En las noches de luna llena las ovejas están más activas y siguen un patrón de tipo escalón.

Nuevas preguntas:

- Cómo se relaciona el patrón de alimentación con los patrones de actividad?
- Cómo se relaciona el patrón de actividad con los mecanismos de compensación del sueño?

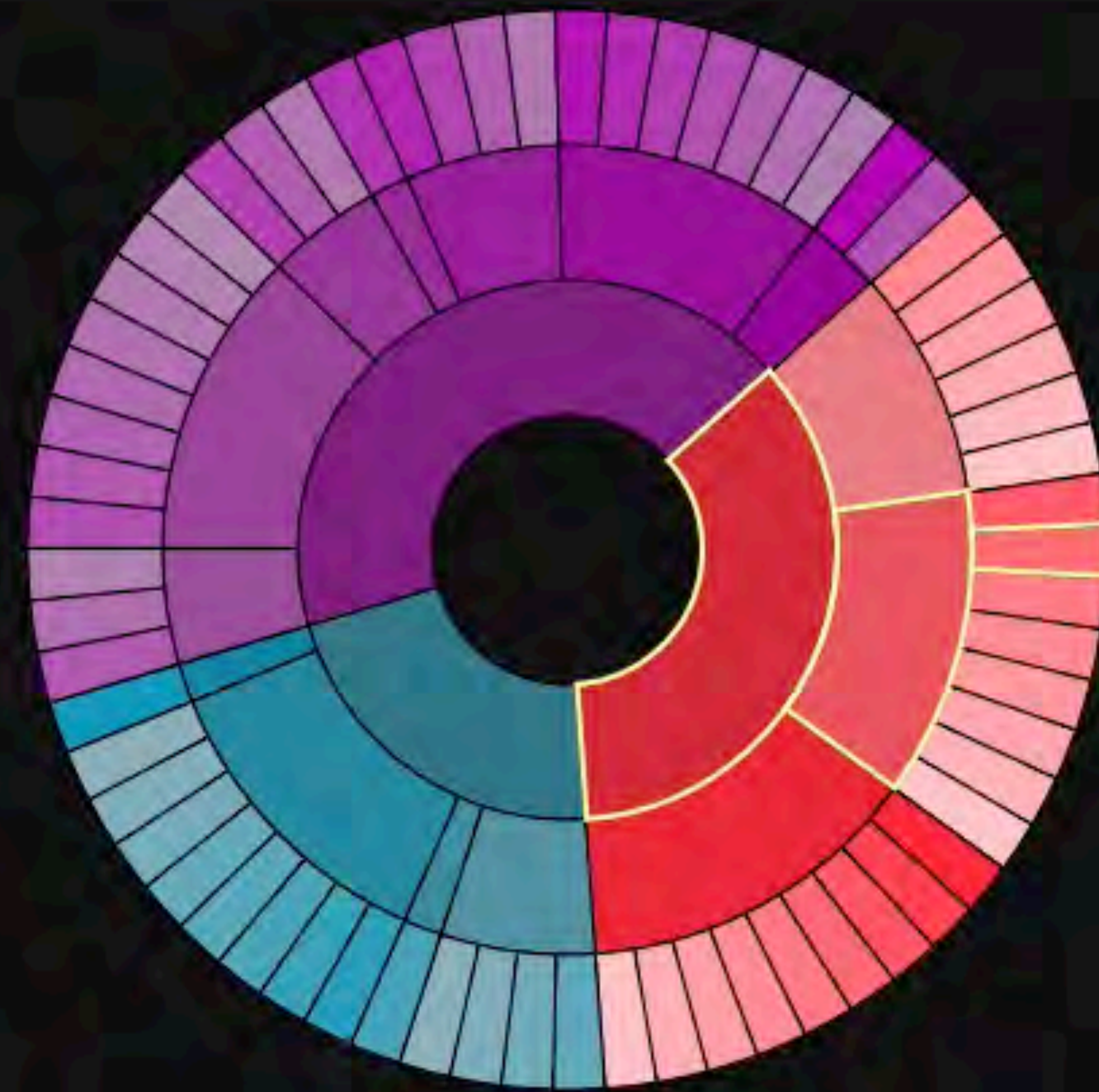
Referencias

- [1] Giraud, C. 2009. El empleo de la condición corporal como indicador del estado nutricional de los ovinos. Presencia 54:32-35.
- [2] Morales, J. M., P. R. Moorcroft, J. Matthiopoulos, J. L. Frair, J. K. Kie, R. A. Powell, E. H. Merrill, y D. T. Haydon. 2010. Building the bridge between animal movements and population dynamics. Philosophical Transactions of the Royal Society B. Biological Sciences July 27:2289-2301.

