# Artificial Intelligence

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# Open Questions

- What is the fundamental difference between human brains and computers?
  - Both mechanical devices
  - Both obey the laws of Physics
- What is creativity? Can a computer be creative?
- Is a running program limited by the programmer who wrote it?
- For a computer to do anything, it must be programmed to do it, right?

# Blank's Philosophy of AI

- Nothing fundamentally different between computers and brains
- Humans are computers
- Anything a human does, a computer could be programmed to do the same
- Creativity is a careful balanced between random and order; between new and old
- Computers can be creative
- We are on the verge of the “singularity”

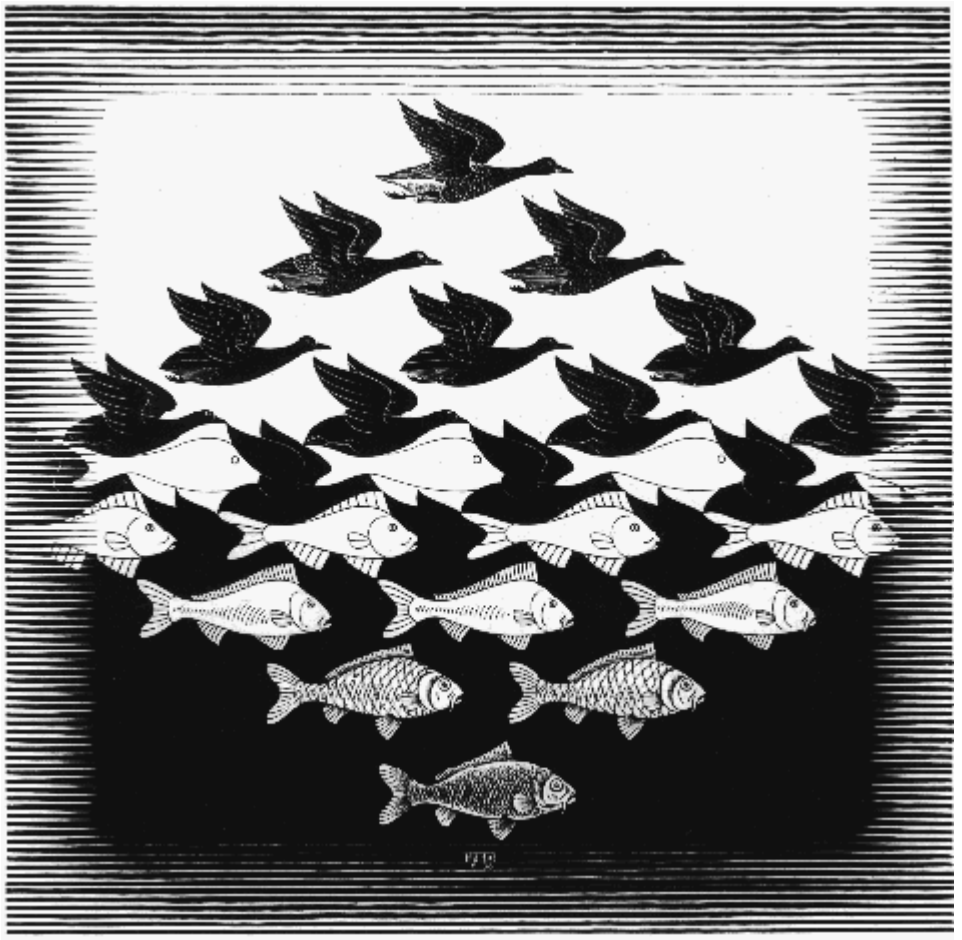
# Emergent, Developmental Intelligence

- Computers need to experience the world, and build their own representations
- Computers need to go through developmental stages

But how?

# Biological Metaphors

- Evolution
- Learning



# Evolution

- “Programs” are represented by a list of numbers
- Each number represents an argument to a function
- A “fitness” value is assigned to each list based on how well it performs
- Lists are selected, recombined, and eliminated based on their fitness value
- Examples:
  - Antennae design, game playing, any task

# Learning

- Artificial Neural Networks
- Many small, interacting units
- Can be “trained” and learns from experience
- Can develop their own representations
- Examples:
  - Credit scores, driving a car, optimizing a function (fuel consumption), any input/output problem

# Downsides to Alternative AI

- Can't predict how well it will do
- May not understand why it does what it does
- May take a long time to evolve/learn
- Can't prove anything about performance/behavior

Just like people!