Hyper-Cell

A Bio-inspired Information Design Framework for Real-time Adaptive Architecture

Promoter: Kas Oosterhuis

Co-Promoters: Nimish Biloria & Henriette Bier

PhD Candidate: Jia-Rey Chang

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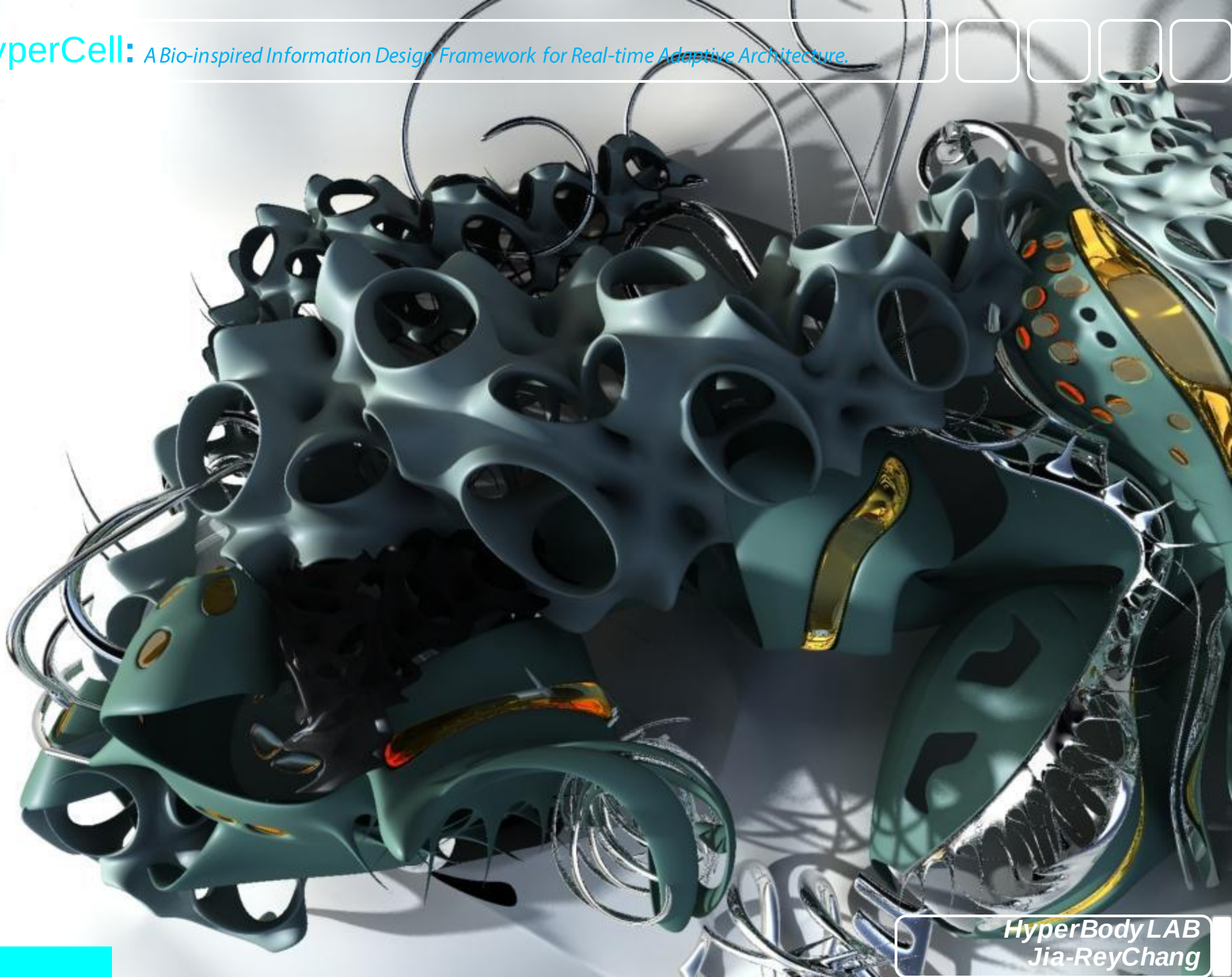

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Janine Benyus:
3 levels of biomimicry

Form

the first level of biomimicry is the mimicking of nature form.

Process

the second level is the mimicking the nature process, or how things are made in nature.

System

the third level is the mimicking the nature ecosystems.

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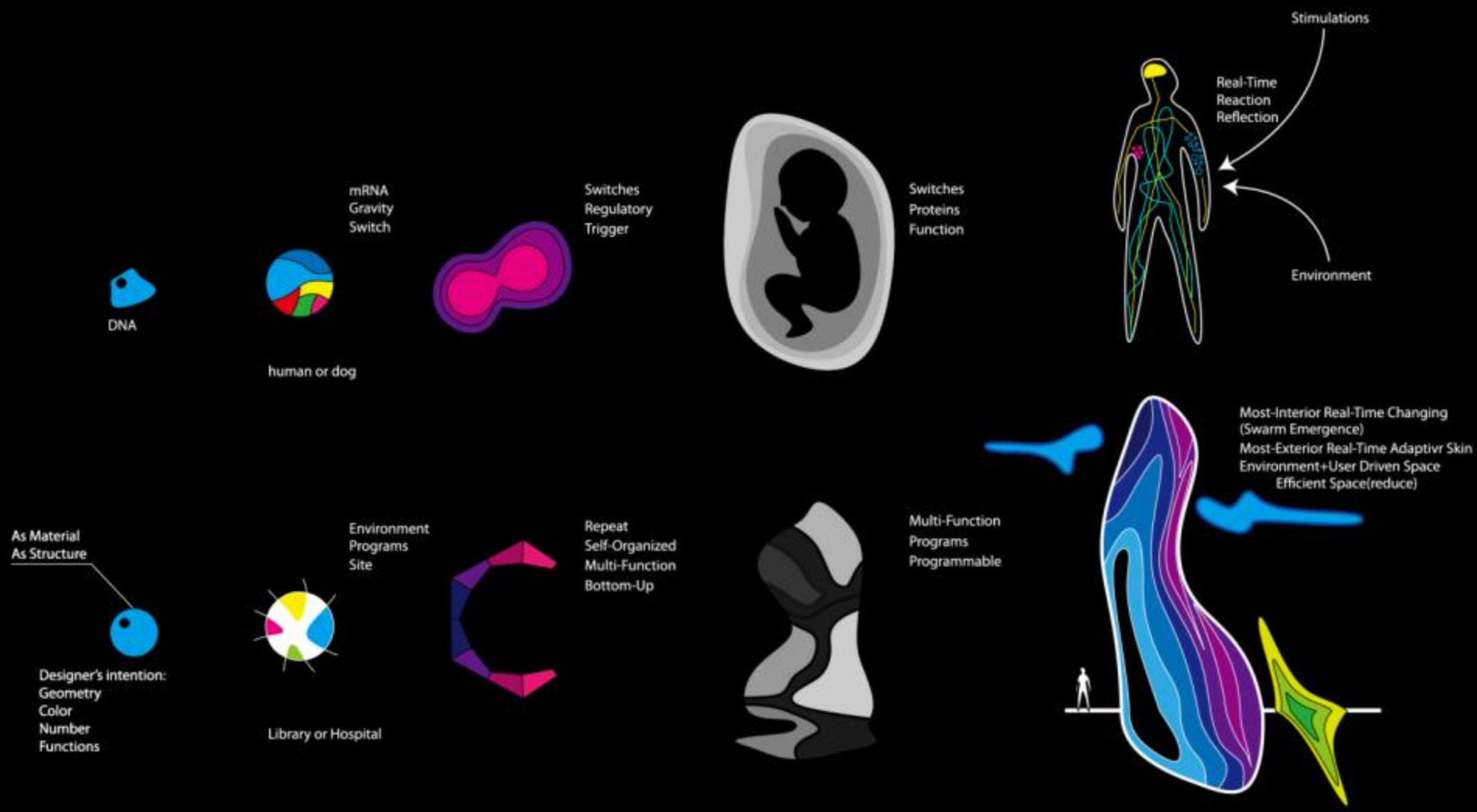

