


# Can the map be the territory?

Visualization and realisation  
in artificial life

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# Visionary Alife

“Having myself seen thousands of pictures produced by cellular automata, I can recognise immediately from memory almost any pattern generated by any of the elementary rules—even though none of the other methods of perception and analysis can get very far whenever such patterns are at all complex”



- Stephen Wolfram, A New Kind of Science, p.621

# The Eye of the Beholder

“I know it when I see it”

- Justice Potter Stewart, on “obscenity”

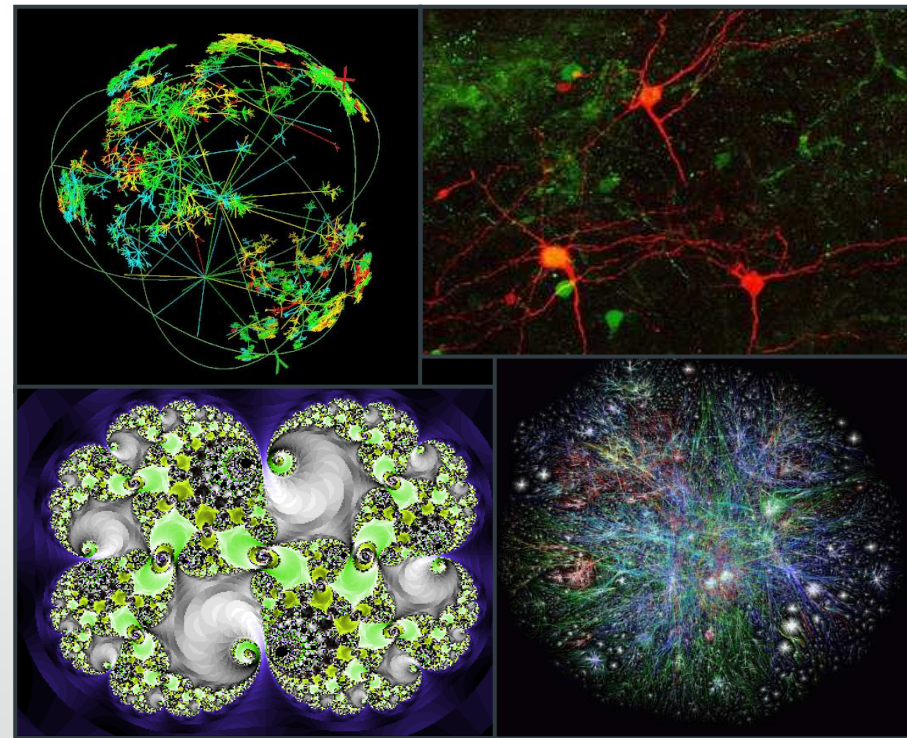


» Epistemologically loads *seeing* and therefore *visualization*.

Might Alife visualization be uniquely problematic as a result?

# To the Naked Eye...

- Visualizations may typically be snapshots aimed at stripping away, reducing, simplifying, disentangling, clarifying, etc.
- Complex systems resist this:
  - high-dimensional
  - dynamic
  - entwined
  - irreducible
- The mystery is the message