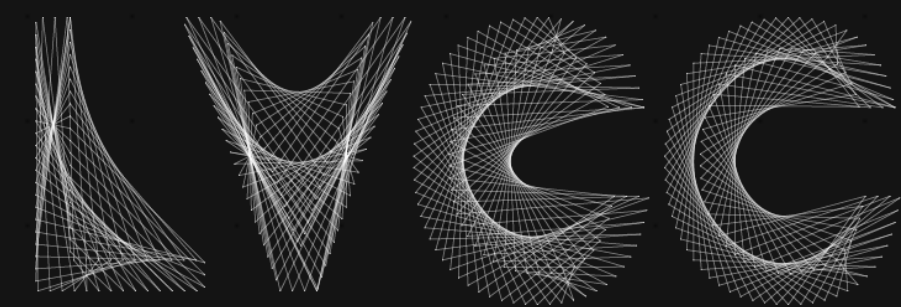


● BORREGOS ● CAPONES ● HEMBRAS ■ PERRO

🔍 Búsqueda

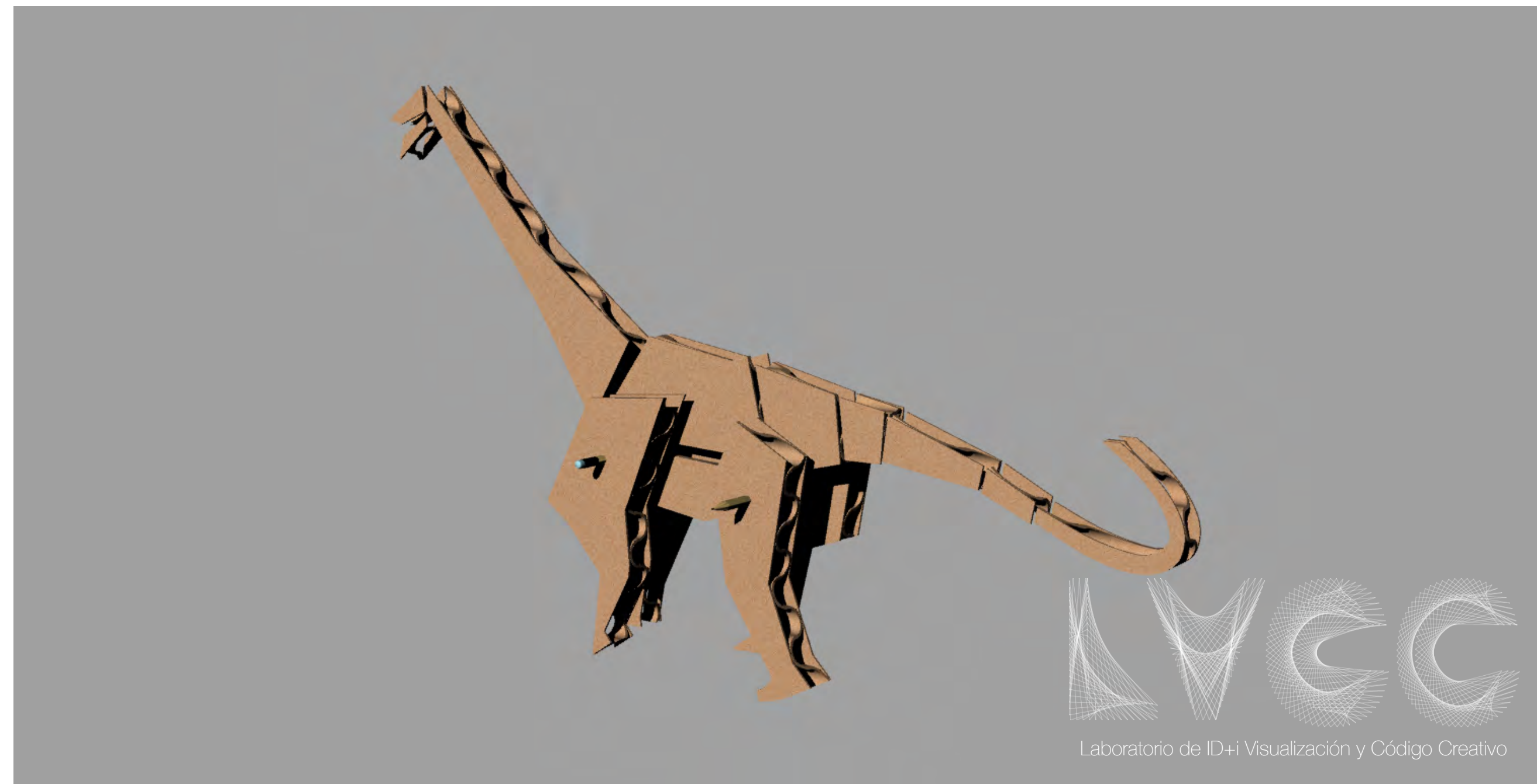