Breed Grow Live

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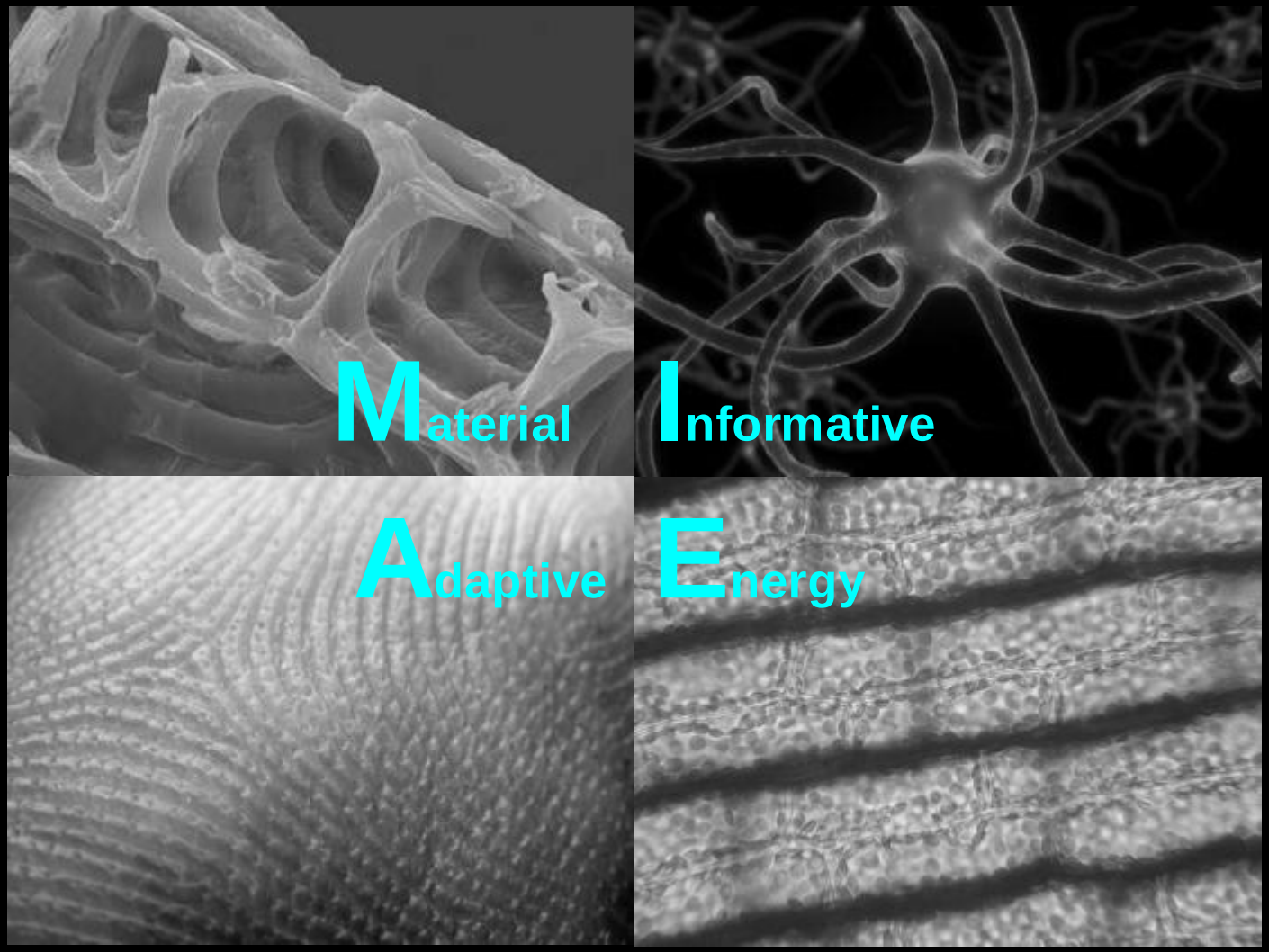

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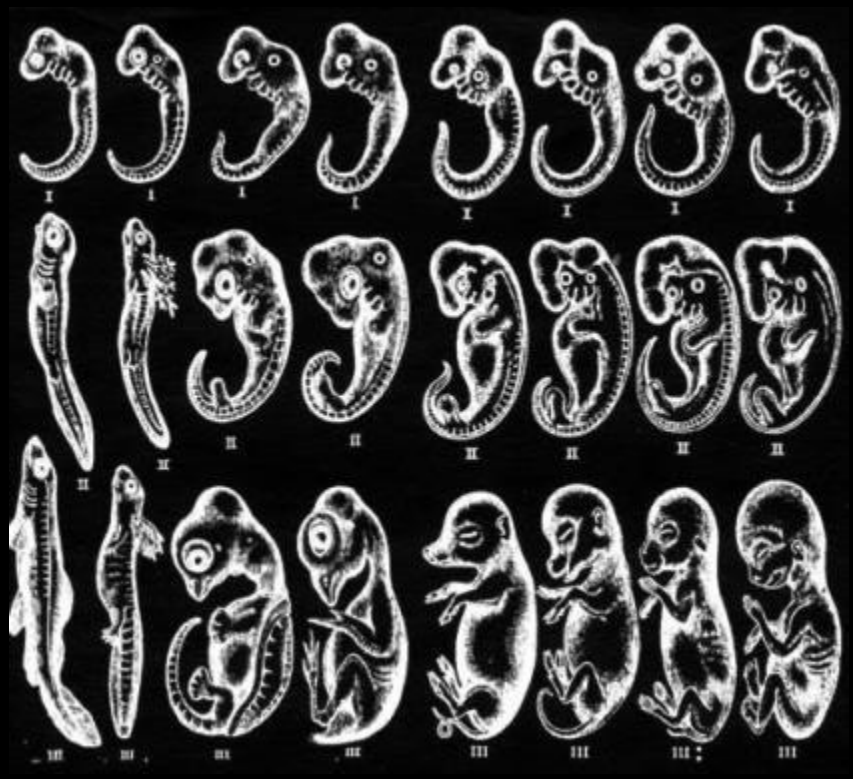
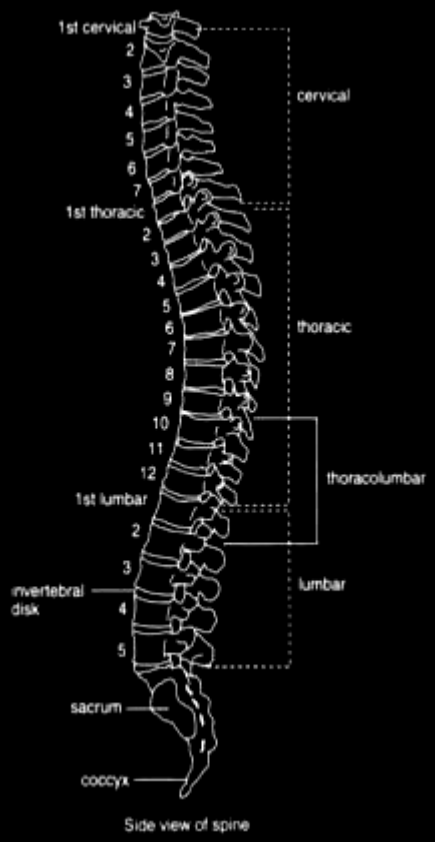
Evo-Devo

(Evolutionary Development Biology)

