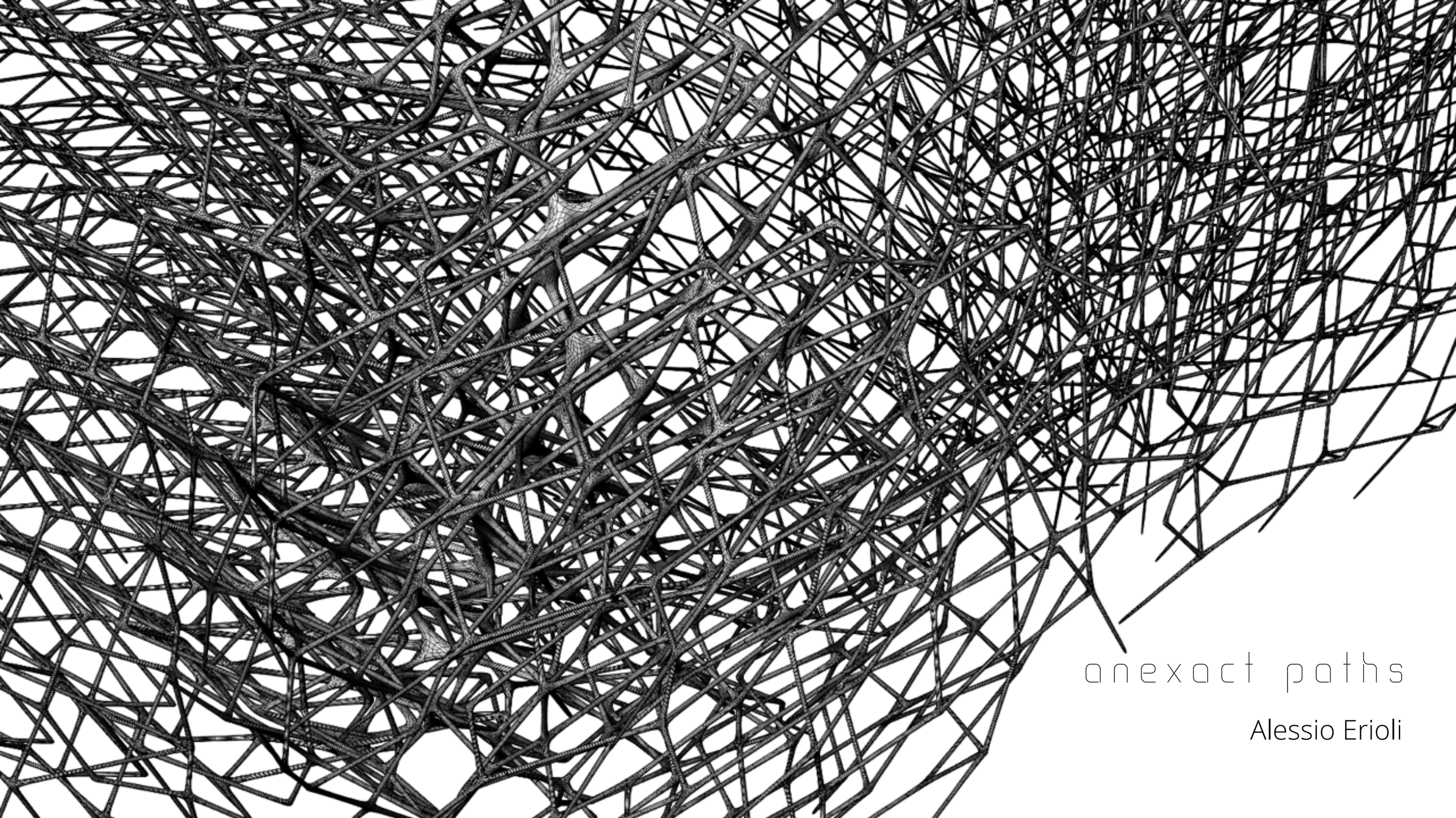
	Monday	Tuesday	Wednesday	Thursday	Friday
9:30-11	lecture	tutorials	template walkthrough	design	design
coffee break					
11:15-13	tutorials	tutorials	template exploration	design	design
lunch break					
14:30-16:30	tutorials	tutorials	template exploration/ design	design	presentation
coffee break					
16:45-18	tutorials	tutorials	template exploration/ design	design	presentation



anexact paths

Alessio Erioli

0. intro

Belousov-Zhabotinski reaction in a Petri dish

emergence

starlings murmuration

starlings murmuration

fire ants bridge

Ghadames, Libya
photo: George Steinmetz

Caracas, Venezuela
photo: Yann Arthus-Bertrand

It is hard to believe that something as mindless and mechanical as an algorithm could produce such wonderful things. No matter how impressive the products of an algorithm, the underlying process always consists of ***nothing but a set of individually mindless steps succeeding each other without the help of intelligent supervision***: they are “automatic” by definition: the workings of an automaton

Daniel Dennett

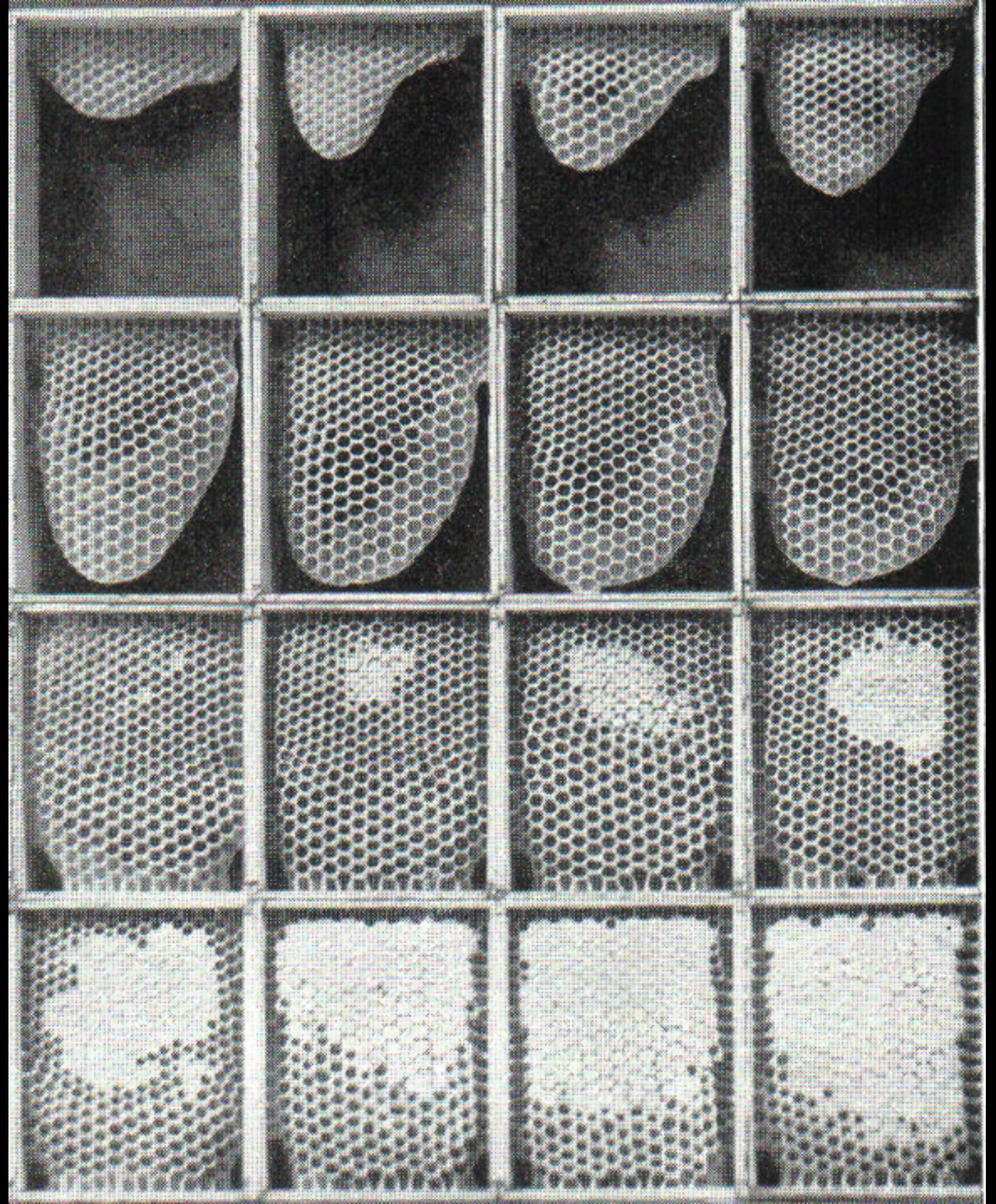
Give me order… and time, and I will give you Design

Daniel Dennett

1. simulation

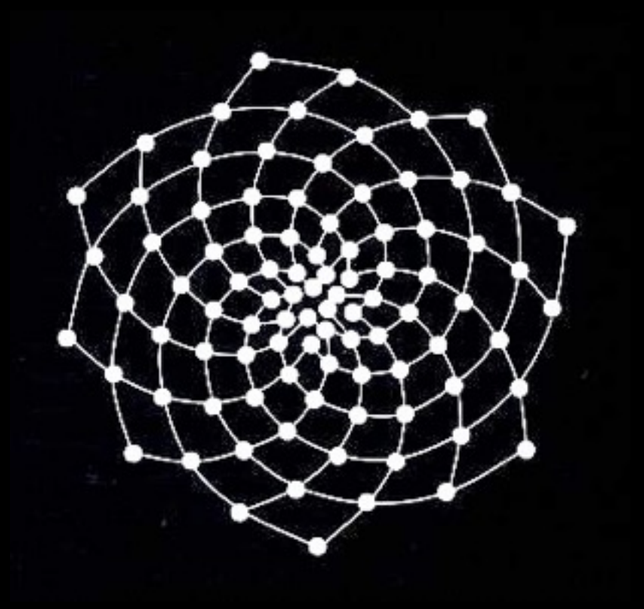
An algorithm must be seen to be believed

