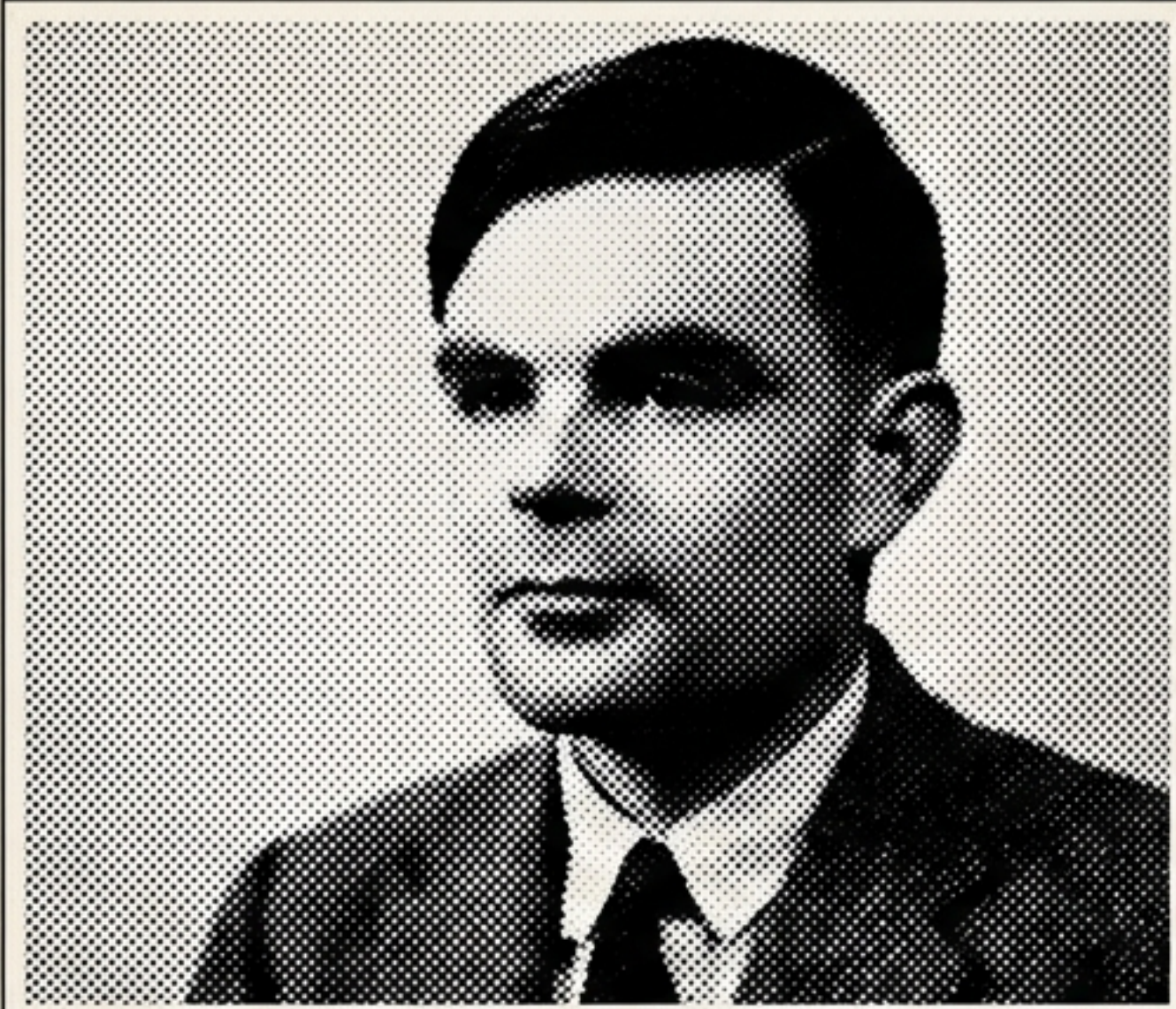


A History of Artificial Intelligence

From the Turing Test to Transformers: The Winters, Springs, and Milestones.