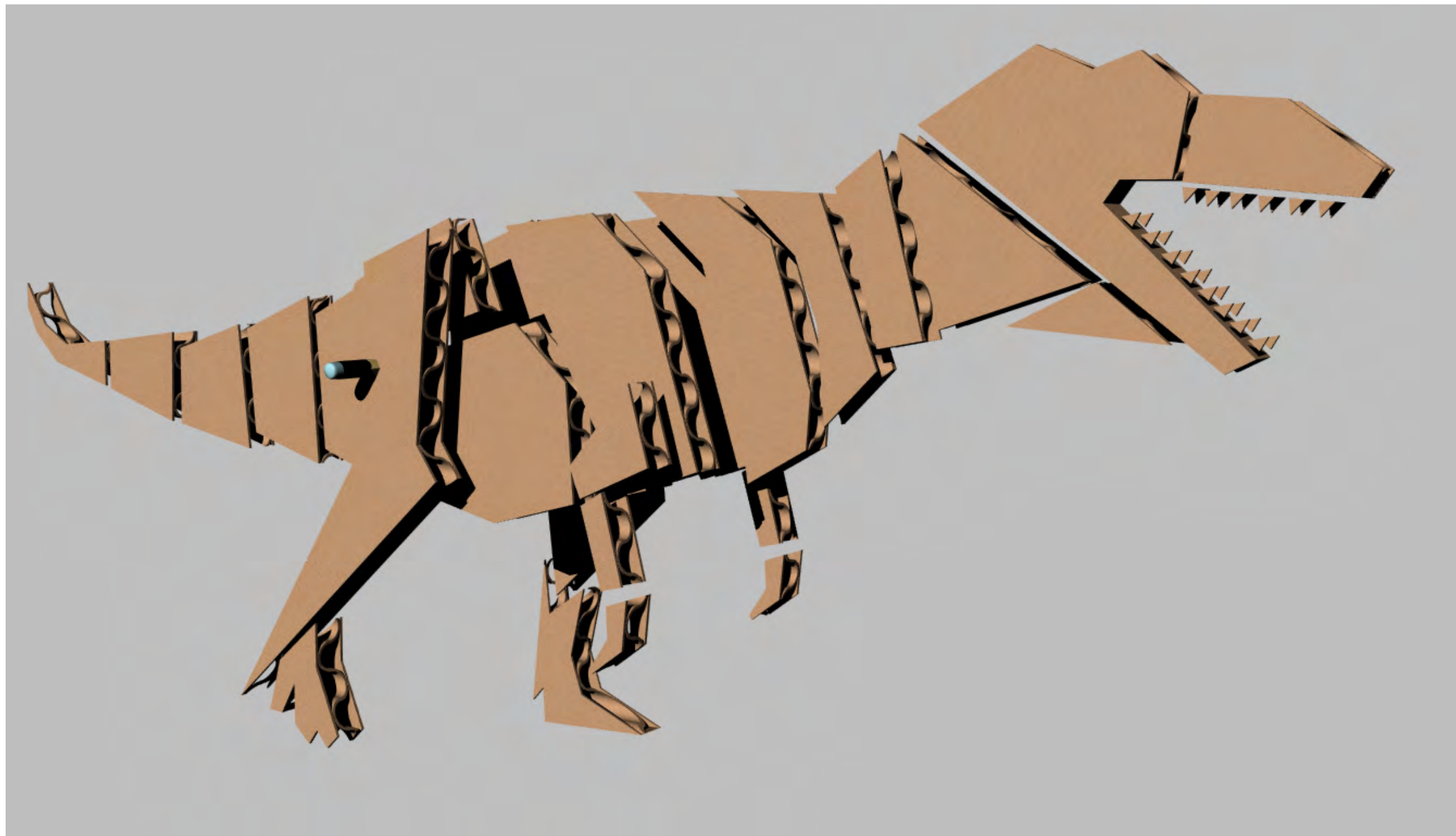
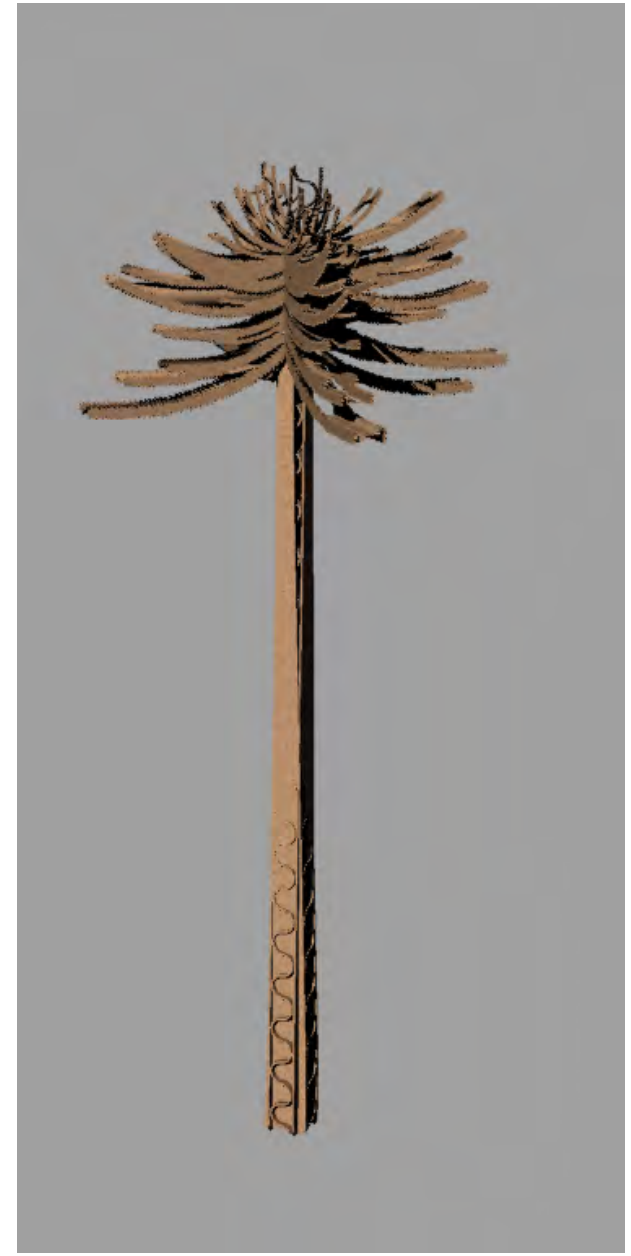
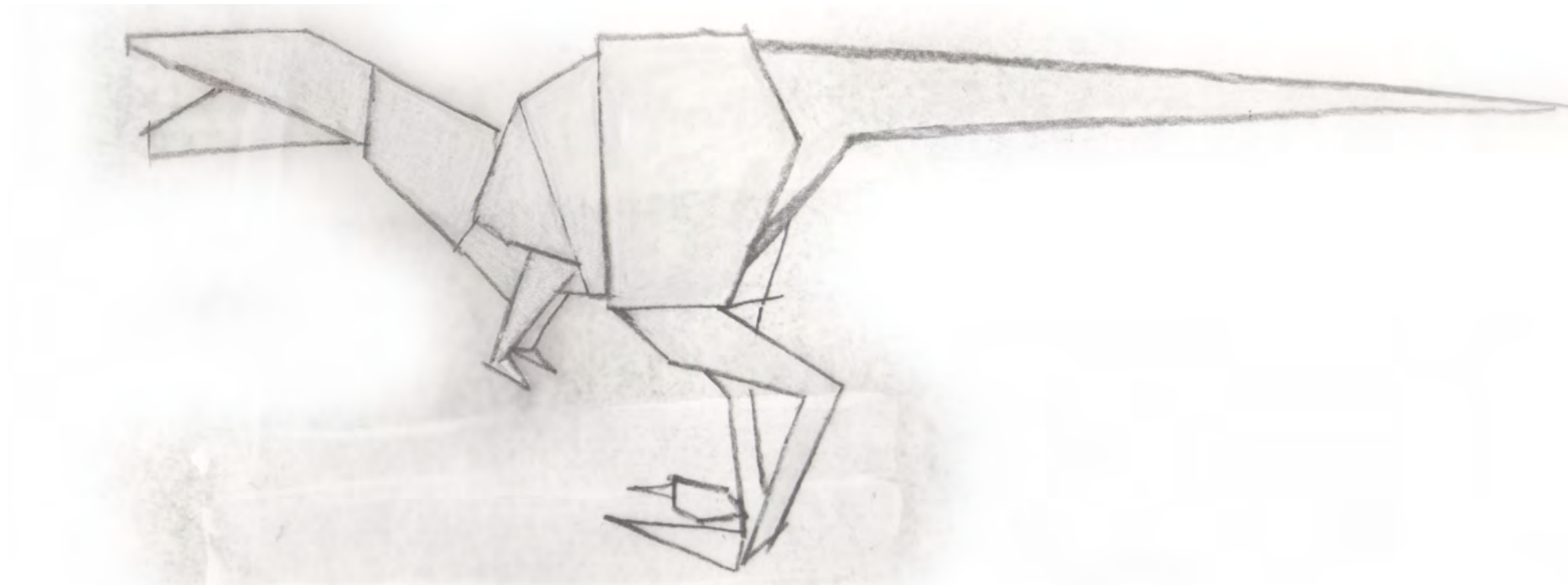