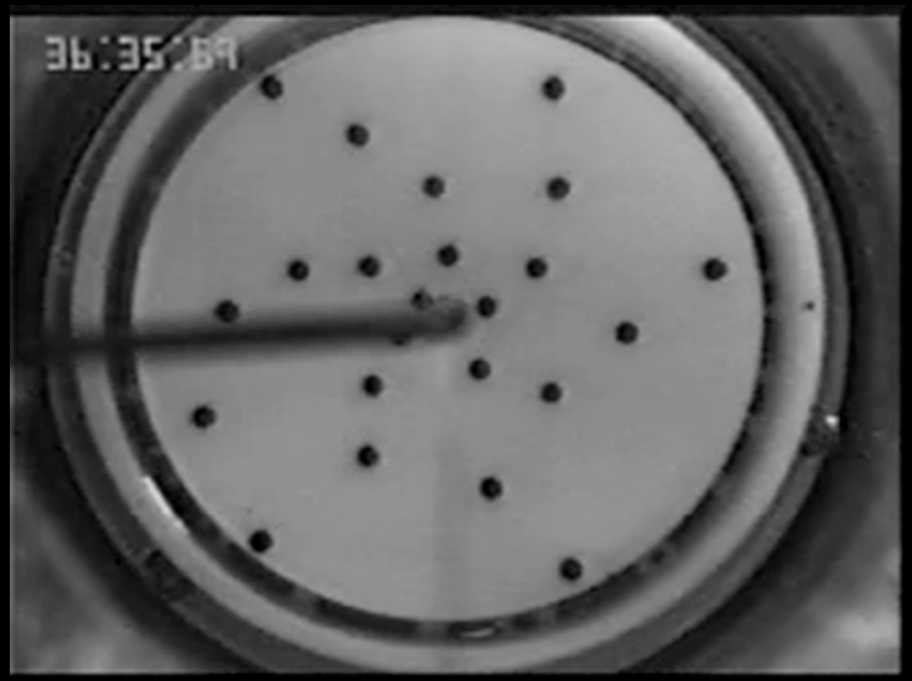
Donald Knuth



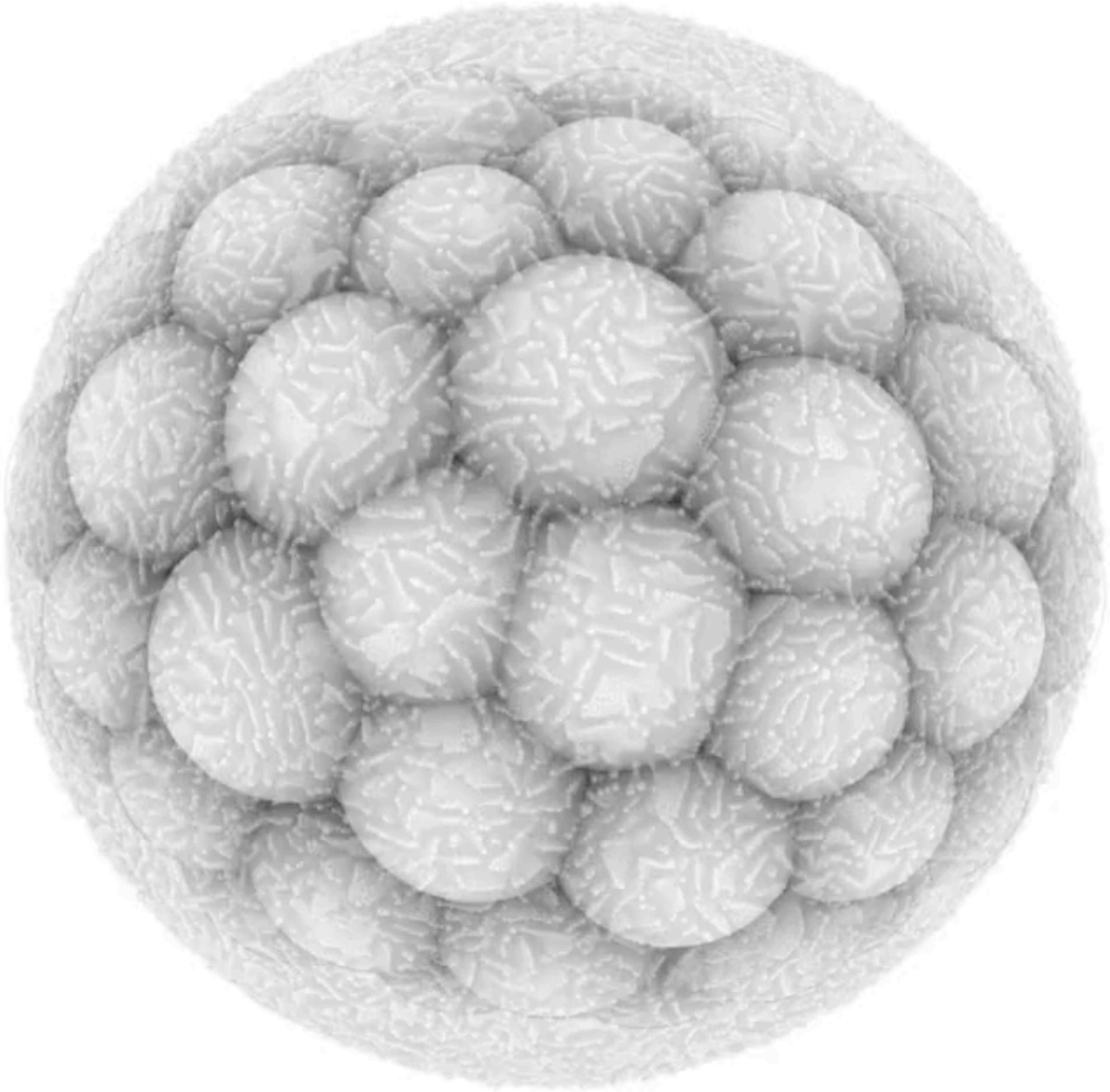
Beehive formation dynamics

Shirley Watts - Beehive





phyllotaxis scheme | Douady & Couder experiment

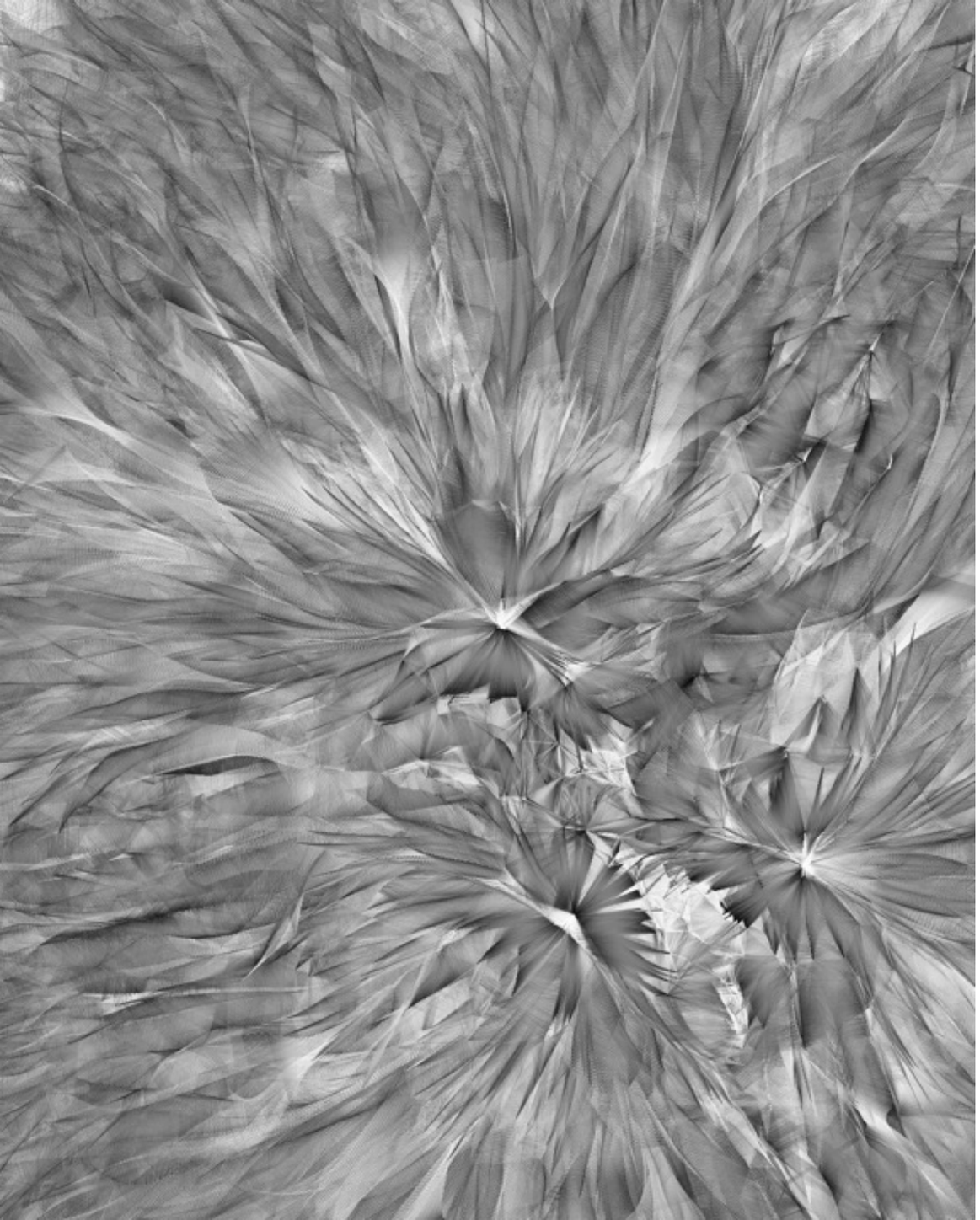


Cellular Formations - Andy Lomas

processes and decisions act at the

metabolic level

distributed decision vs *randomness*



Process 6: Position three large circles on a rectangular surface.
Set the center of each circle as the origin for a large group of Element 1. When each Element moves beyond the edge of the circle, move its position back to the origin. Draw a line from the centers of Elements which are touching. Set the value of the shortest possible line to white and the longest to black, with varying grays between.