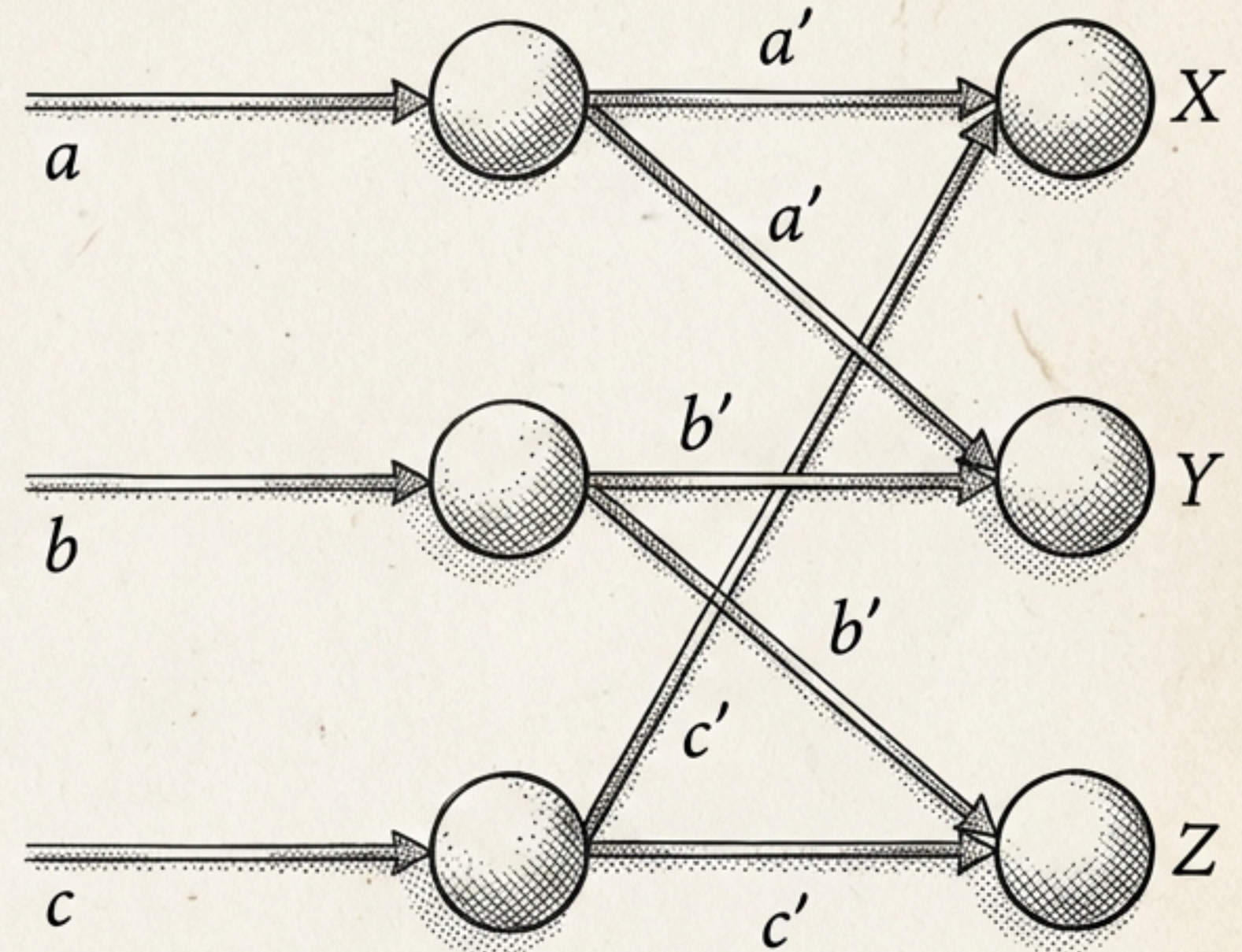
The Imitation Game (1943–1950)