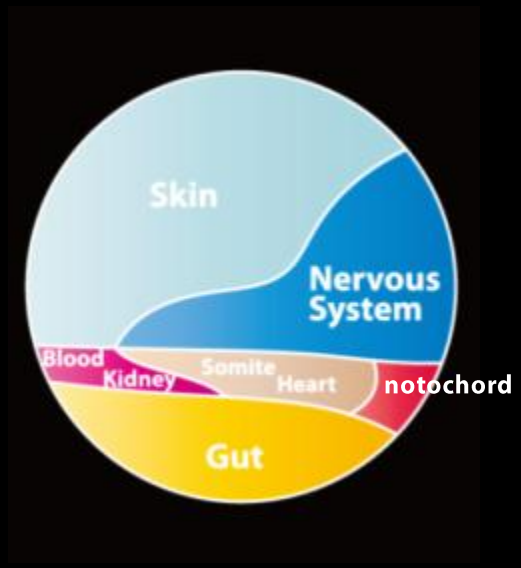
Embryo



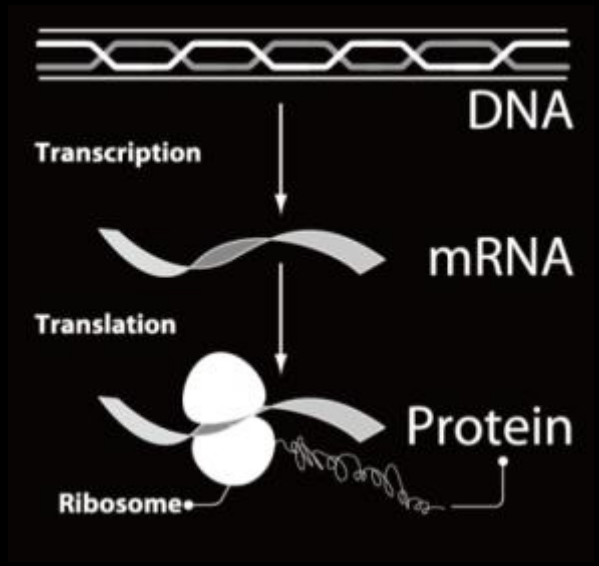
Form



Simple-Complex Logic



Geometry Rules



Switch and Trigger

Gene Regulation
DNA Logic

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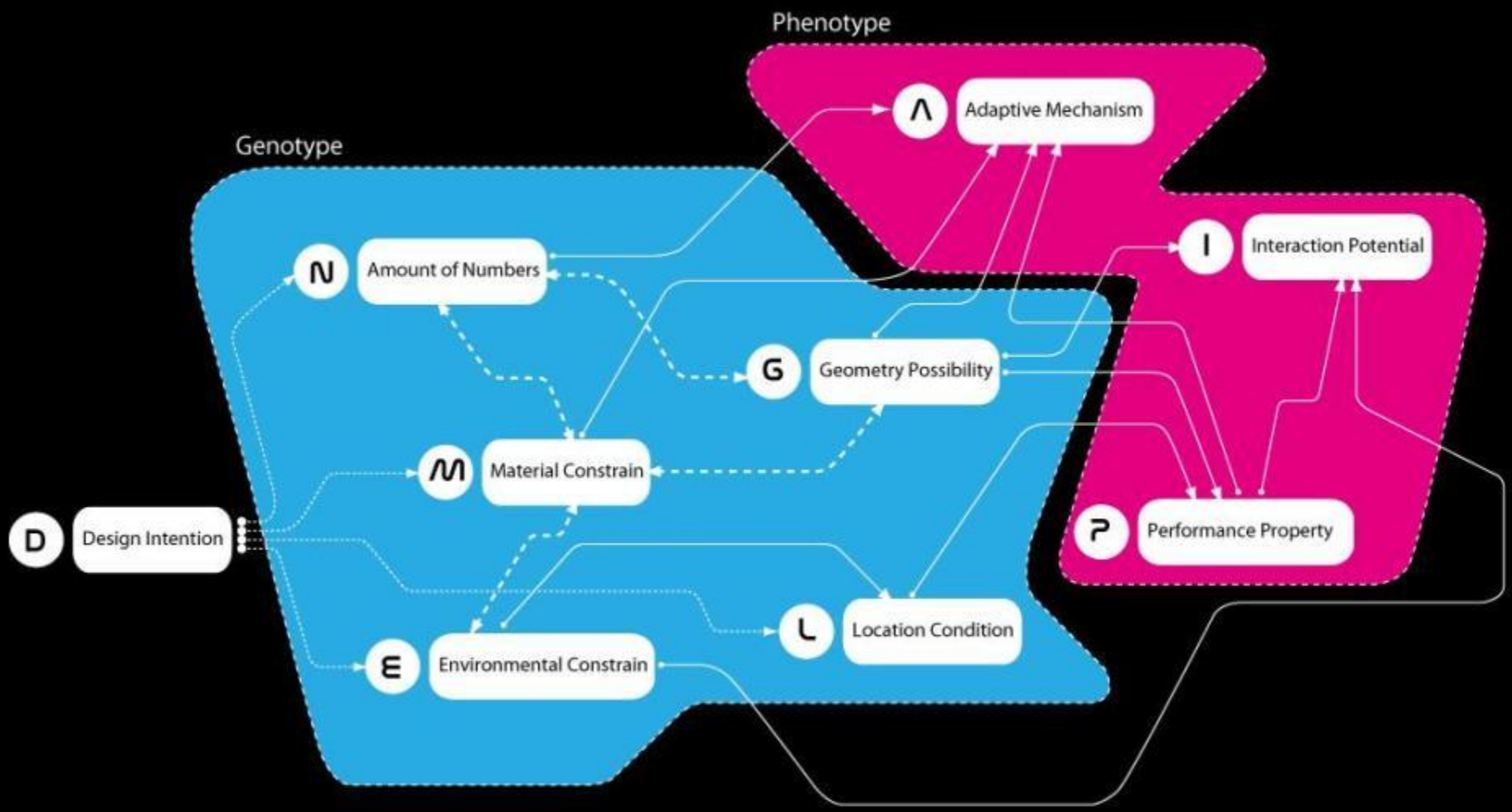

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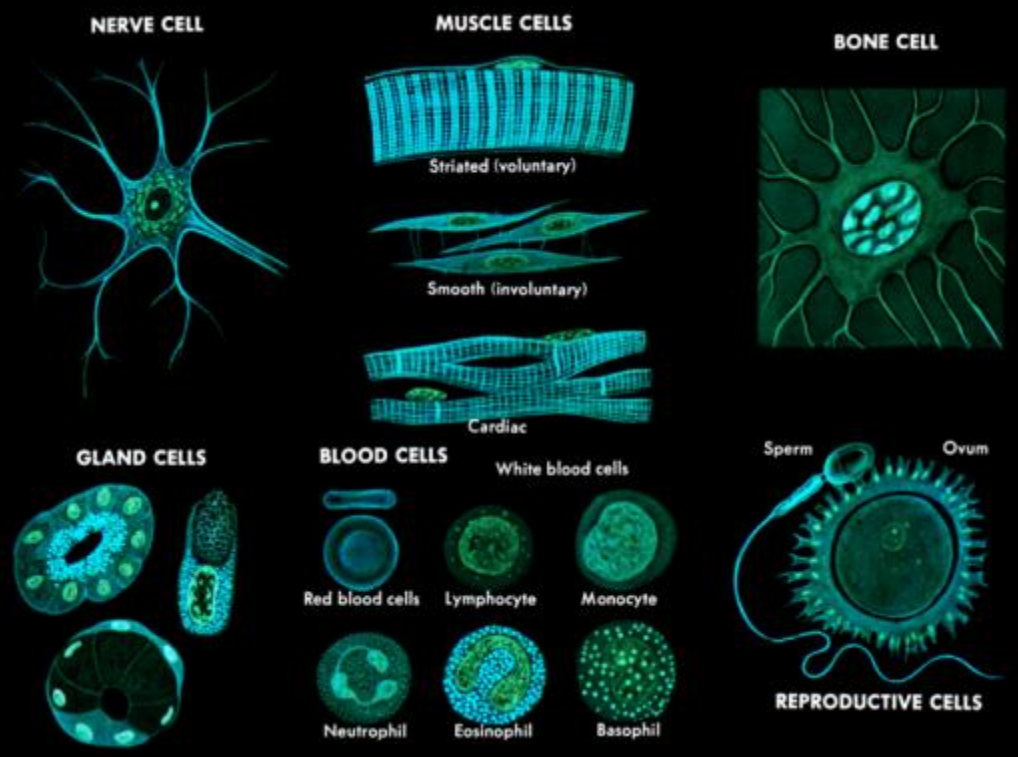
cellular differentiation