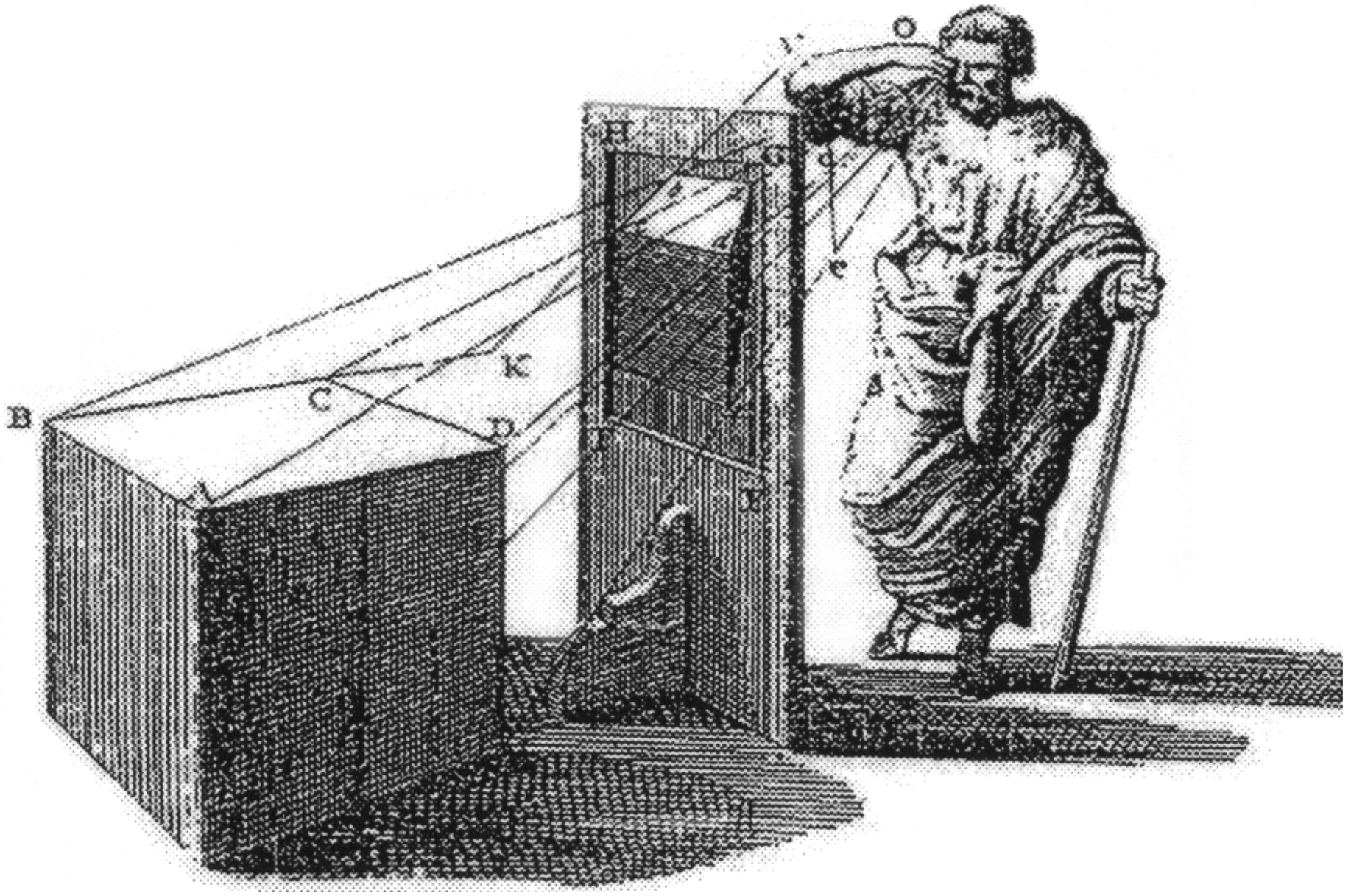
Element 1: Form 1 + Behavior 1 + Behavior 2 + Behavior 3 Form 1: Circle
Behavior 1: Constant linear motion
Behavior 2: Constrain to surface

Behavior 3: When touching another, change direction

2. the Albertian divide

notational identity

autographic > allographic


O
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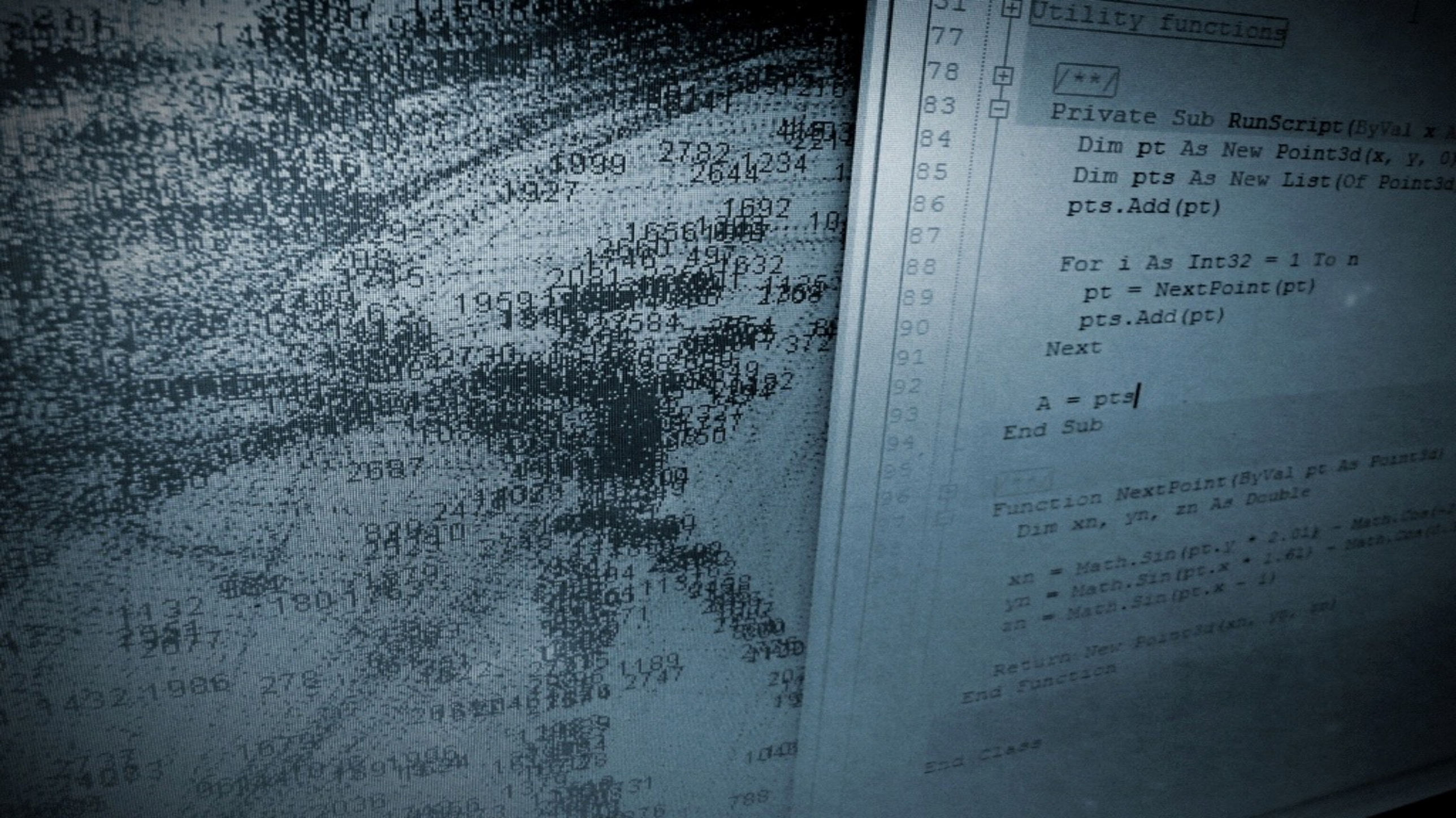
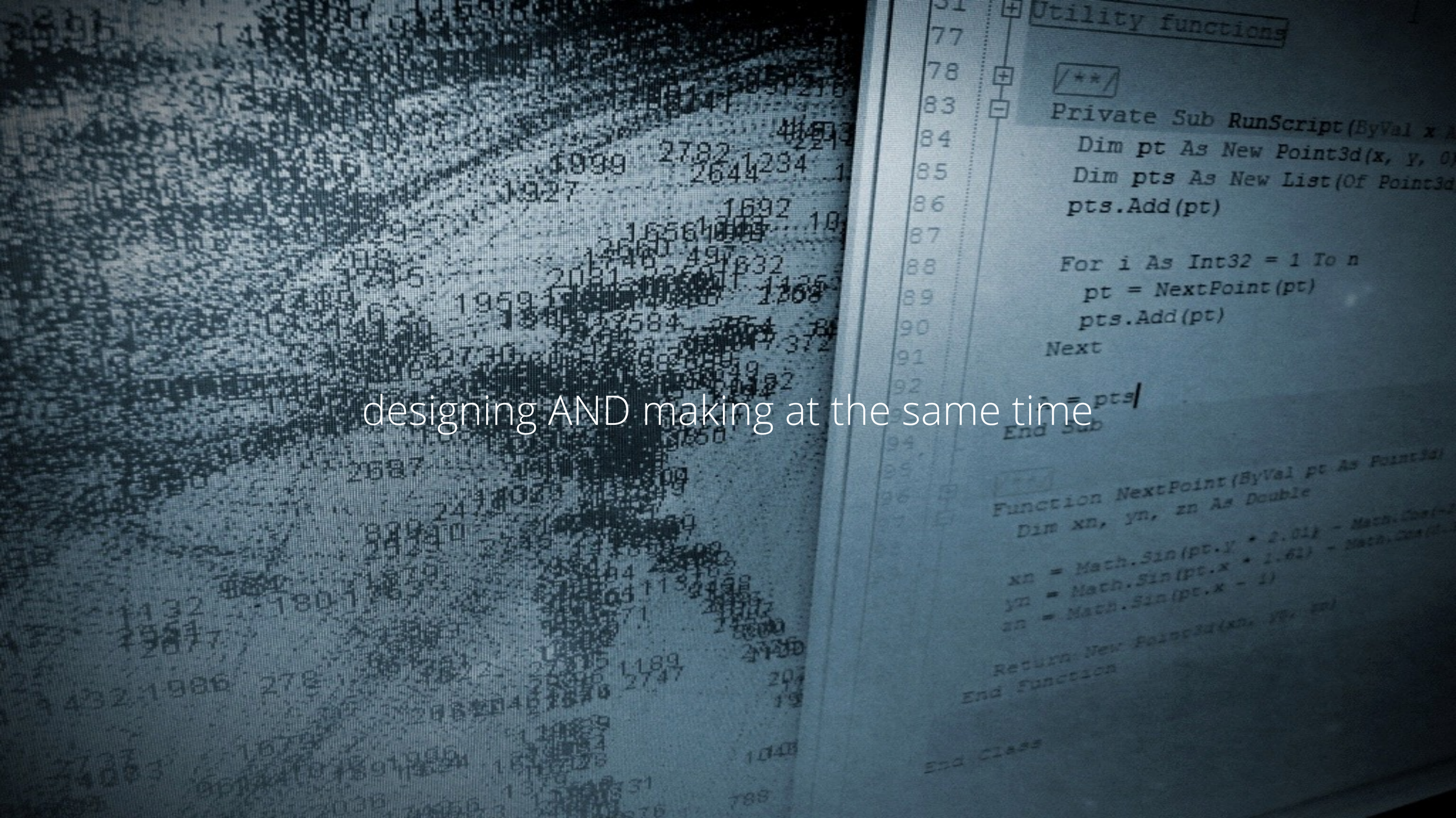
craft