Licenciatura En Ciencias Antropológicas
Escuela De Humanidades Y Estudios Sociales
Sede Andina



Laboratorio de ID+i Visualización y Código Creativo

Hand drawings and Modeling in Blender & Solidworks 3D CAD Design for TV Series



Interactive Typography for Series titles

word_writter_02 | Processing 4.2

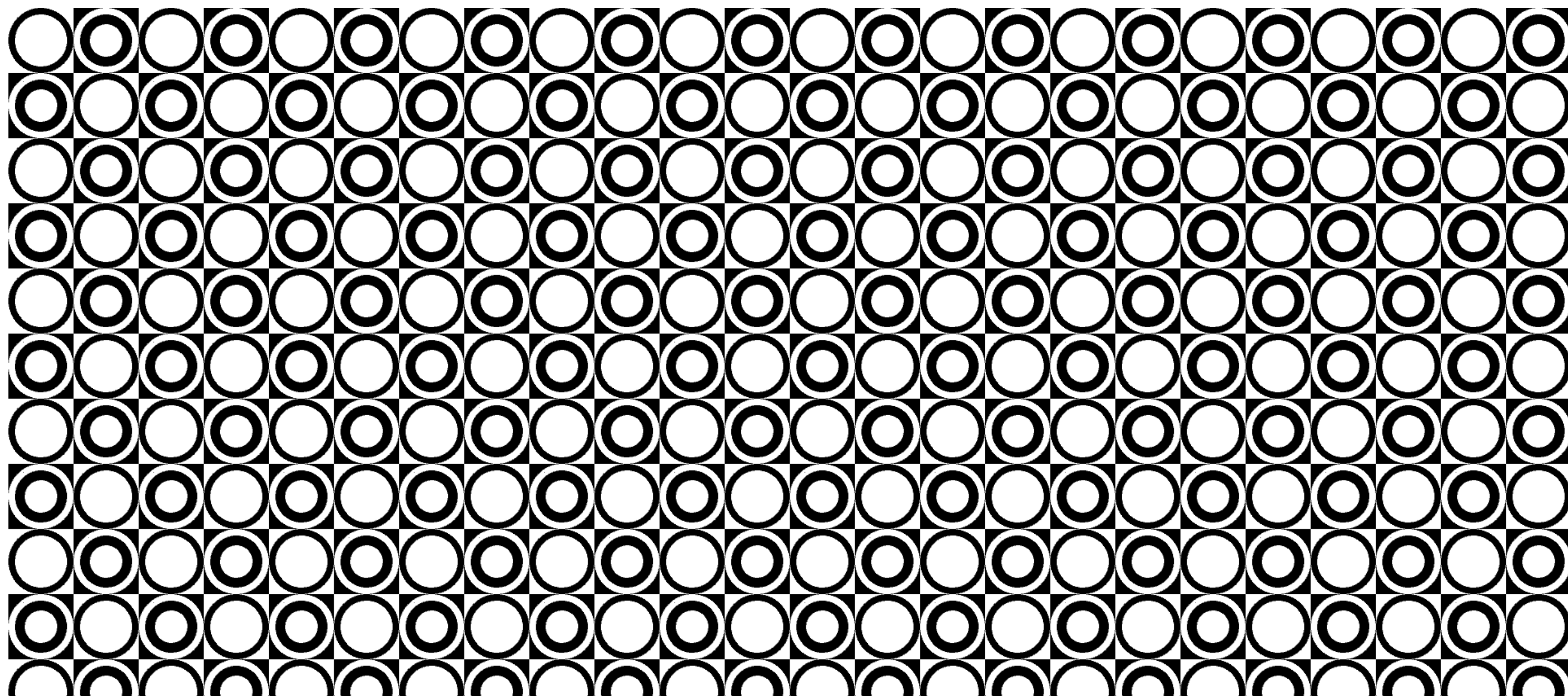
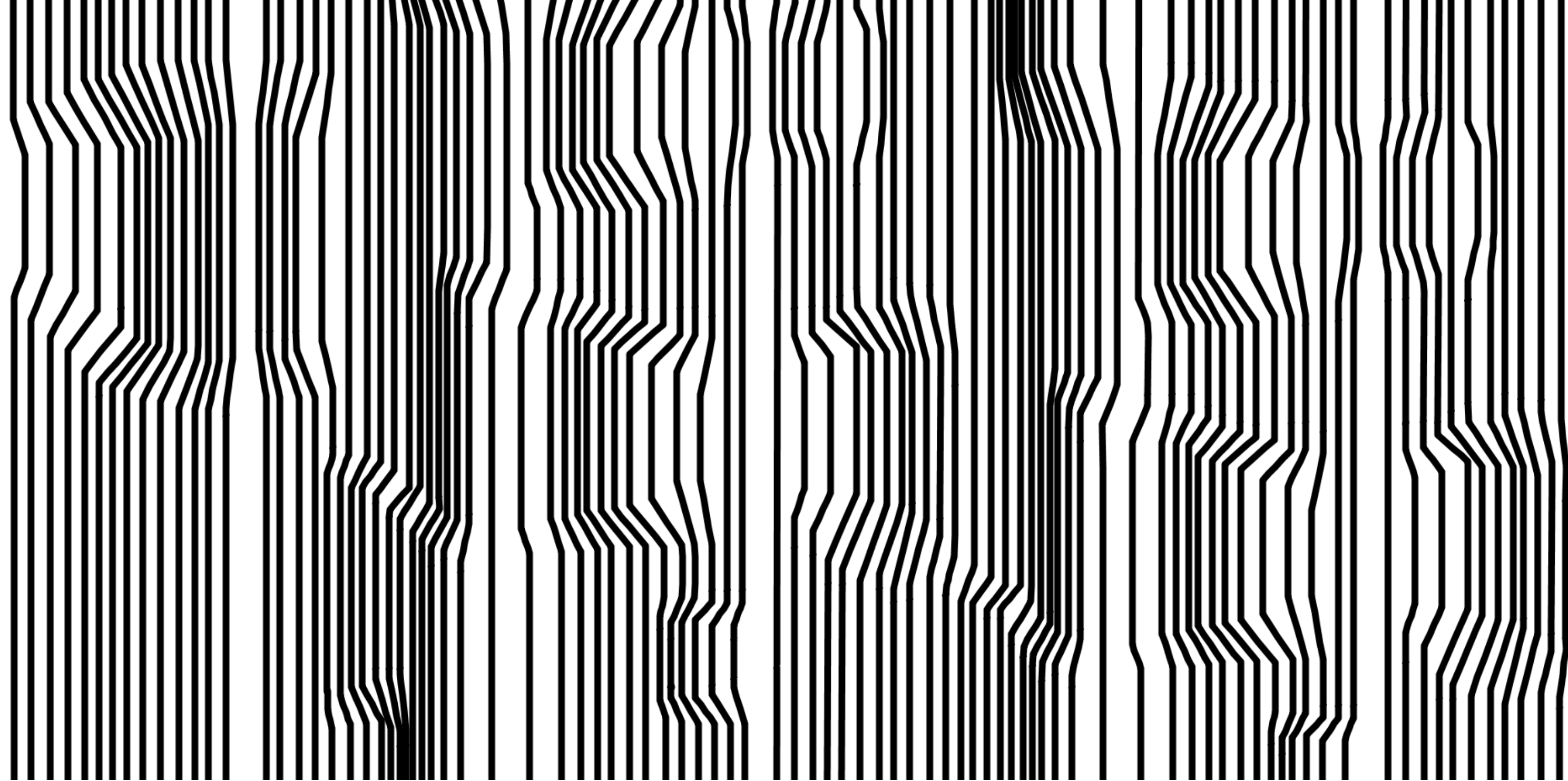
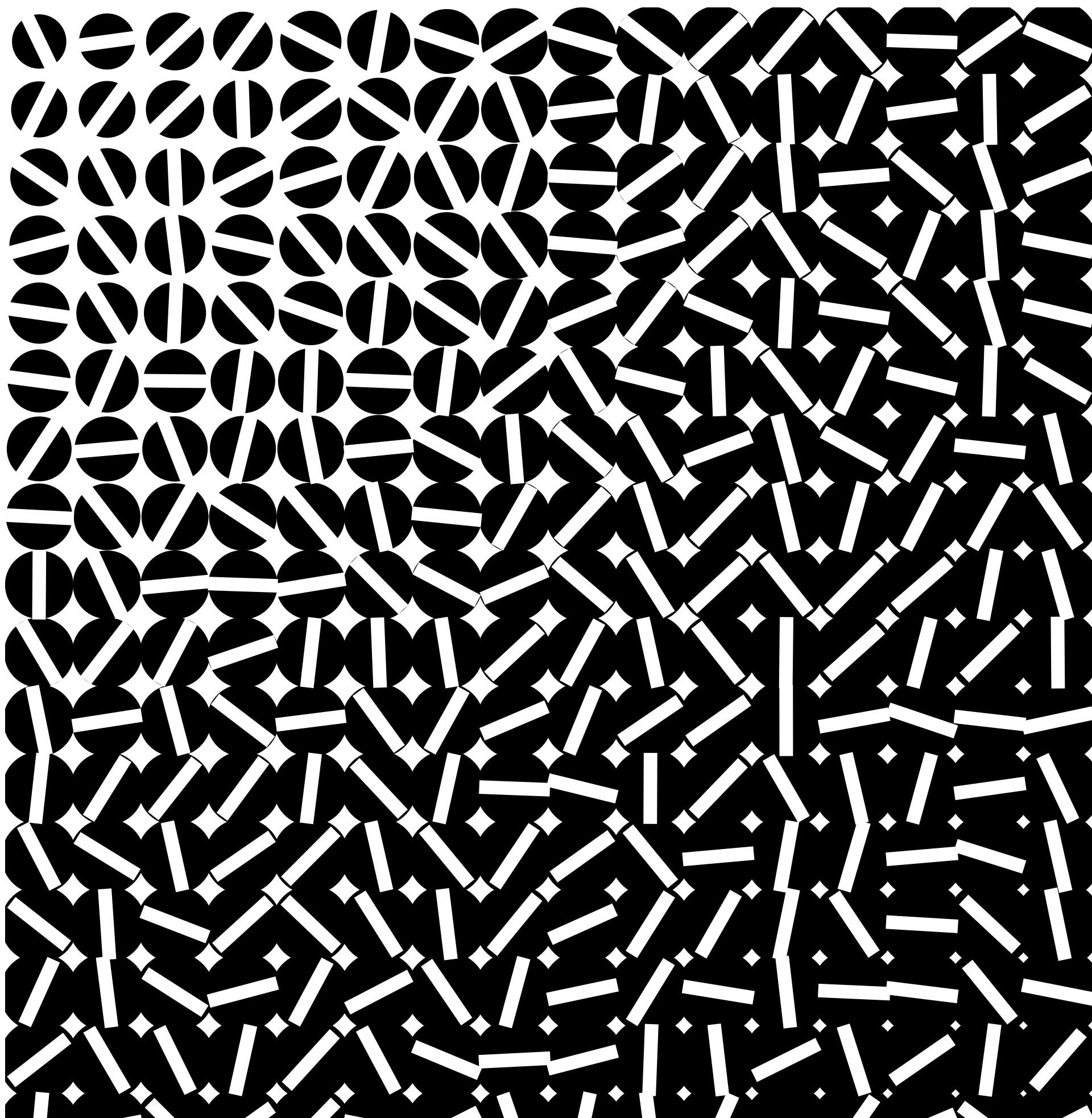
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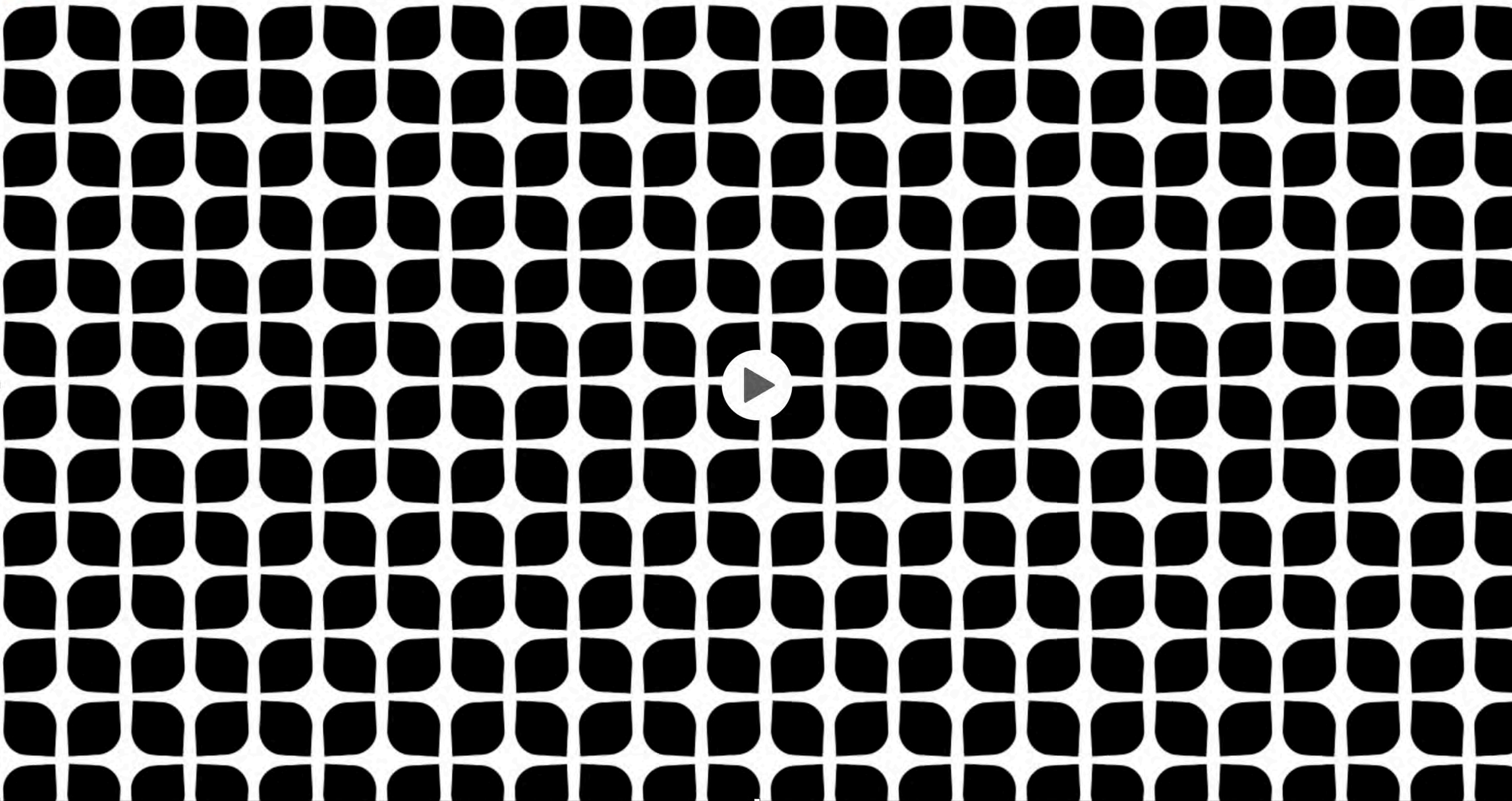