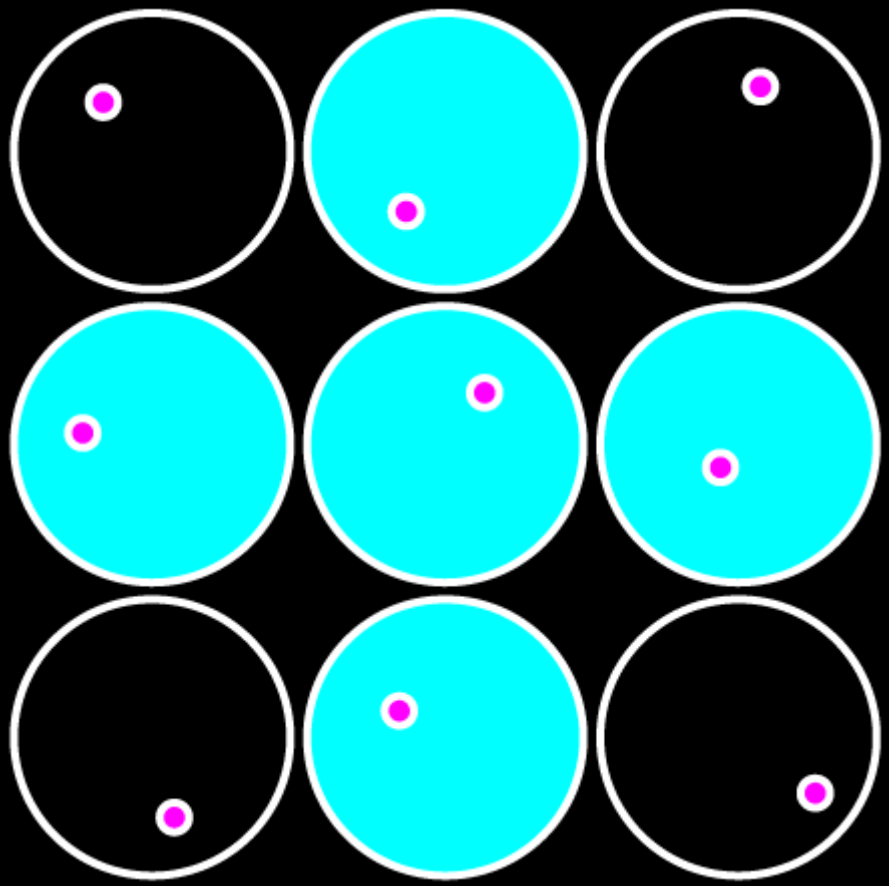
Regulation (expression) of cellular differentiation

1.0×10^{14}

10 trillion

Local

Signal Induction



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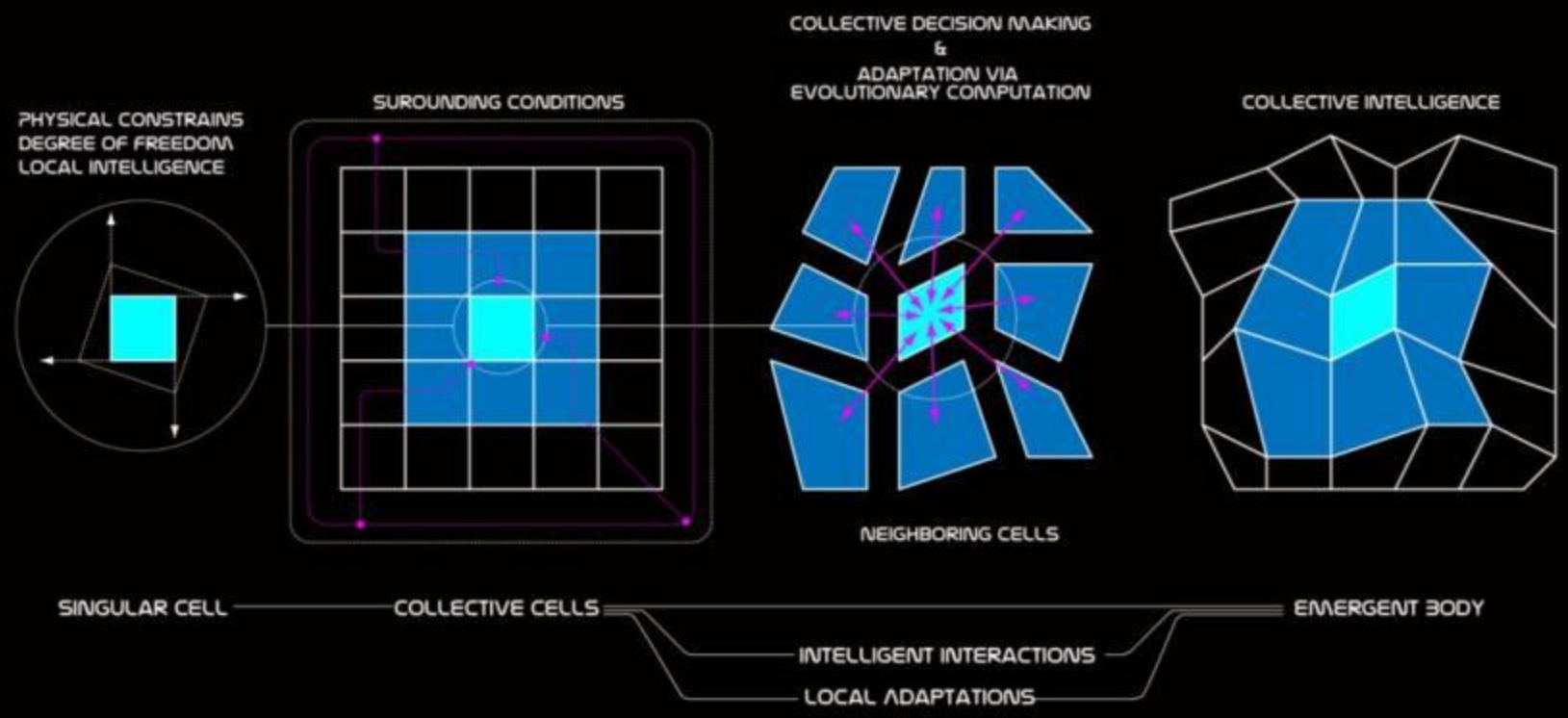