Utility functions
/**/
Private Sub RunScript(ByVal x
Dim pt As New Point3d(x, y,
Dim pts As New List(Of Point3d
pts.Add(pt)
For i As Int32 = 1 To n
pt = NextPoint(pt)
pts.Add(pt)
Next
A = pts
End Sub
Function NextPoint(ByVal pt As Point3d)
Dim xn, yn, zn As Double
xn = Math.Sin(pt.y * 2.01) - Math.Cos(
yn = Math.Sin(pt.x * 1.62) - Math.Cos(
zn = Math.Sin(pt.x - 1)
Return New Point3d(xn, yn, zn)
End Function
End Class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End Class
designing AND making at the same time


craft
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End Function
End Class

craft

accumulation of ***knowledge*** that sublimates into ***sensibility***

. ***computation as design medium***

. design behaviors
. build your own tools
. designing and building as breeding

3. agency

an ***agent*** is something that *perceives* and *acts*

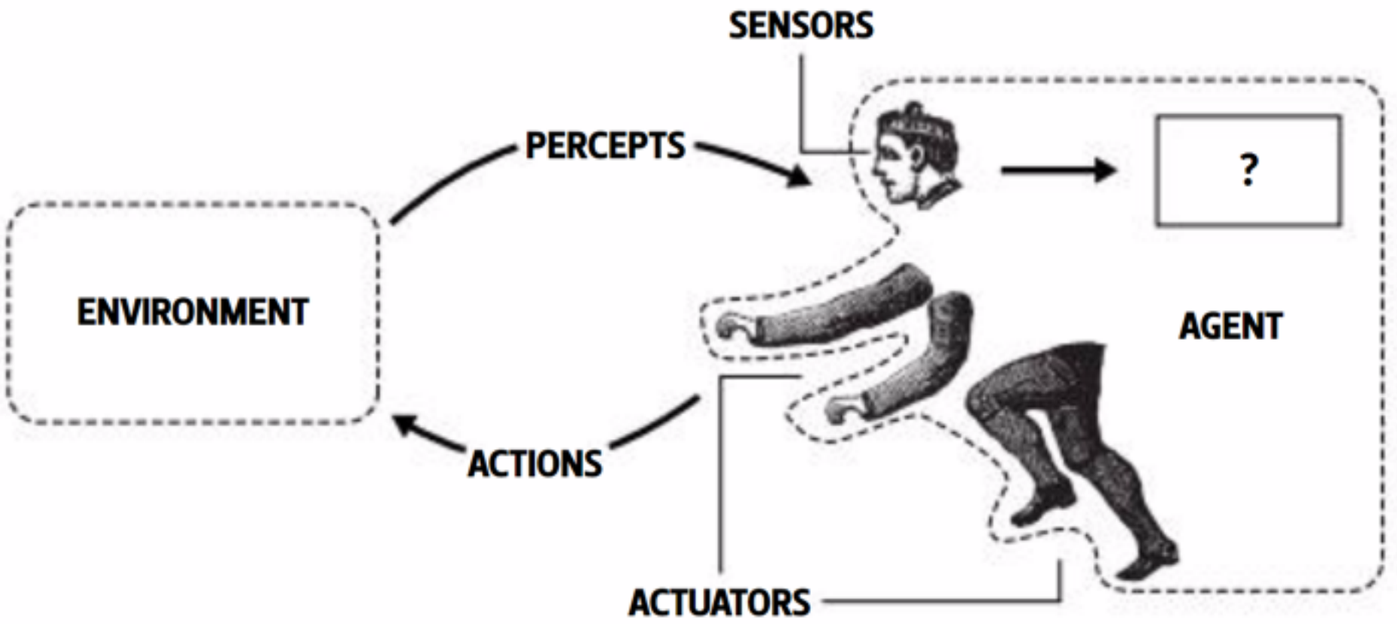
. simple reflex

. goal based

. utility based

agents

sensorium

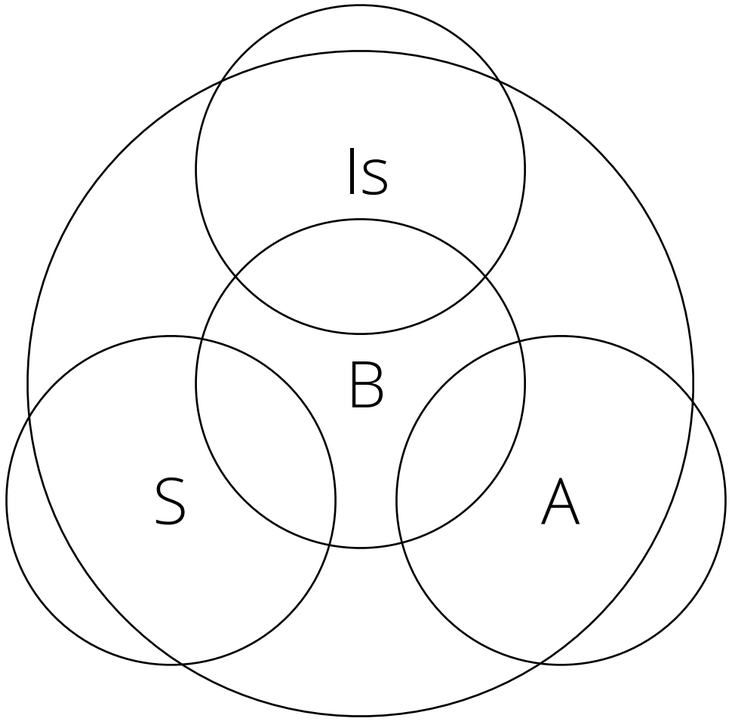


internal state

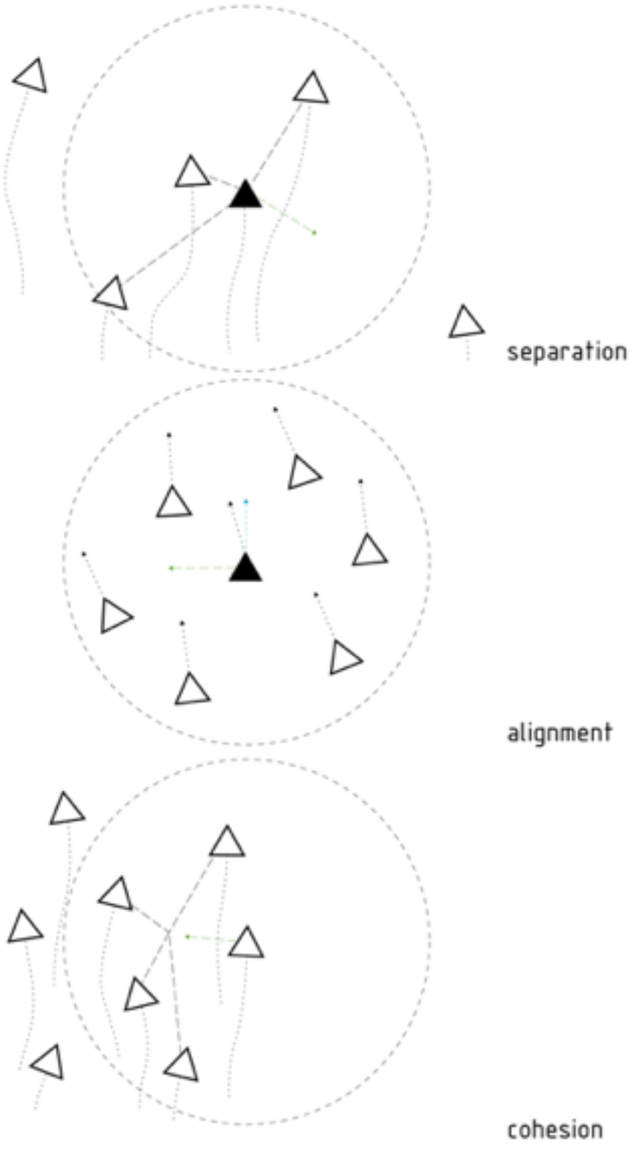
action

agent - Russel and Norvig

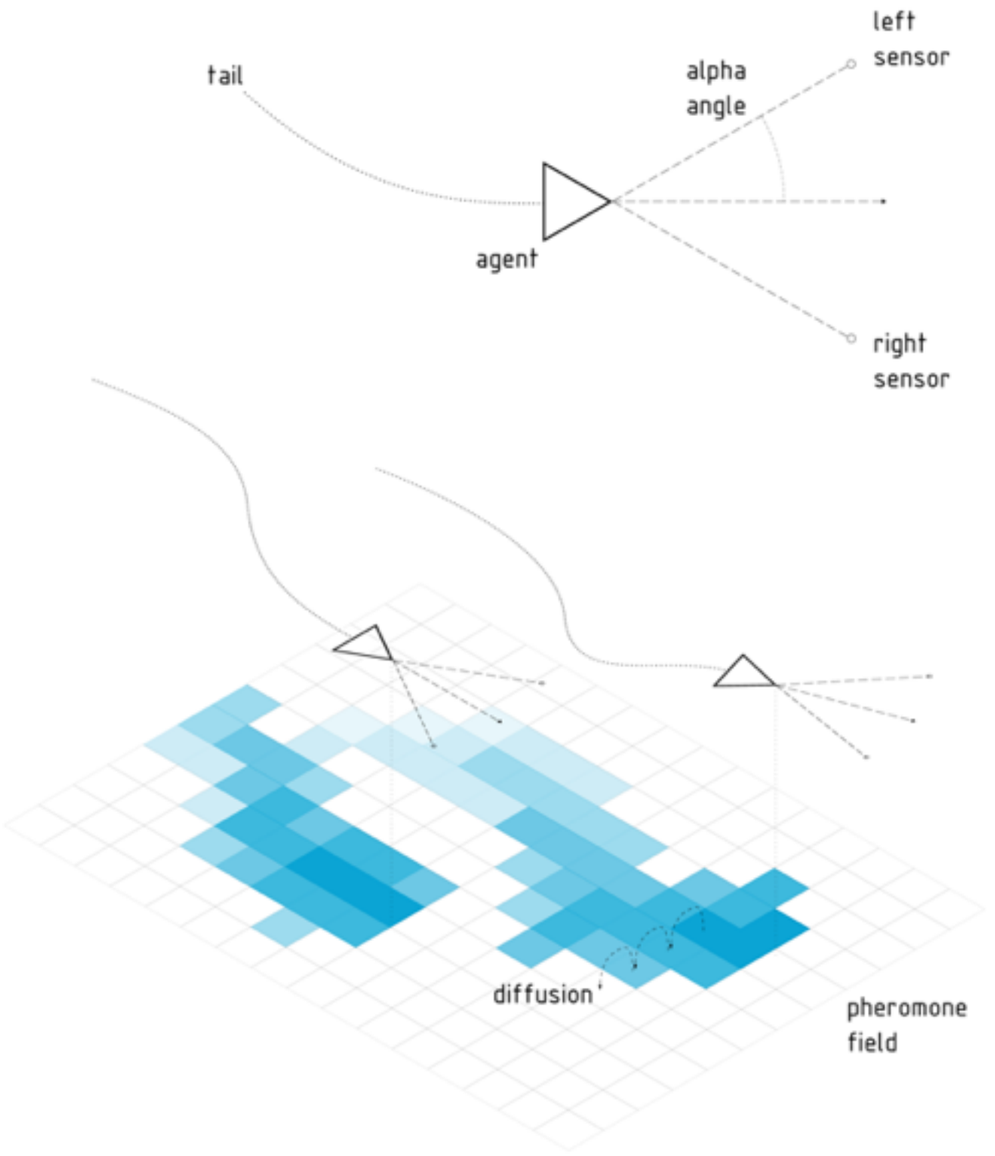
internal state



sensorium ***action***

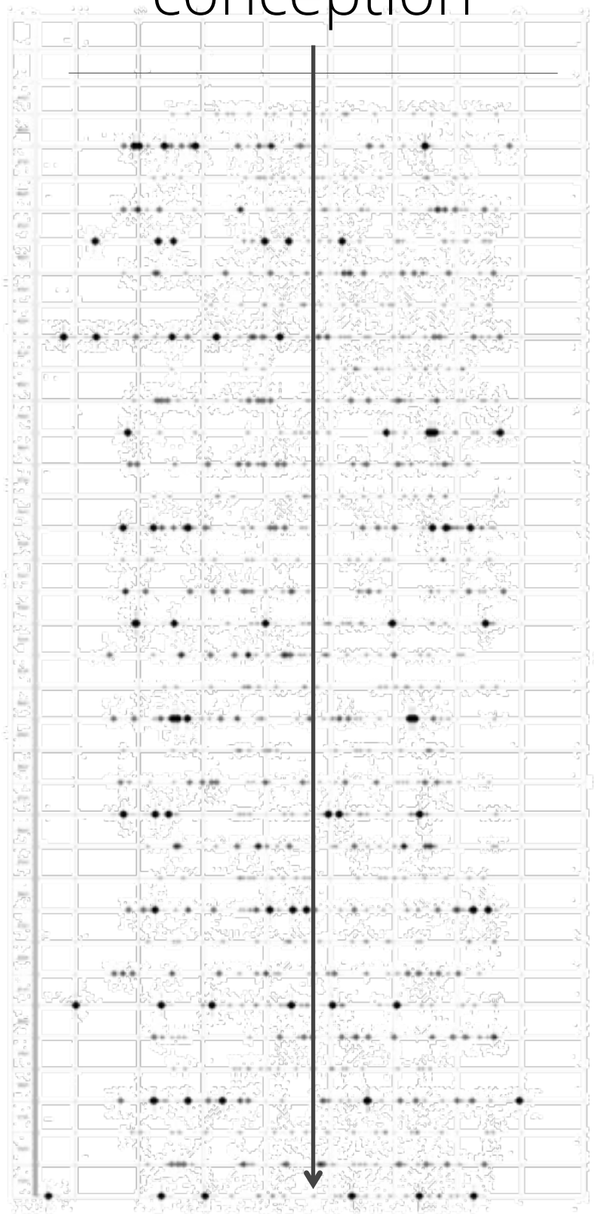


Craig Reynolds model

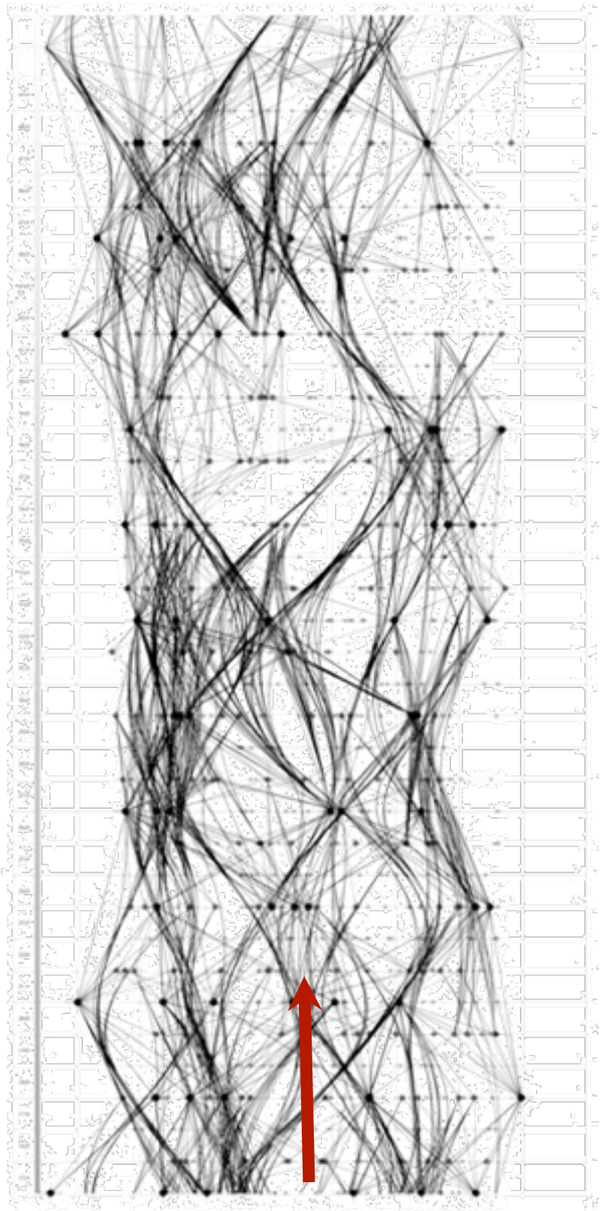


Jeff Jones model

conception



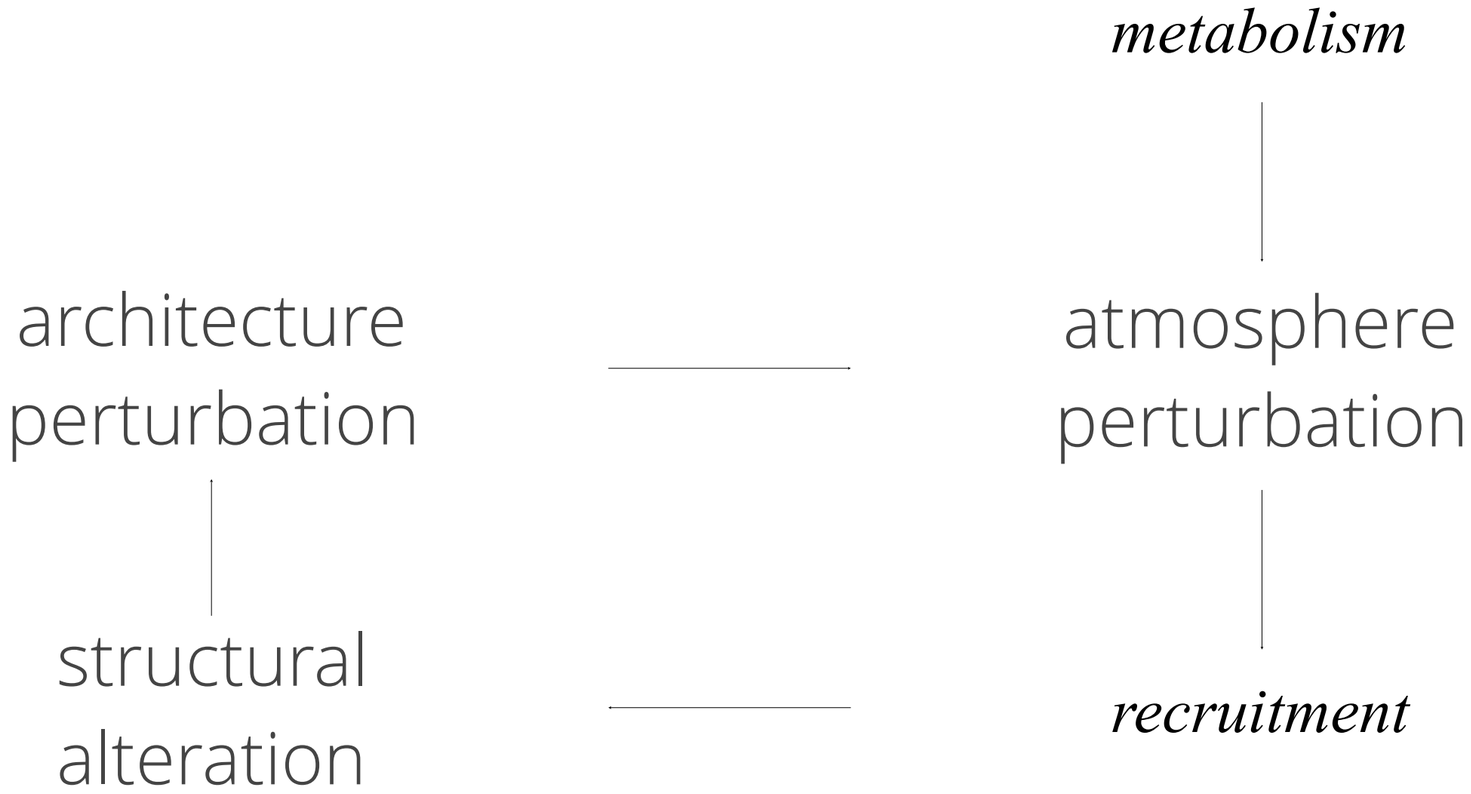
realization



inception

swarm intelligence

the collective behavior of decentralized, self-organized systems, natural or artificial


metabolism
architecture
perturbation
atmosphere
perturbation
structural
alteration
recruitment

communal spiders web

. procedures