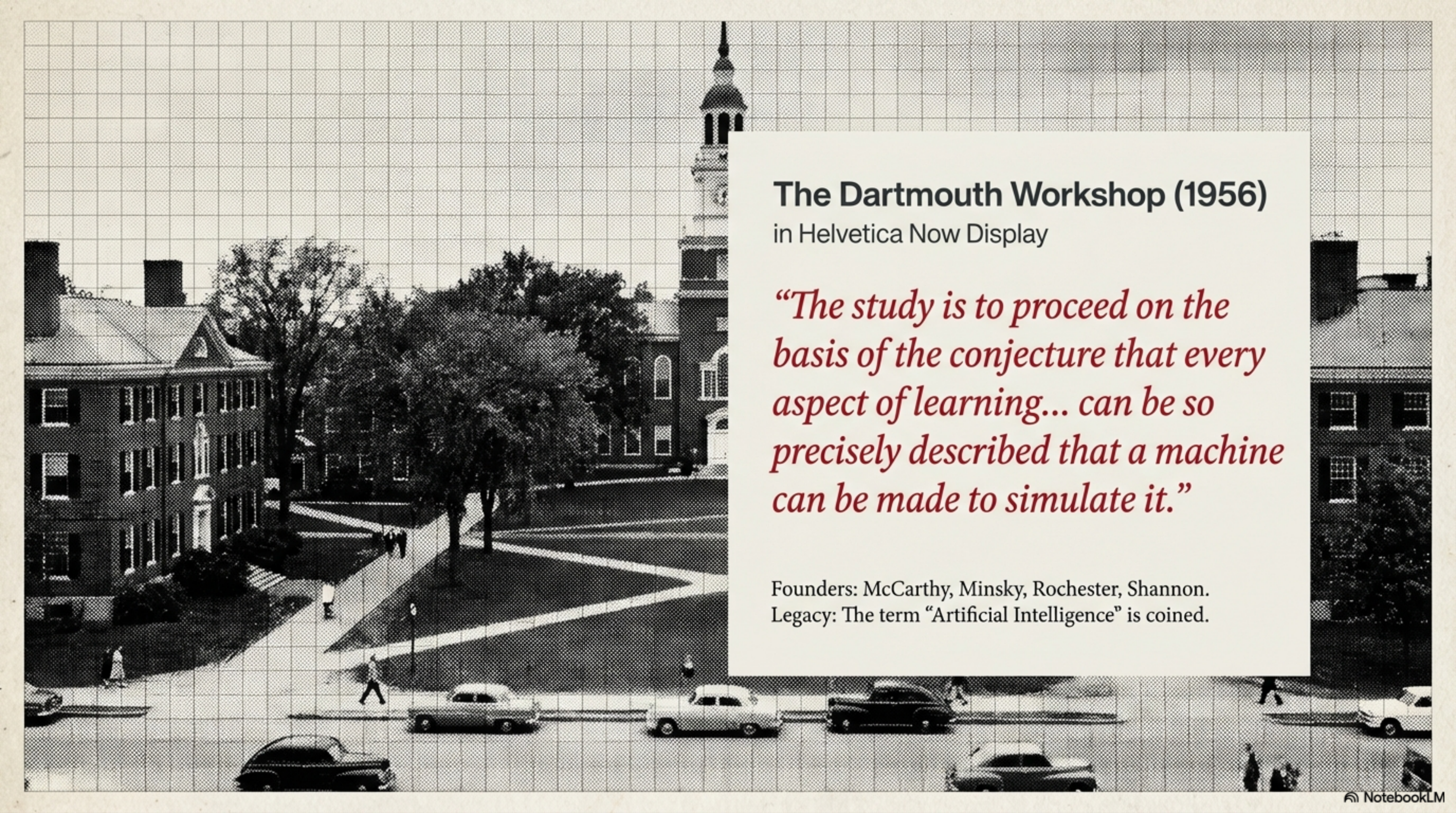


1943: McCulloch & Pitts propose the first mathematical model of an artificial neuron.

1949: Hebbian Learning: “Cells that fire together, wire together.”

1950: Turing publishes *Computing Machinery and Intelligence*.