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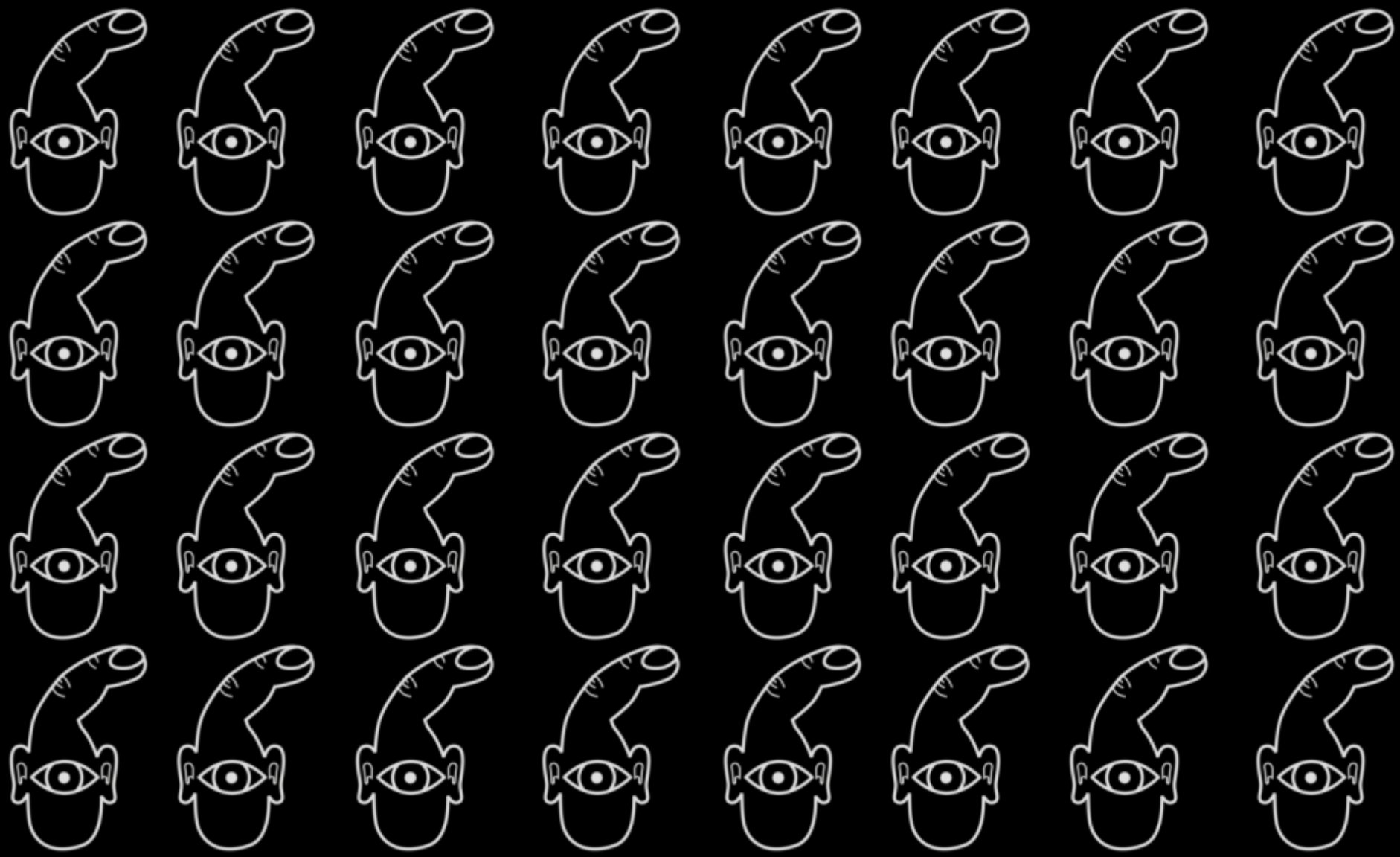
How the computer see us



REVERSE

Simple & Intuitive

No matter the device or gestures

HyperCell Development

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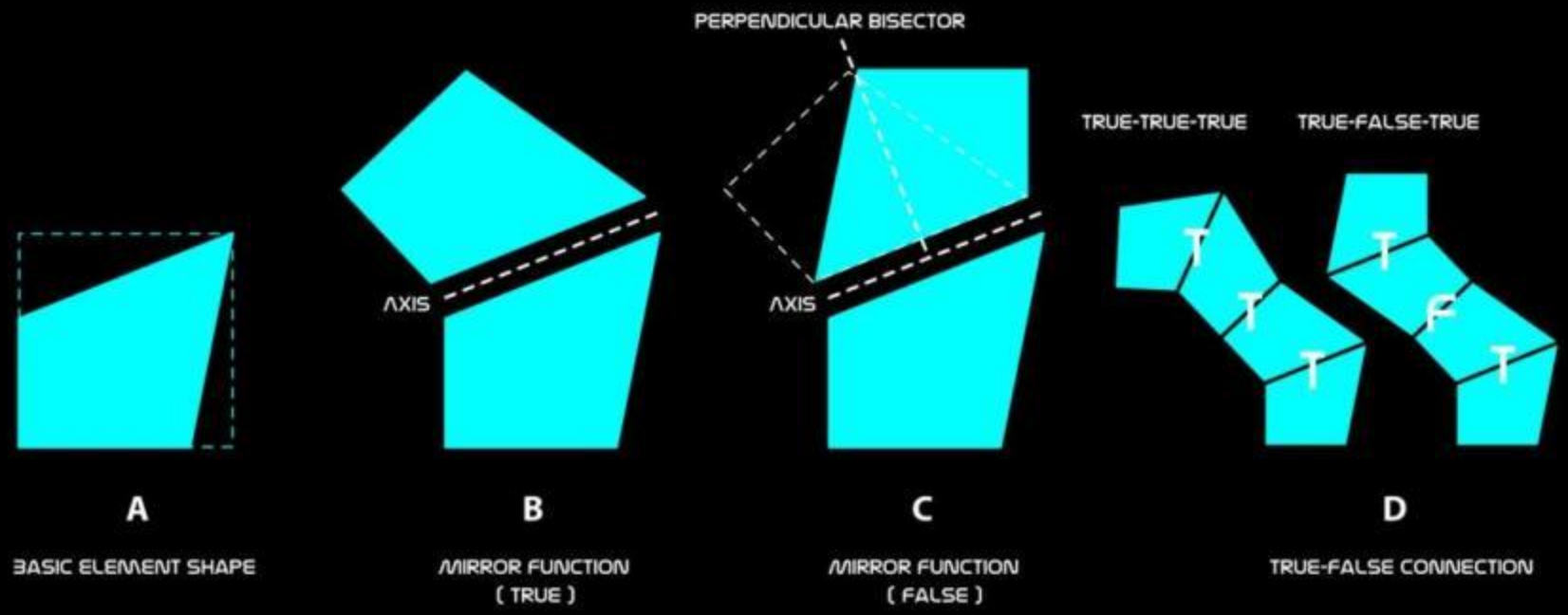

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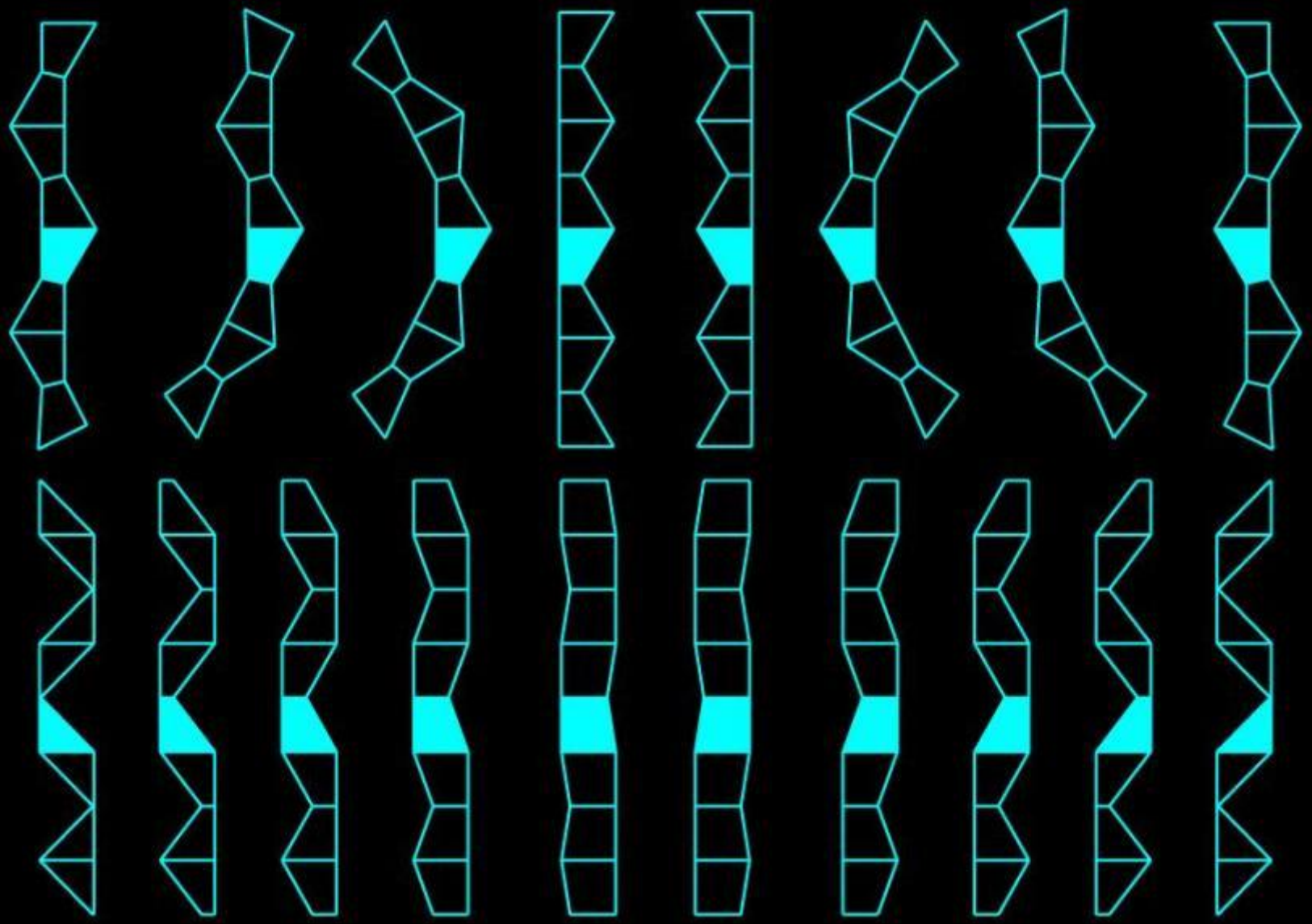