conditions of operation > speculative, dynamic

. criteria

constrain the possible realm of the artifact > stable, boundary-like

*algorithms are **modes of thought***

logic becomes an ***aesthetic operation***

"The idea becomes a machine that makes the art"

Sol Lewitt, Paragraphs on conceptual art, 1967

*"The **code designs machines** that **grow** the architecture"*

paraphrasing Sol Lewitt

programming ***behaviors*** that produce ensembles of matter around a void

an ***aesthetic of decision*** in a framework of self-organization and complex adaptive systems

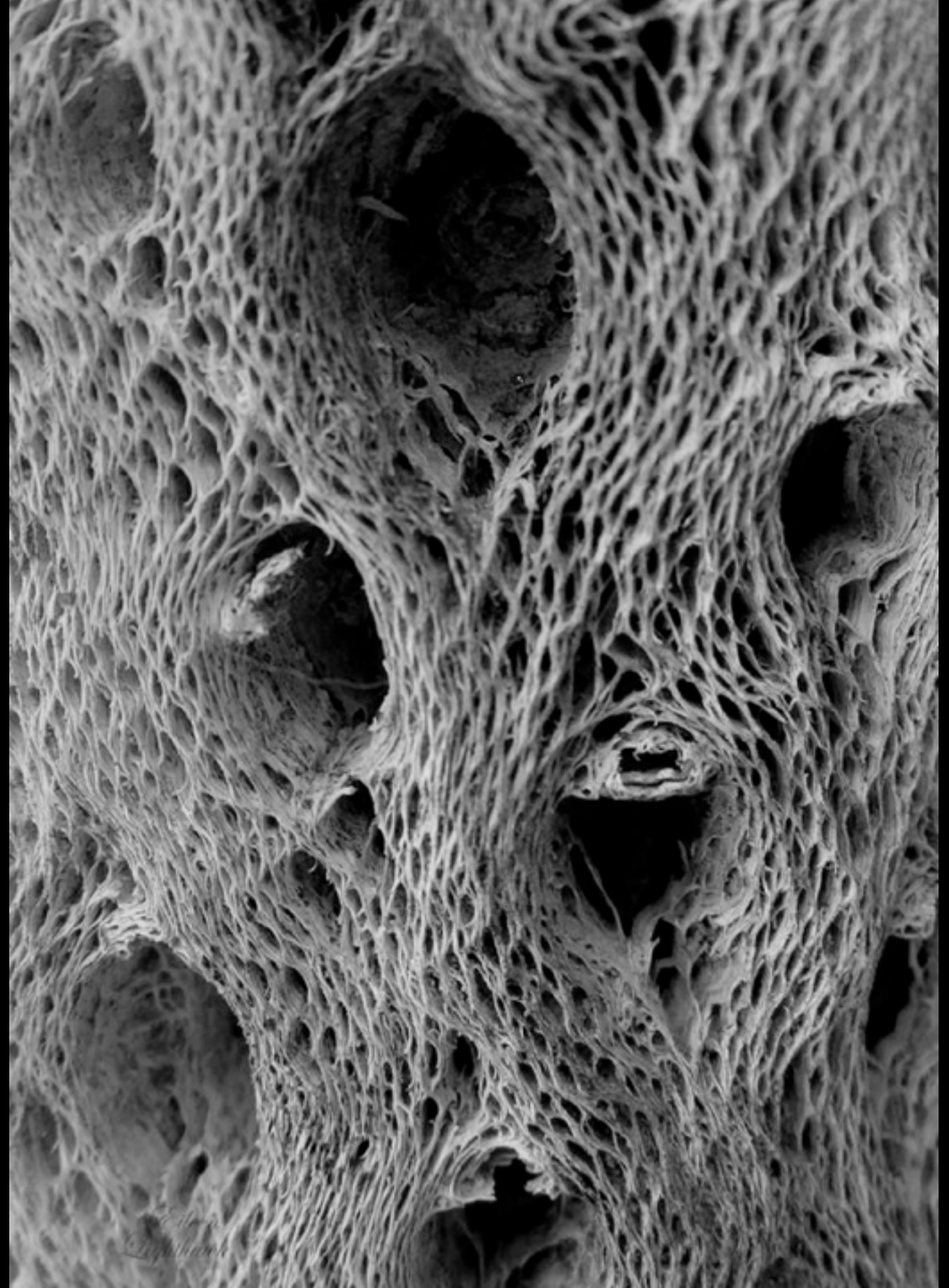
Steven Shaviro

4. detail as procedural information

vagueness | anexact

vagueness is not lack of logic but of determinacy

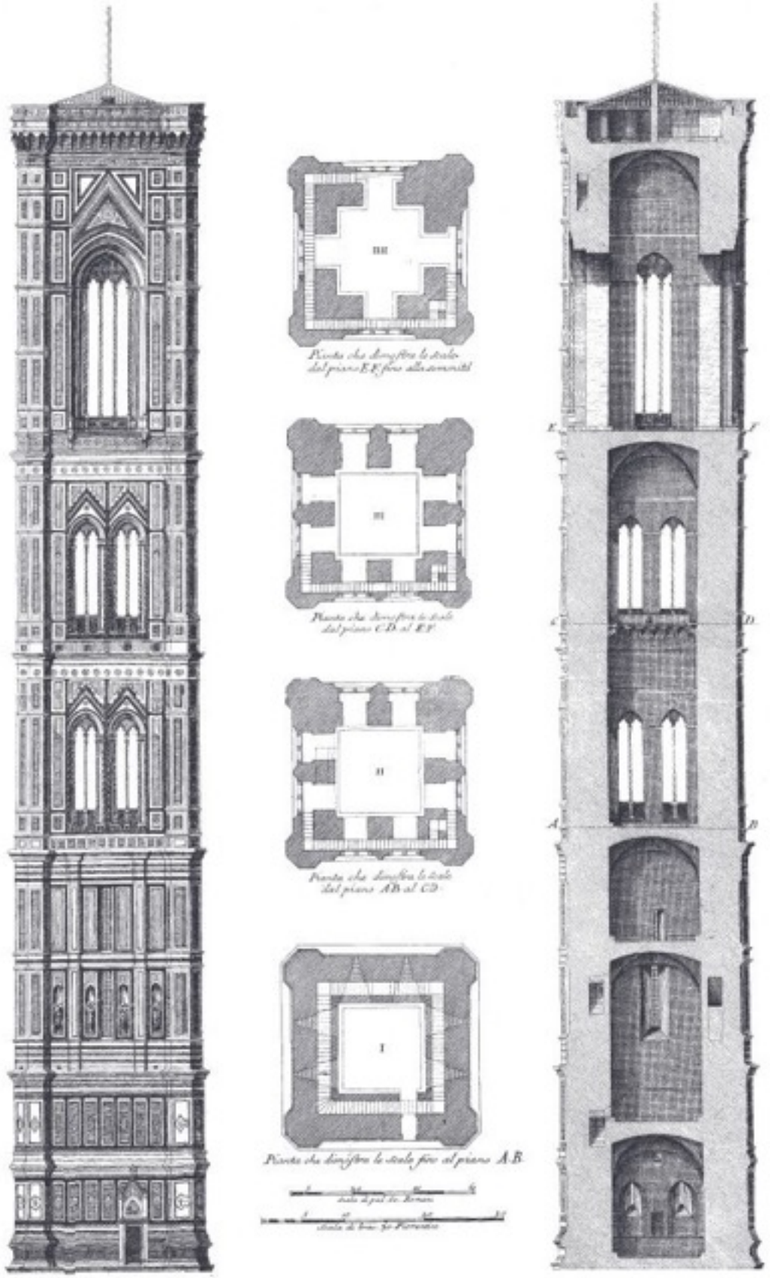
anexact rigorous yet non tending to perfection