# Aims of Visualization

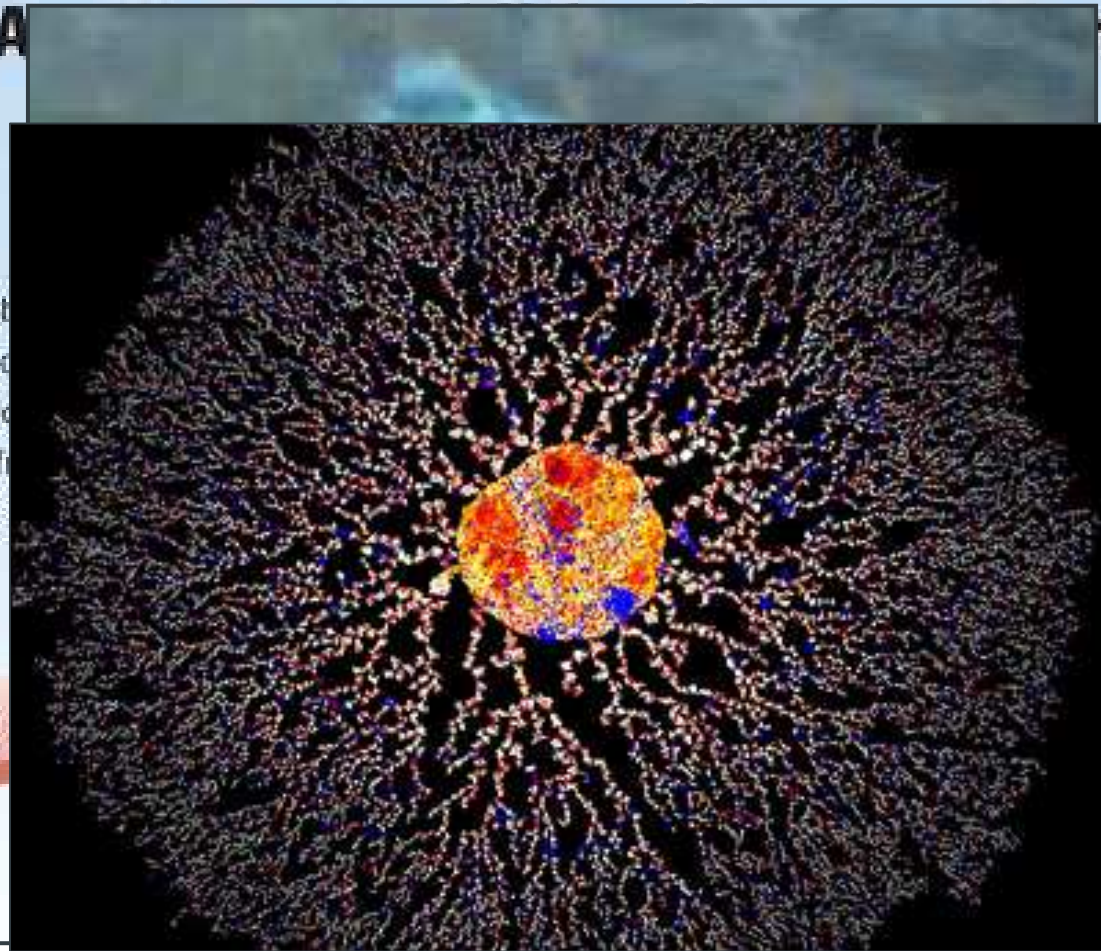
- Why

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**Engages?**

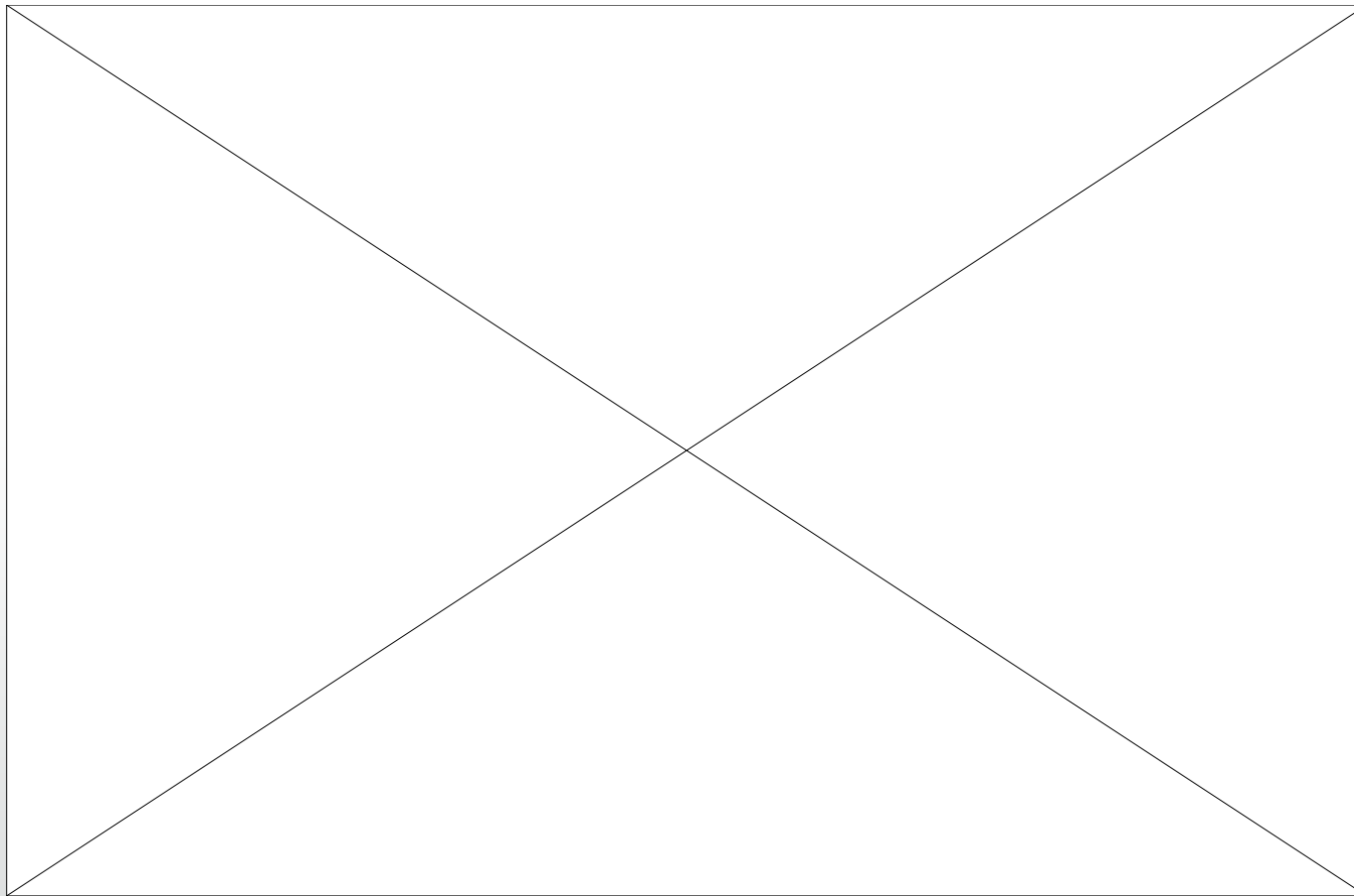


# Aims of Visualization

- What are the aims of visualization?
  - to bring the data to life
  - to recognize patterns and trends