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word writt
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25 int x
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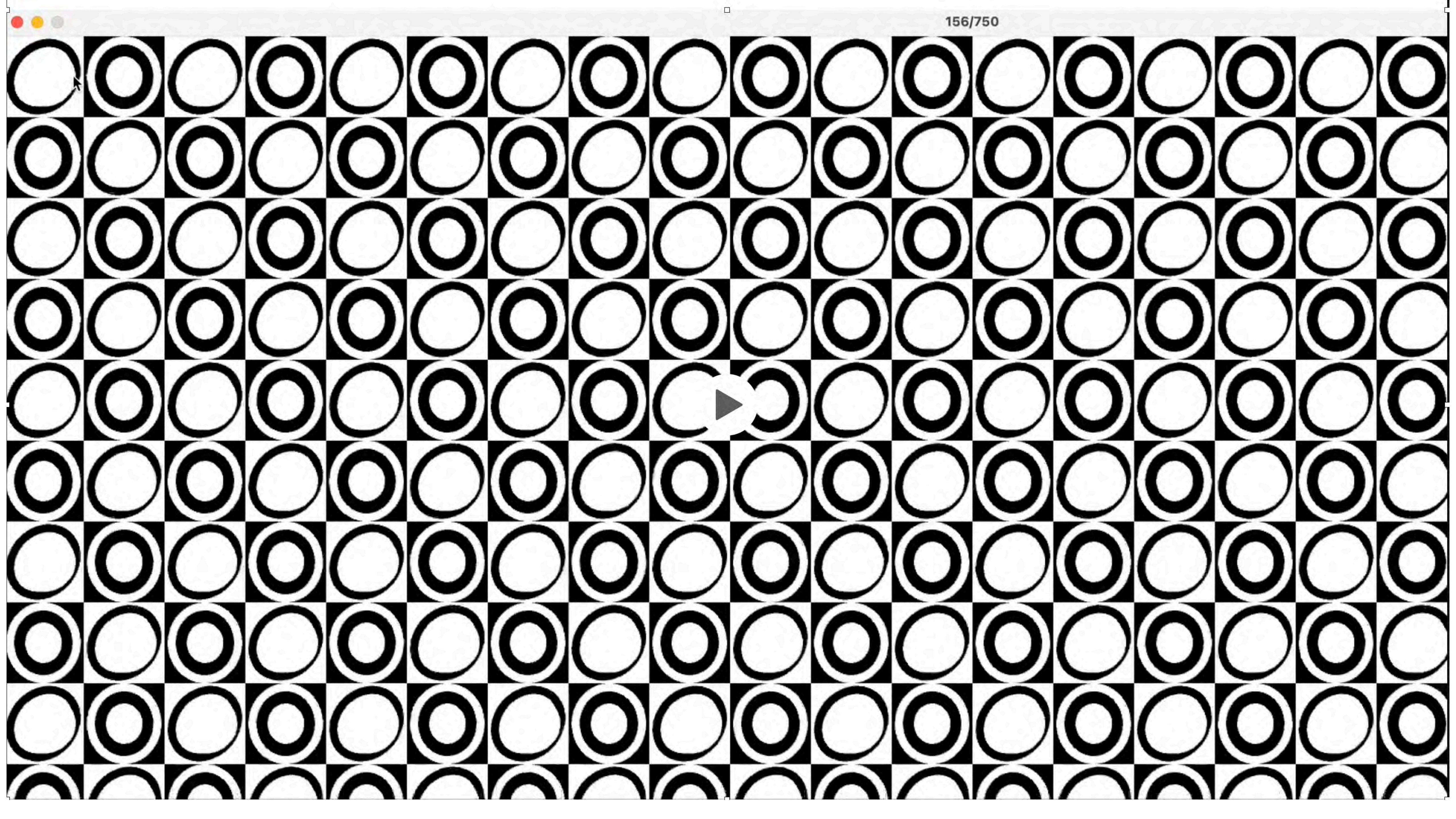