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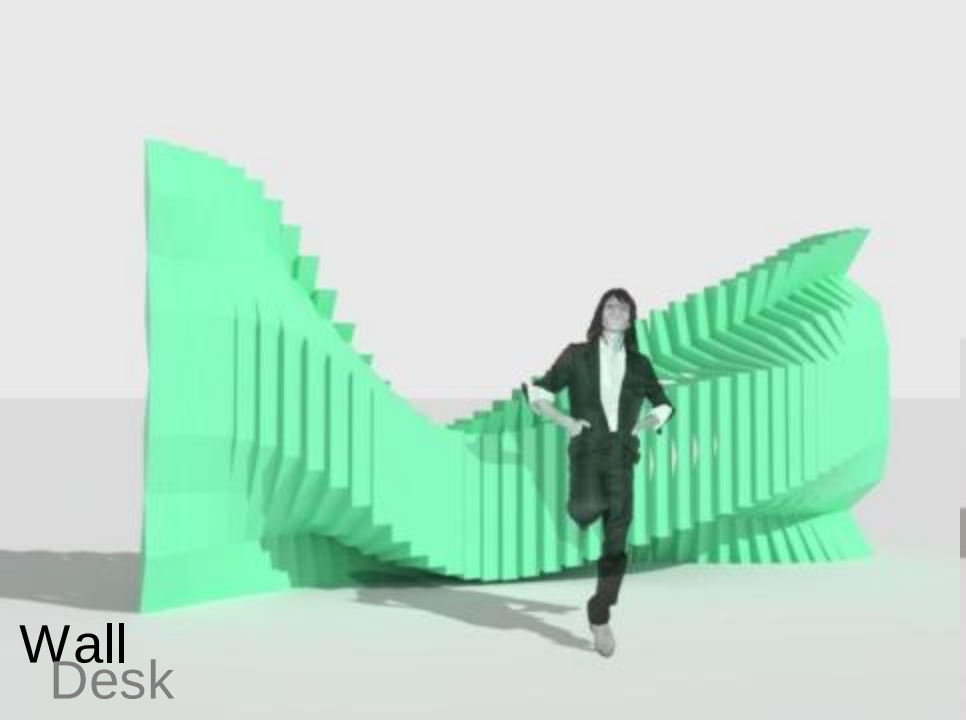
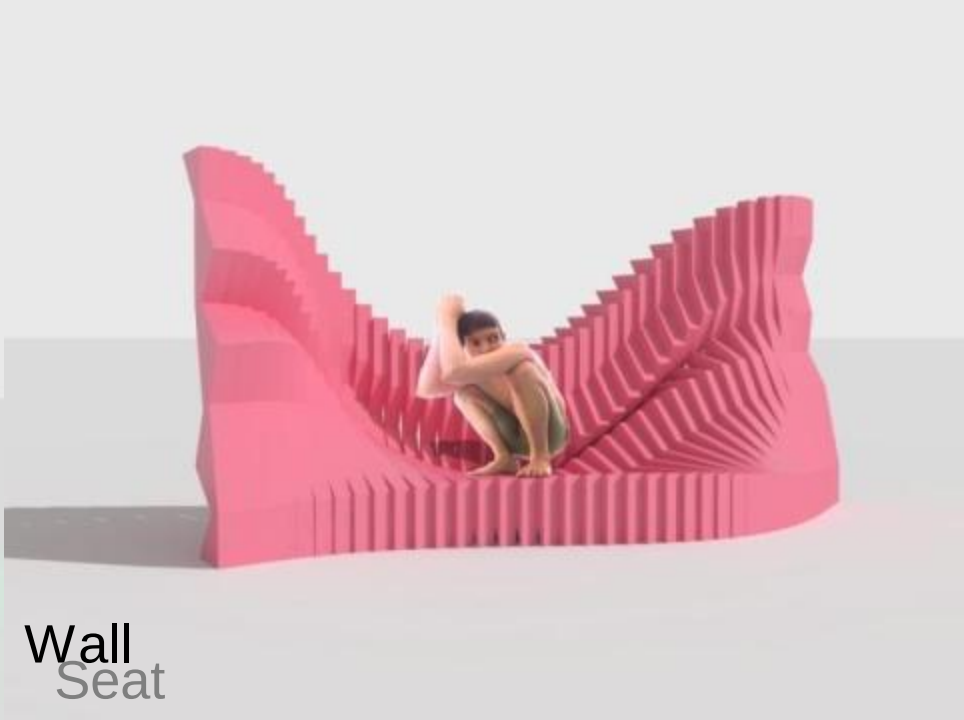
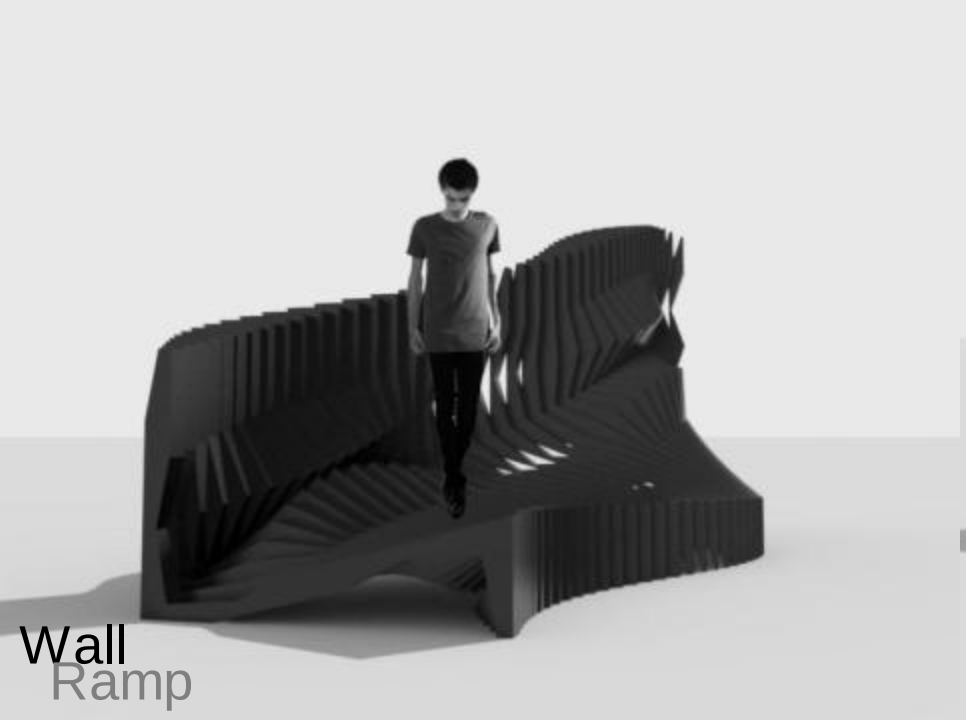
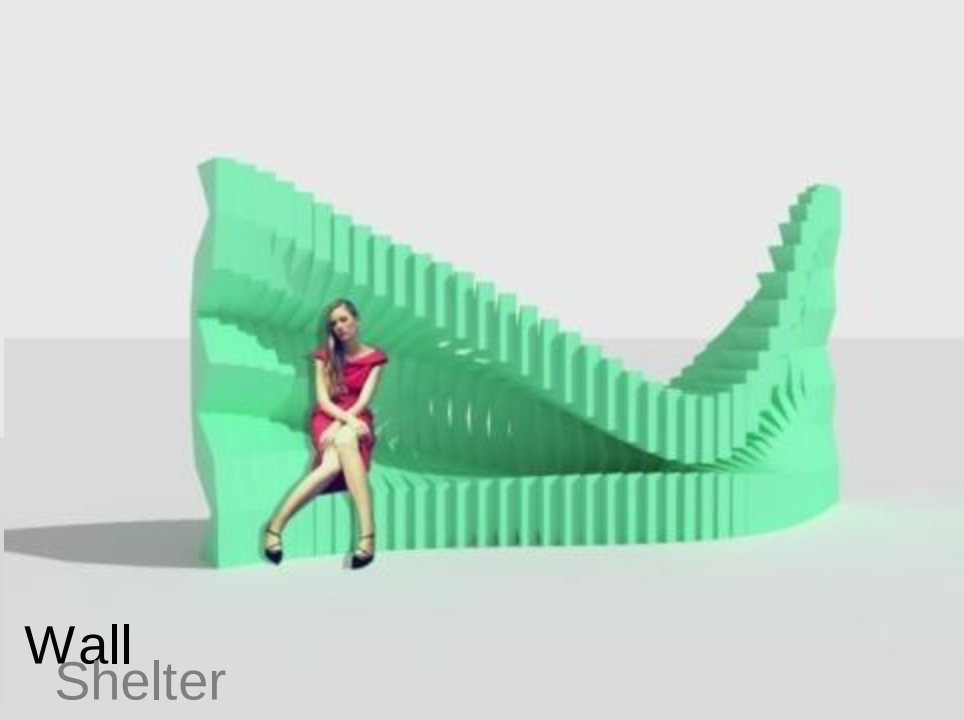