Saguaro Skeleton

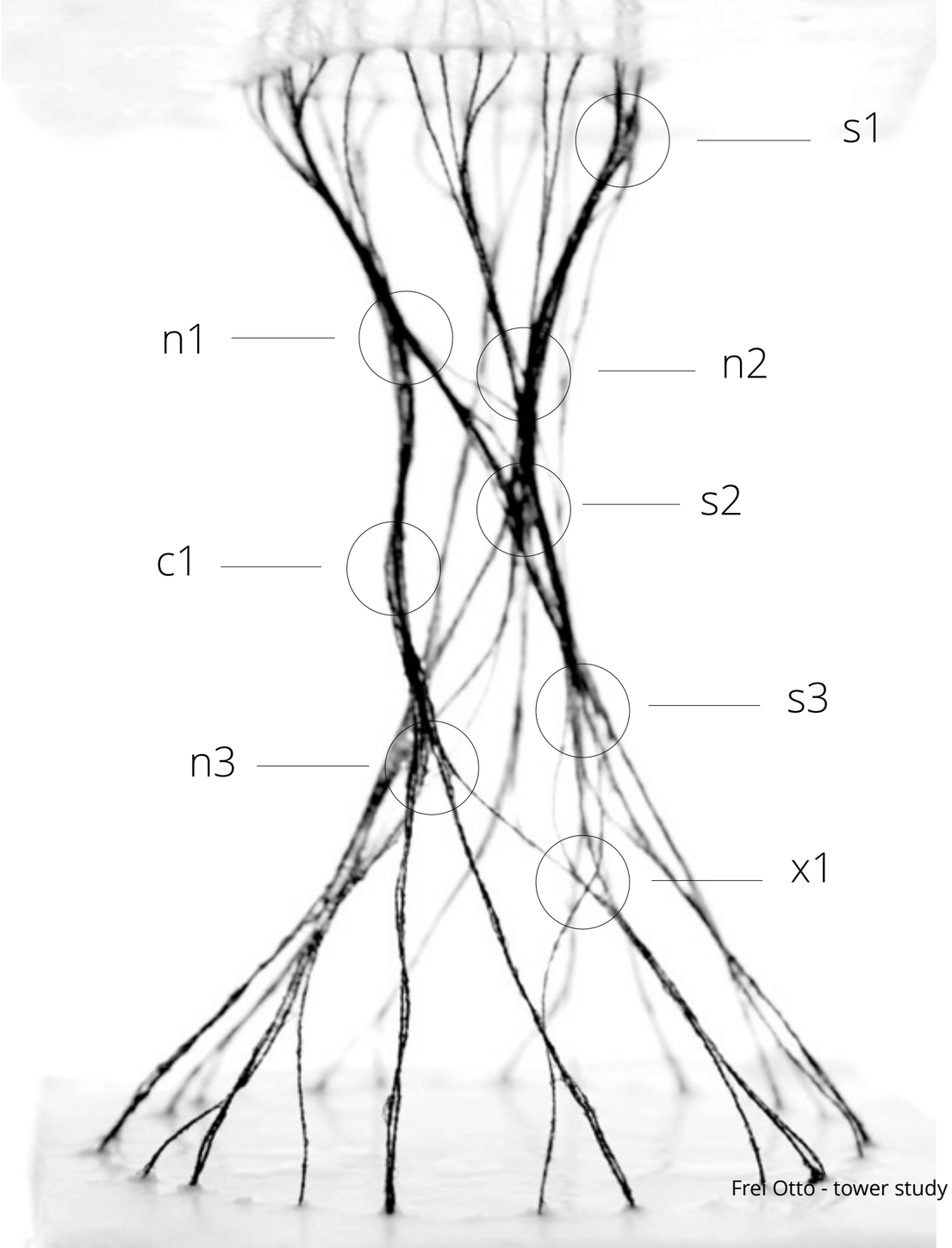
tectonics

tectonic of ***elements*** > tectonic of ***behaviors***



Campanile di Giotto

>



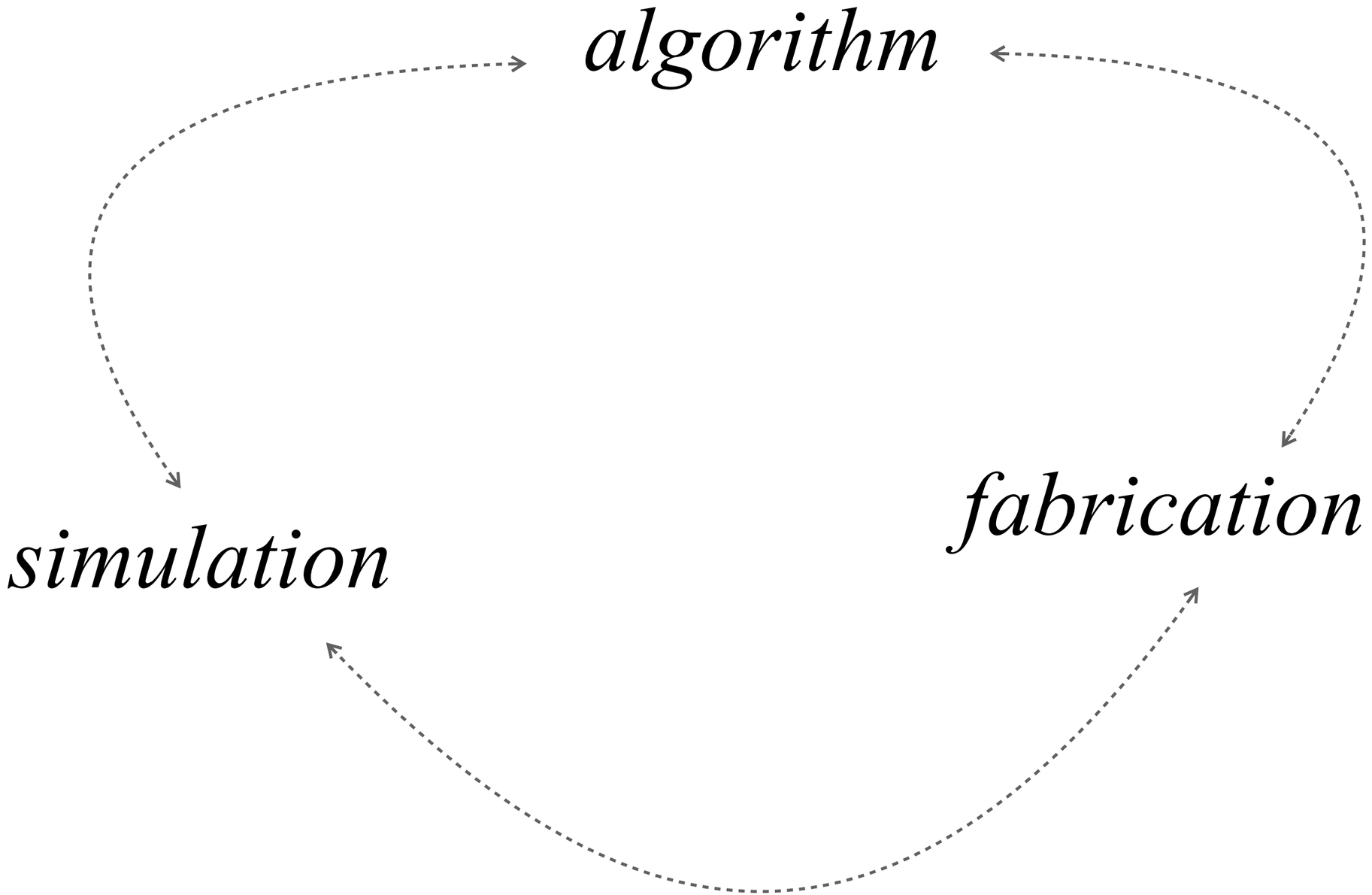
Frei Otto - tower study

Lucy Irvine - Before the After

embedded | logic

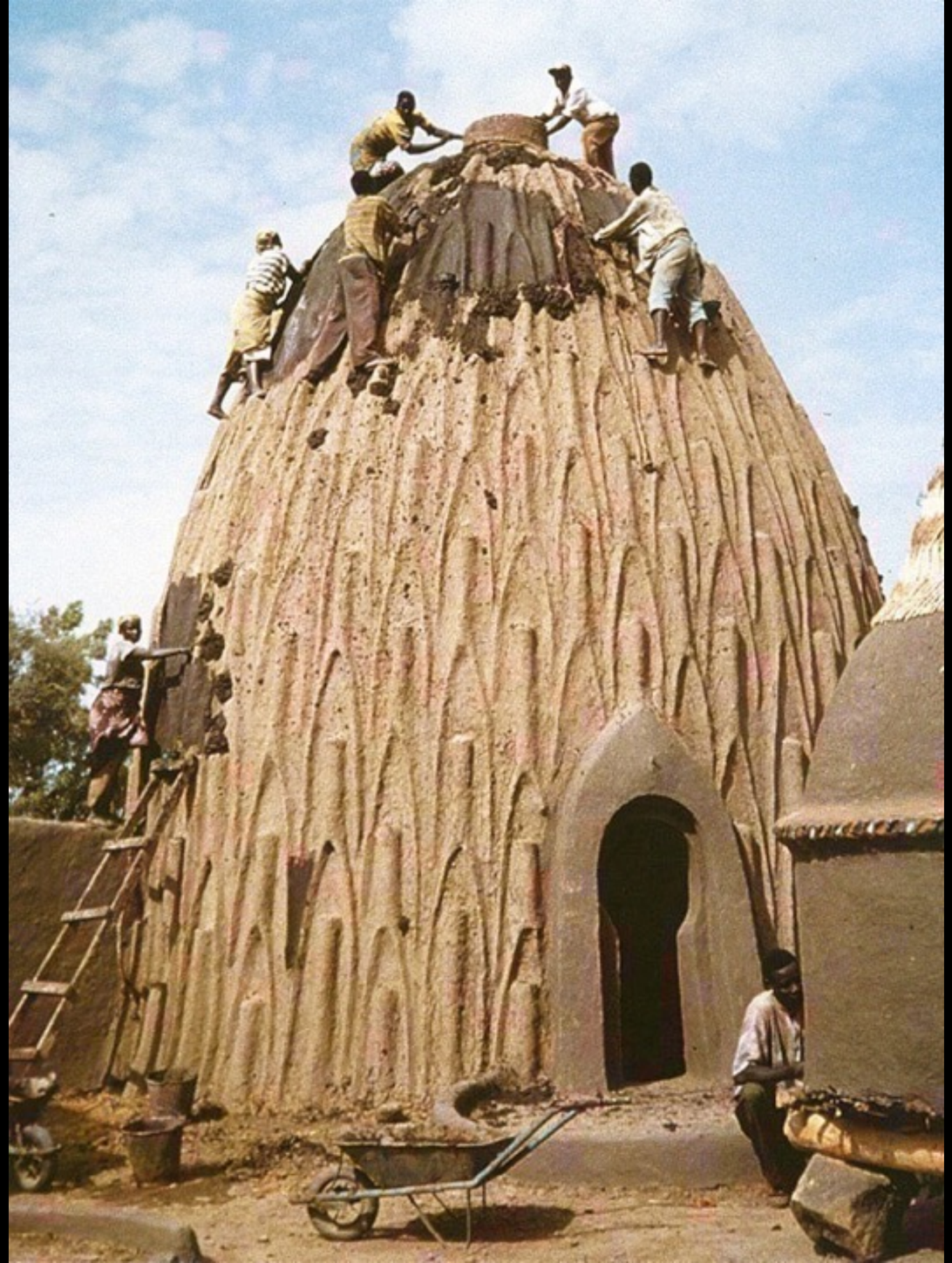
chair (chãr), *n.* [OF. *chaiere* (F. *chaire*), < L. *cathedra*: see *cathedra*.] A seat with a back, and often arms, usually for one person; a seat of office or authority, or the office itself; the person occupying the seat or office, esp. the chairman of a meeting; a sedan-chair; a chaise†; a metal block or clutch to support and secure a rail in a railroad.