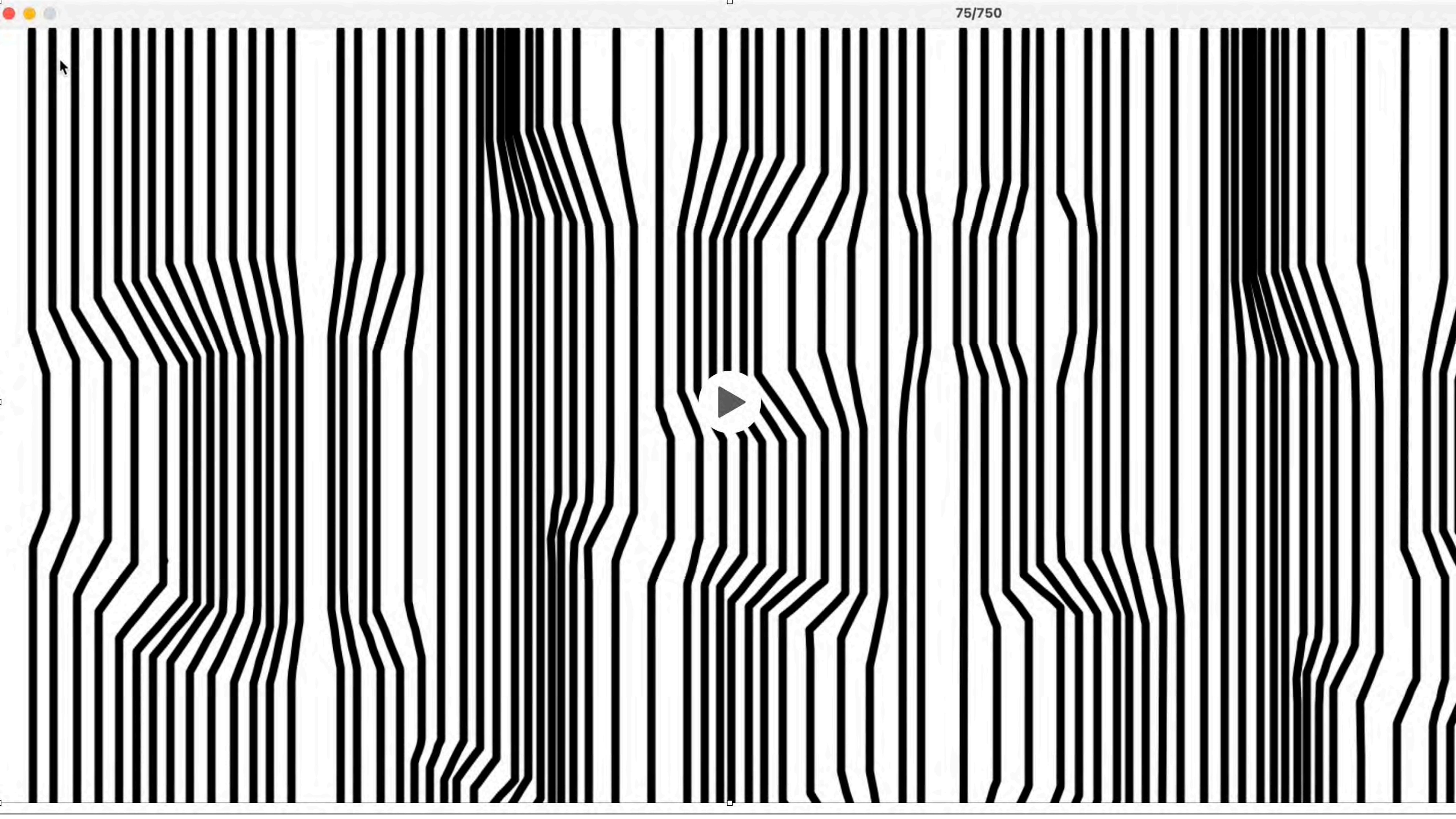

Pattern Design for background in TV Documentary:
"Historia del Sistema Universitario Argentino"

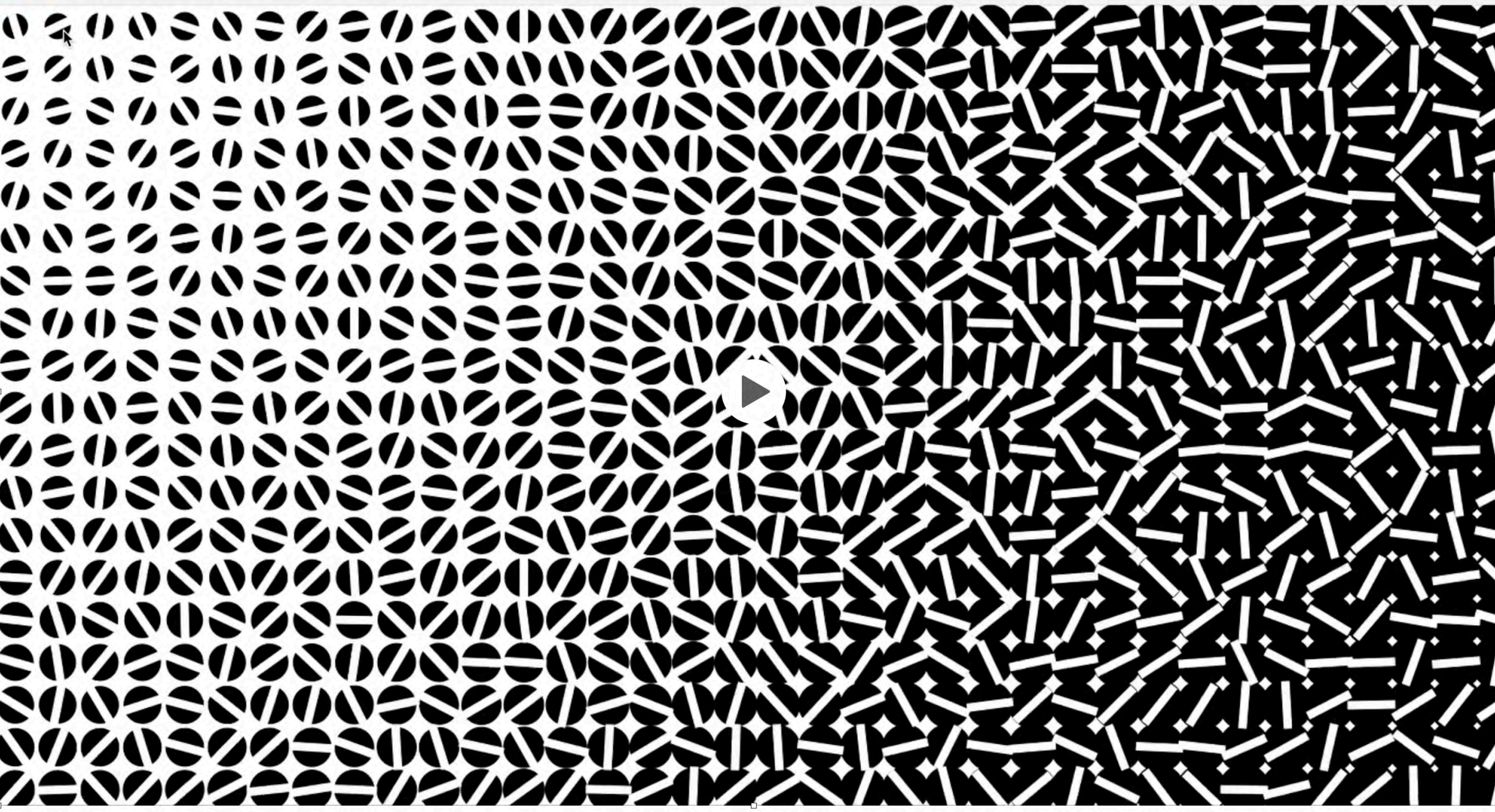
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Media exports with transparency for multimedia use.