Wall
Desk


Wall
Seat


Wall
Ramp


Wall
Shelter

[Catalogue]

[Chair]

bench no.1	chair no.1	chair no.2
LogicDNA {}	{ 2,1,1,1,1 }	{ 1,4,1,1,1 }	{ 1,8,1,1,1 }
DimensionDNA []	[20,20,0,30] [20,20,20,30] [20,20,40,30]	[20,40,-10,20] [20,40,0,20] [20,40,20,20]	[20,40,10,20]
3D			

[Table]

table no.1	table no.2	table no.3	table no.3 (tatami)
LogicDNA {}	{ 5,1,1,1,1 }	{ 1,3,4,1,1 }	{ 1,3,4,6,9 }	{ 3,4,5,6,9 }
DimensionDNA []	[10,10,80,90]	[10,36,-24,26]	[2,16,-28,22]	[4,50,-40,10]
3D			

[Bed]

bed no.1	bed no.2	bed no.3	bed no.4
LogicDNA {}	{ 2,1,1,1,1 }	{ 3,6,1,1,1 }	{ 3,5,6,1,1 }	{ 3,4,5,8,1 }
DimensionDNA []	[25,25,0,50]	[20,40,-20,30]	[24,40,0,50]	[14,54,0,50]
3D			

[Wall]

wall no.1	wall no.2	wall no.3
LogicDNA {}	{ 1,2,6,1,1 }	{ 3,5,6,7,8 }	{ 1,3,4,5,1 }
DimensionDNA []	[12,52,-20,30] [16,46,-20,30] [16,40,-20,30]	[16,46,-20,30]	[40,60,-20,30]
3D			

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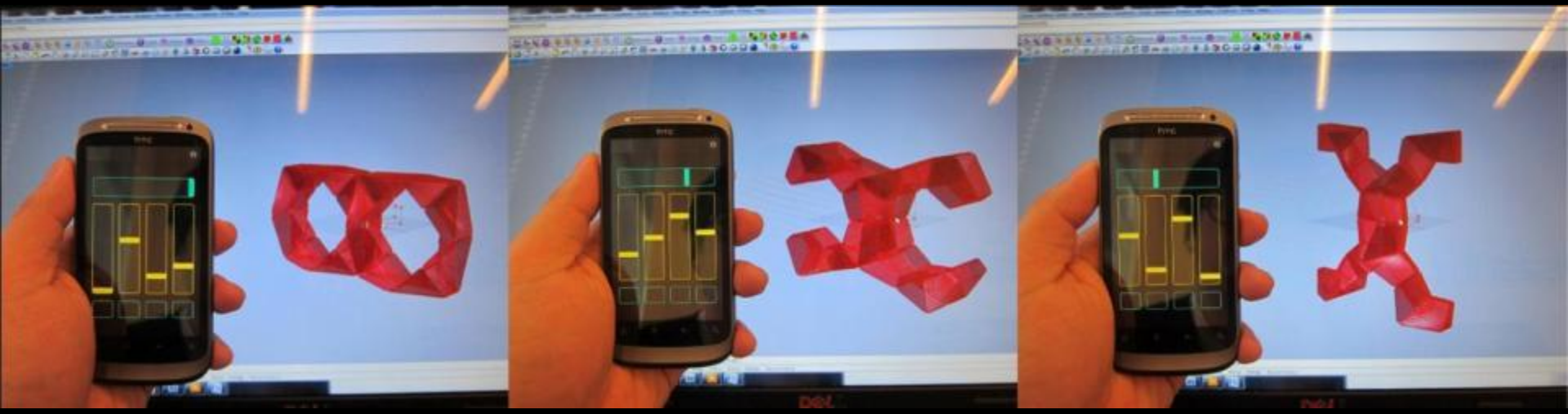

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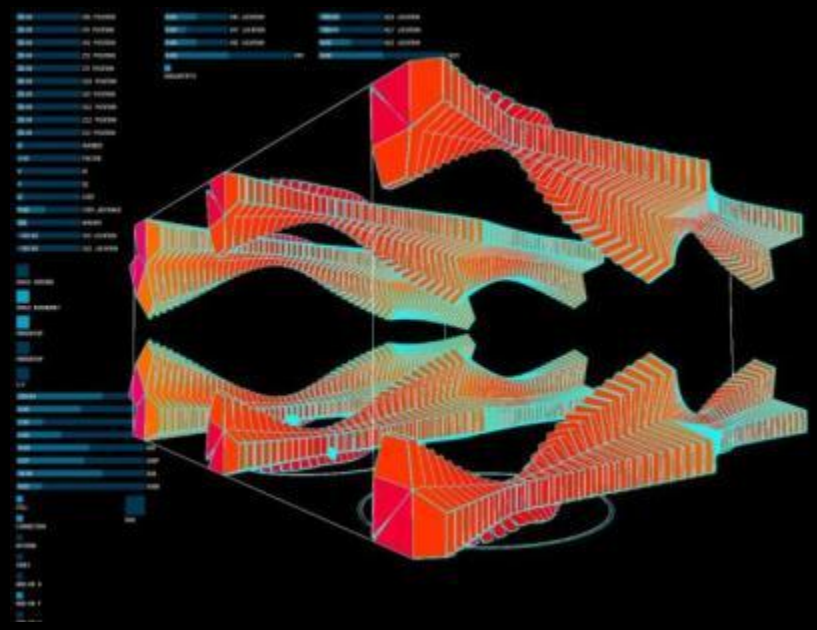