  - to communicate the results
  - to improve the understanding of the system
  - the “art of the possible”
  - *real-time* visualization



# Reynolds' Boids



# Map-Territory Relation

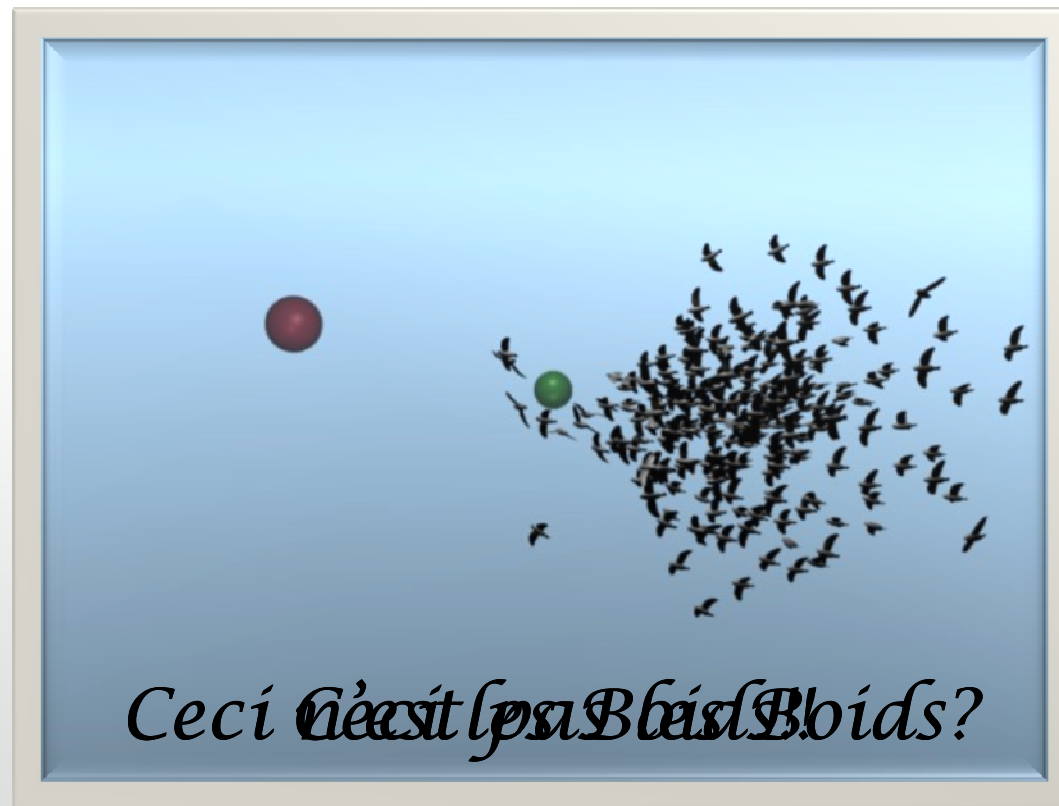
“A map is not the territory” - Alfred Korzybski, 1931.