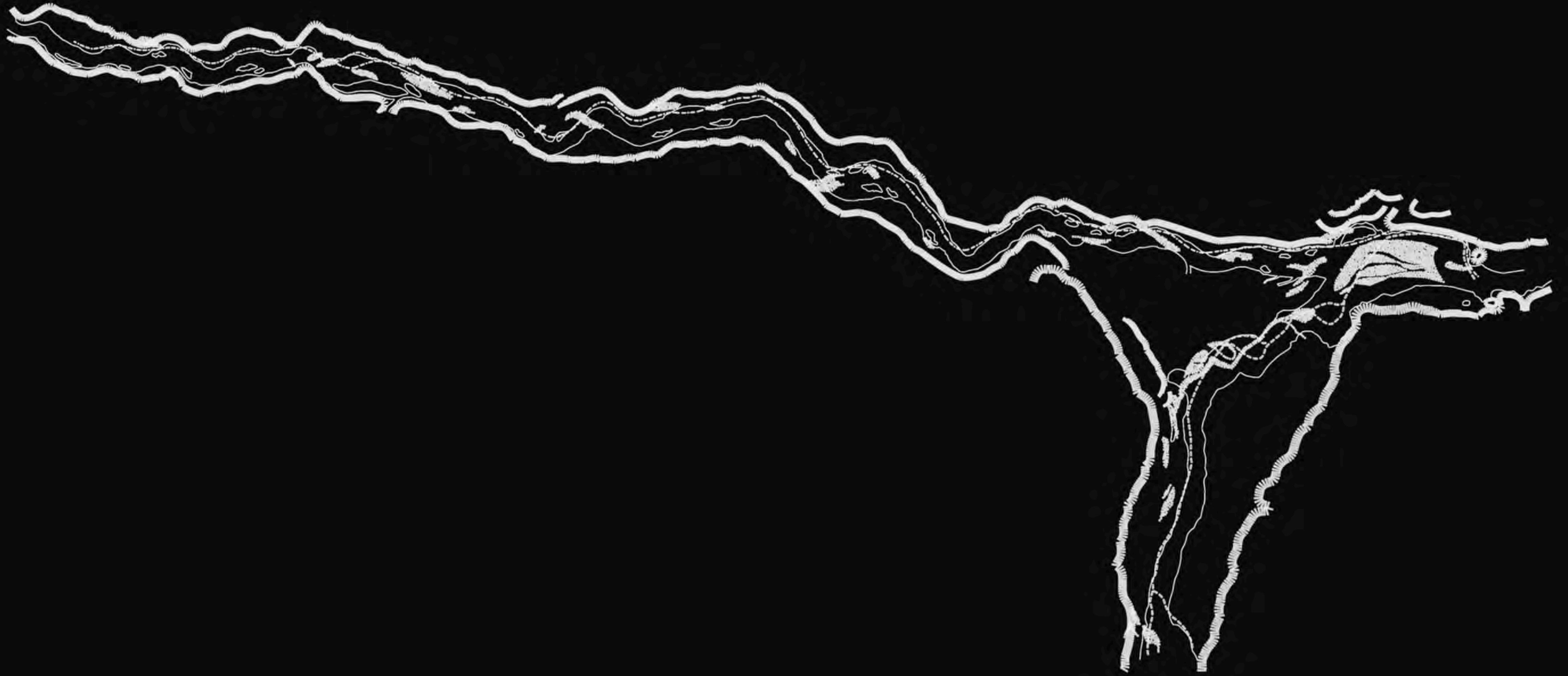
Media exports with transparency for multimedia use. Project: Paisajes en Disputa

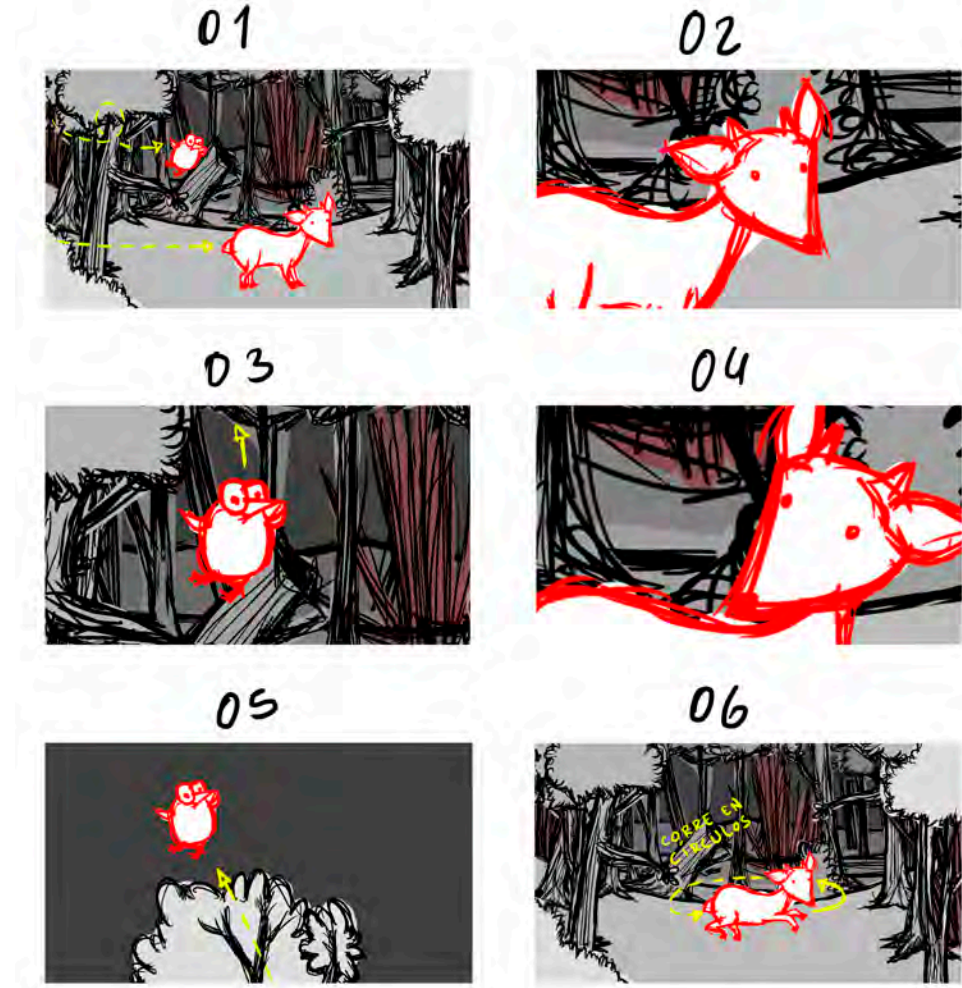


PAISAJES
en disputa

<https://www.youtube.com/watch?v=e68RLAsrMzI>

Media exports with transparency for multimedia use. Project: Paisajes en Disputa





Animation TV Series for children: “CANCIONES DEL BOSQUE” (FOREST’S SONGS) 13 Episodes.

Character Design: Pablo Bernasconi. Artistic Director & Animation Direction:
Carola Dreidemie. Animators: Fermin Valeros & Vallejos.
Production CPCA. Director: Matías P. Saccomanno



THANK YOU!

Carola Dreidemie