Joseph Kosuth – one and three chairs

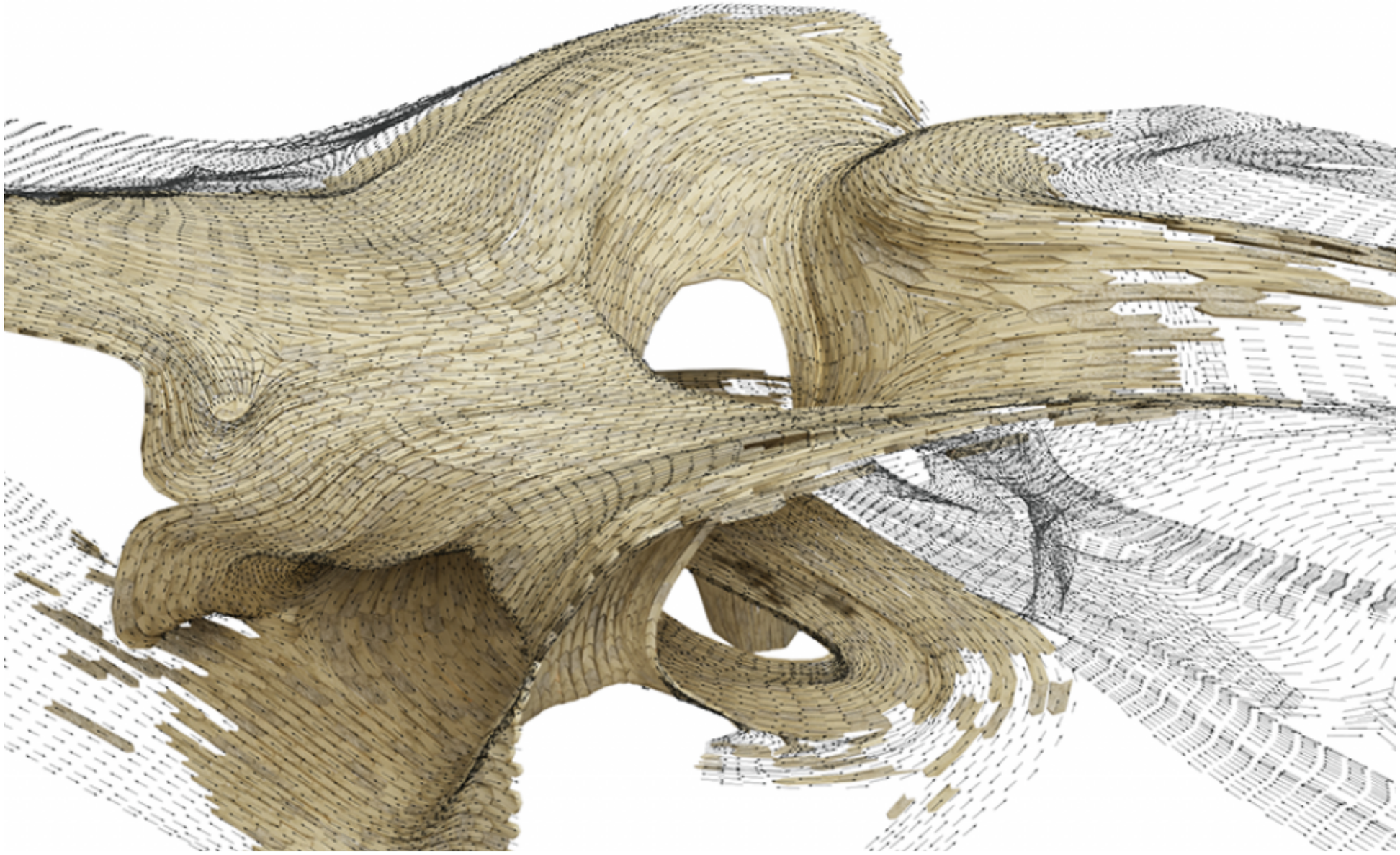

algorithm
simulation
fabrication

capanne Musgum, Camerun

capanne Musgum, Camerun

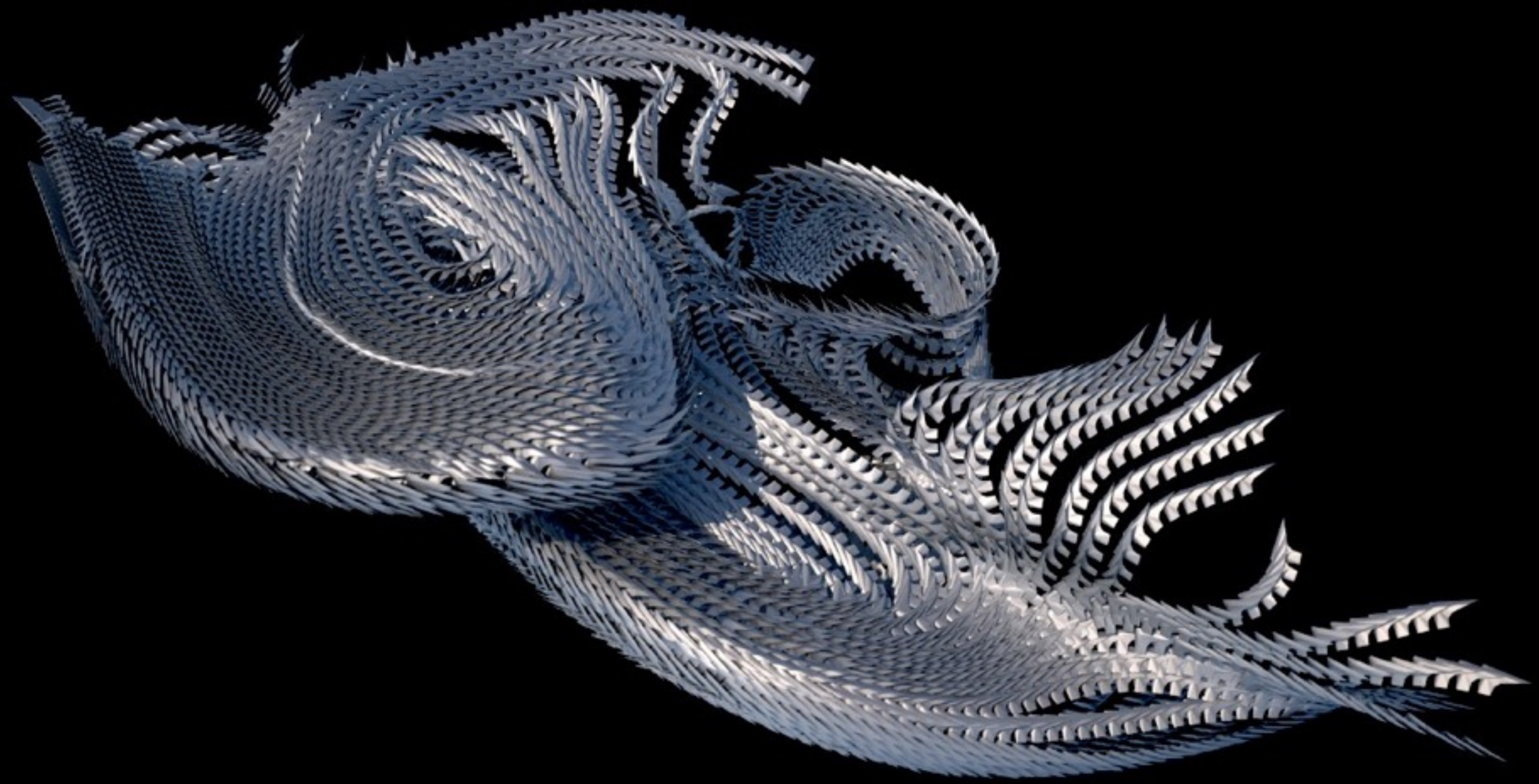


Musgum huts, Cameroon



Rob Stuart-Smith - Helsinki Library project

Kokkugia - NAMOC - study for structural shell



Kokkugia - NAMOC - study for structural shell

Kokkugia - NAMOC - study for structural shell

Rather than exploring architecture in terms of an embedding space (the field of functions or uses to which an enclosure is put), it seeks a metric within the creation of a void itself

a metric or logic that is intrinsic and unique to that spatio-hyletic enclosure

Levi Paul Bryant