# Map *and* Territory?

But a *Boids* movie is presented as *territory* – those *are* Boids.



# Where is the Flocking?

Where is the locus of the “emergence” of flocking?

(...or life, or other complex simulated phenomena...)

In the code?

On the screen?

Within an observer's mind?

If we just “know it when we see it”, then it must be the latter.

# And where is the Territory?

“Somebody went out with a retina ... and made representations which were then put on paper.

What is on the paper map is a representation of what was in the retinal representation of the man who made the map; and as you push the question back, what you find is an infinite regress, an infinite series of maps.

*The territory never gets in at all.”*

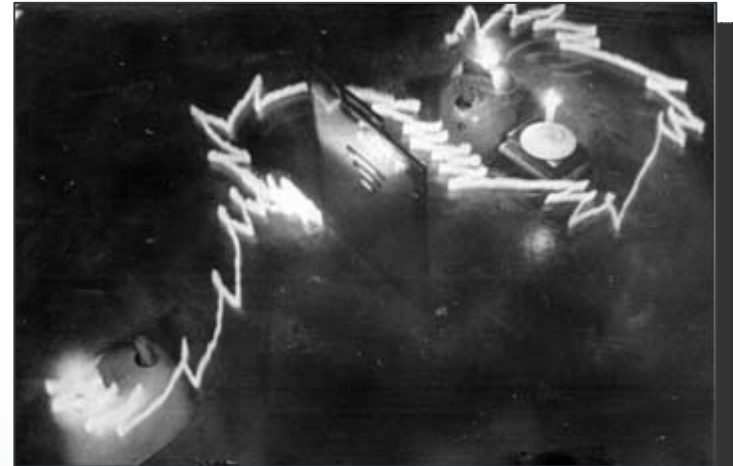
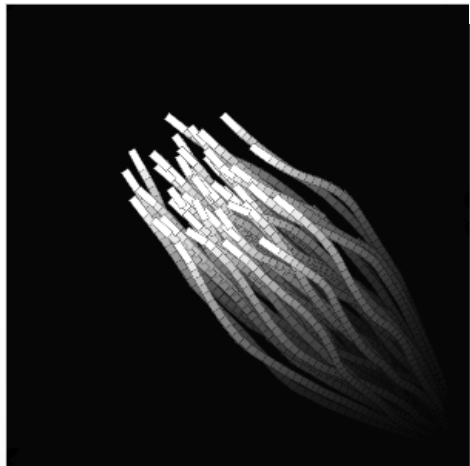
- Patrick Bateson,  
Steps to an Ecology of Mind, 1972

# Illusion

As the eye is not infallible, relying on an informal *psycho-visual* notion of “life” leaves us vulnerable to mass hallucination.



# Synthetic Constructs



Boids, oil droplets, Elmer and Elsie, etc. are constructs in the *psychological* sense as much as the *engineering* sense.

Models teach us about the world *indirectly* by shedding light on *ideas* about the world. “Living” artefacts may only change what we know of life by *changing the way that we see it*.



Thank you