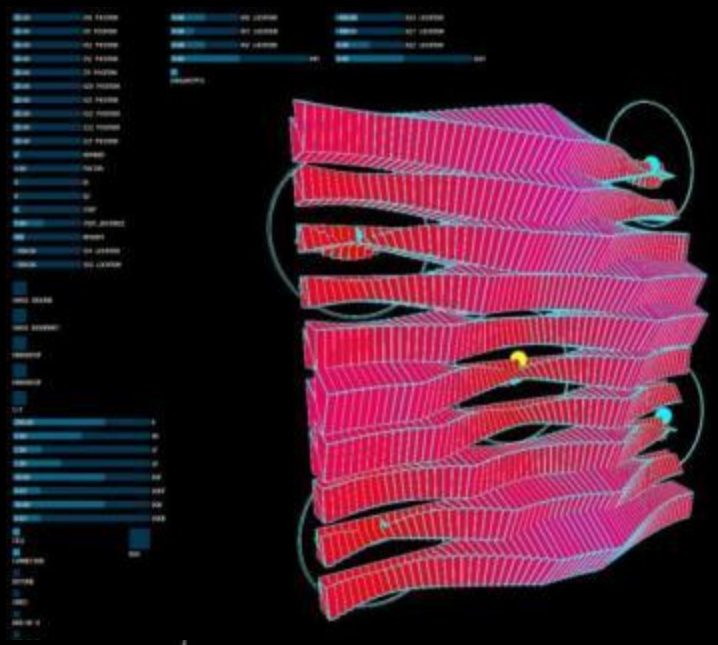

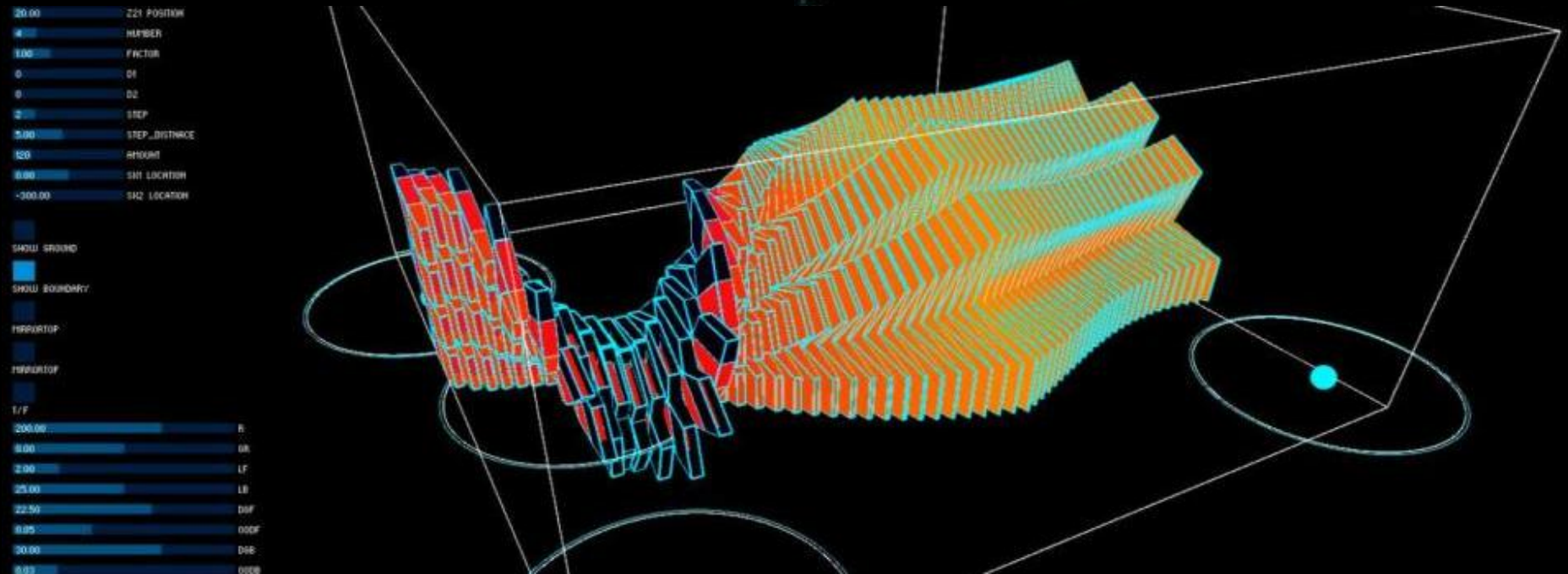


Dim 01
Dim 02
Dim 03
Dim 04
Amount
Step
Attraction
CHAIR
TABLE
BED
WALL
OTHER
RESET
SAVE
Chair NO.3

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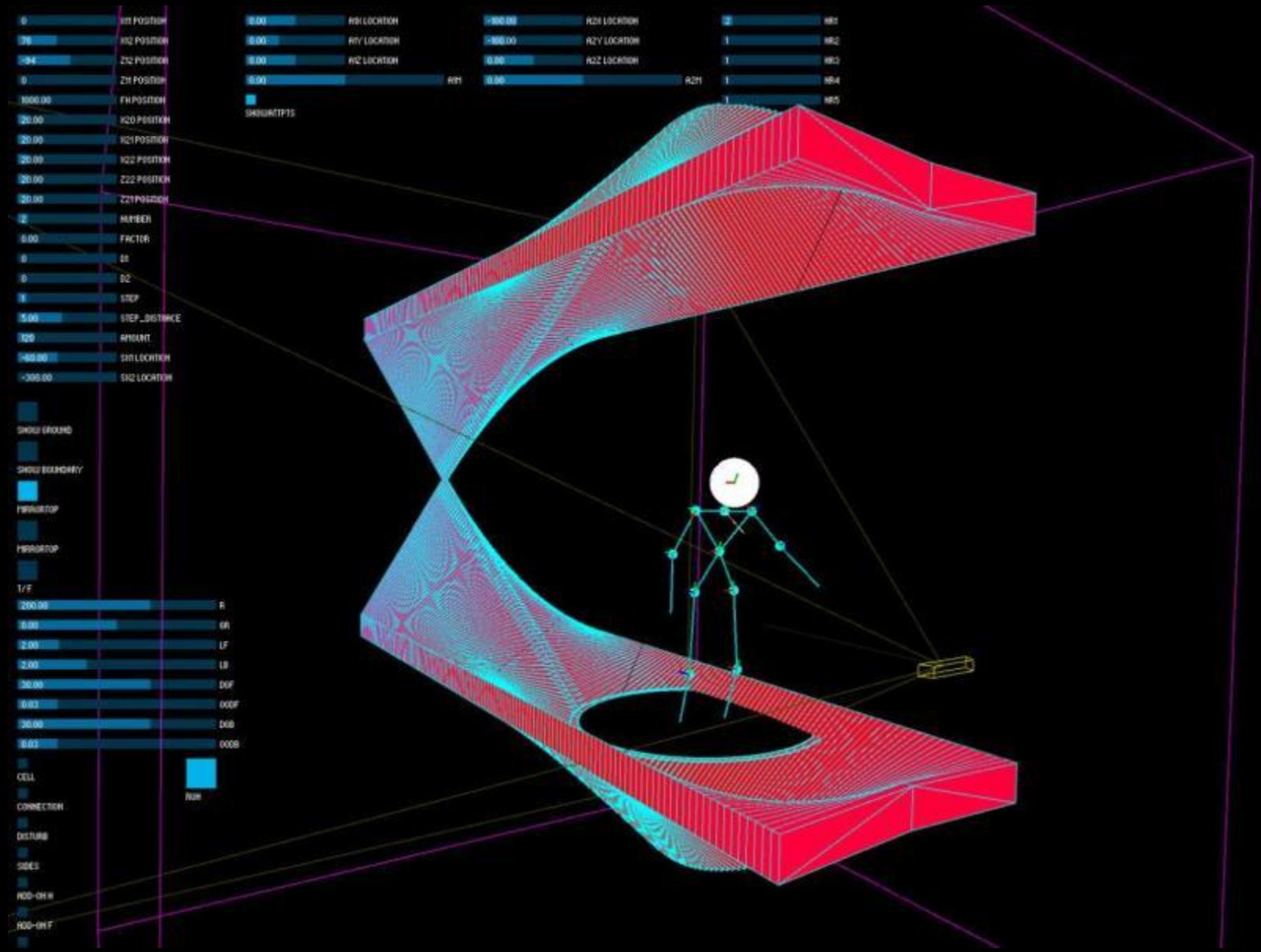

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