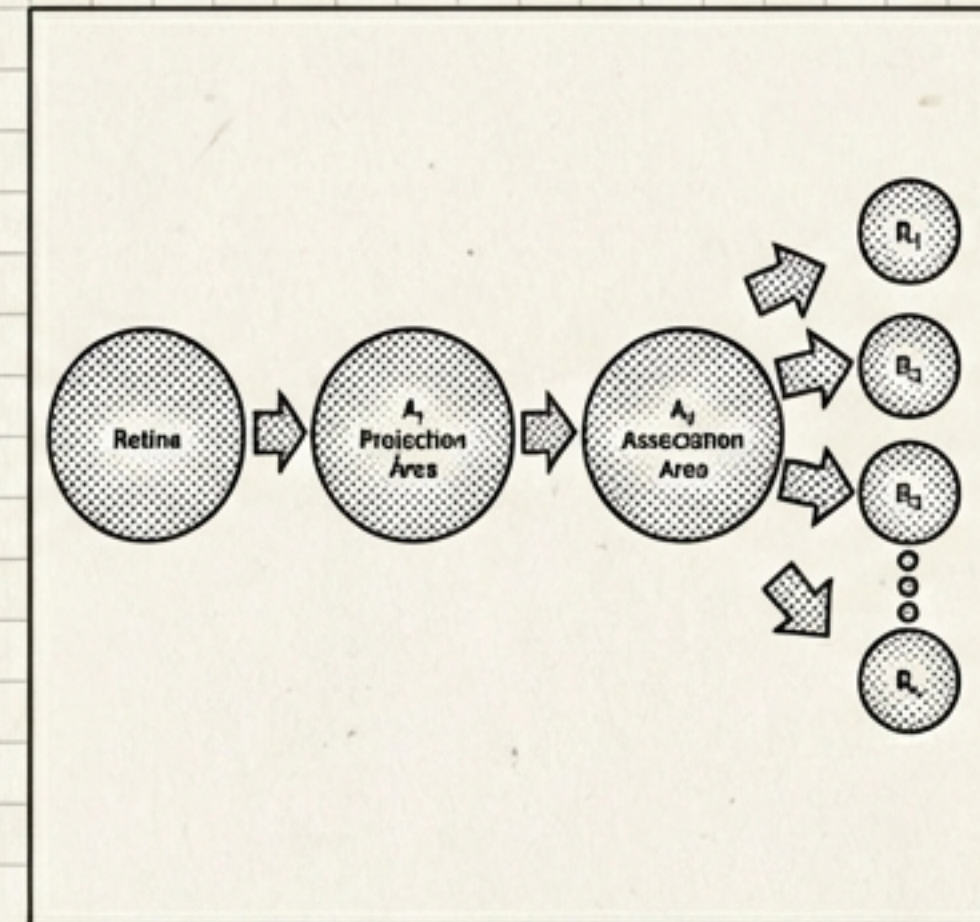
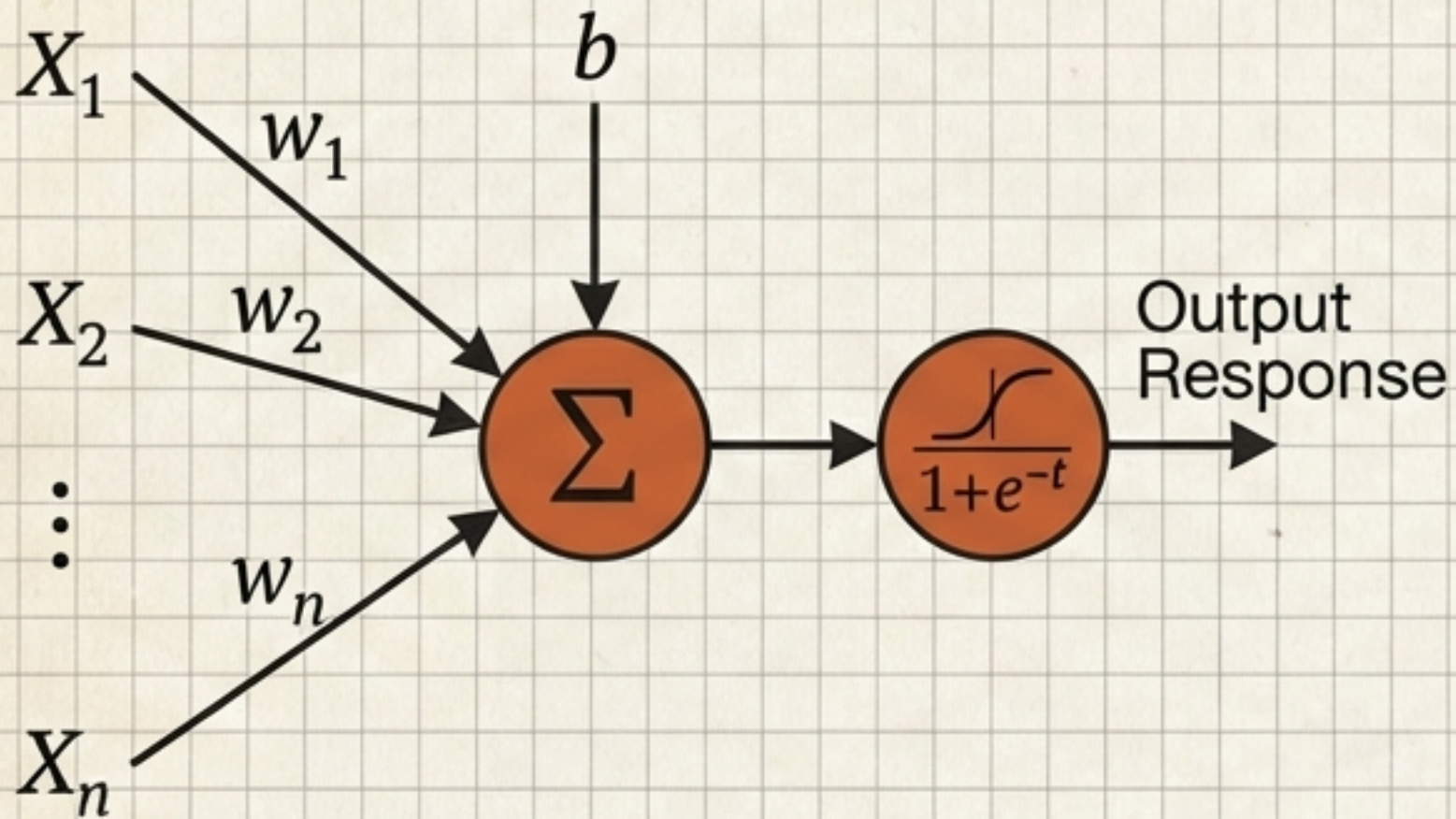
The Dartmouth Workshop (1956)

in Helvetica Now Display

“The study is to proceed on the basis of the conjecture that every aspect of learning... can be so precisely described that a machine can be made to simulate it.”

Founders: McCarthy, Minsky, Rochester, Shannon.
Legacy: The term “Artificial Intelligence” is coined.

Great Expectations (1956–1974)



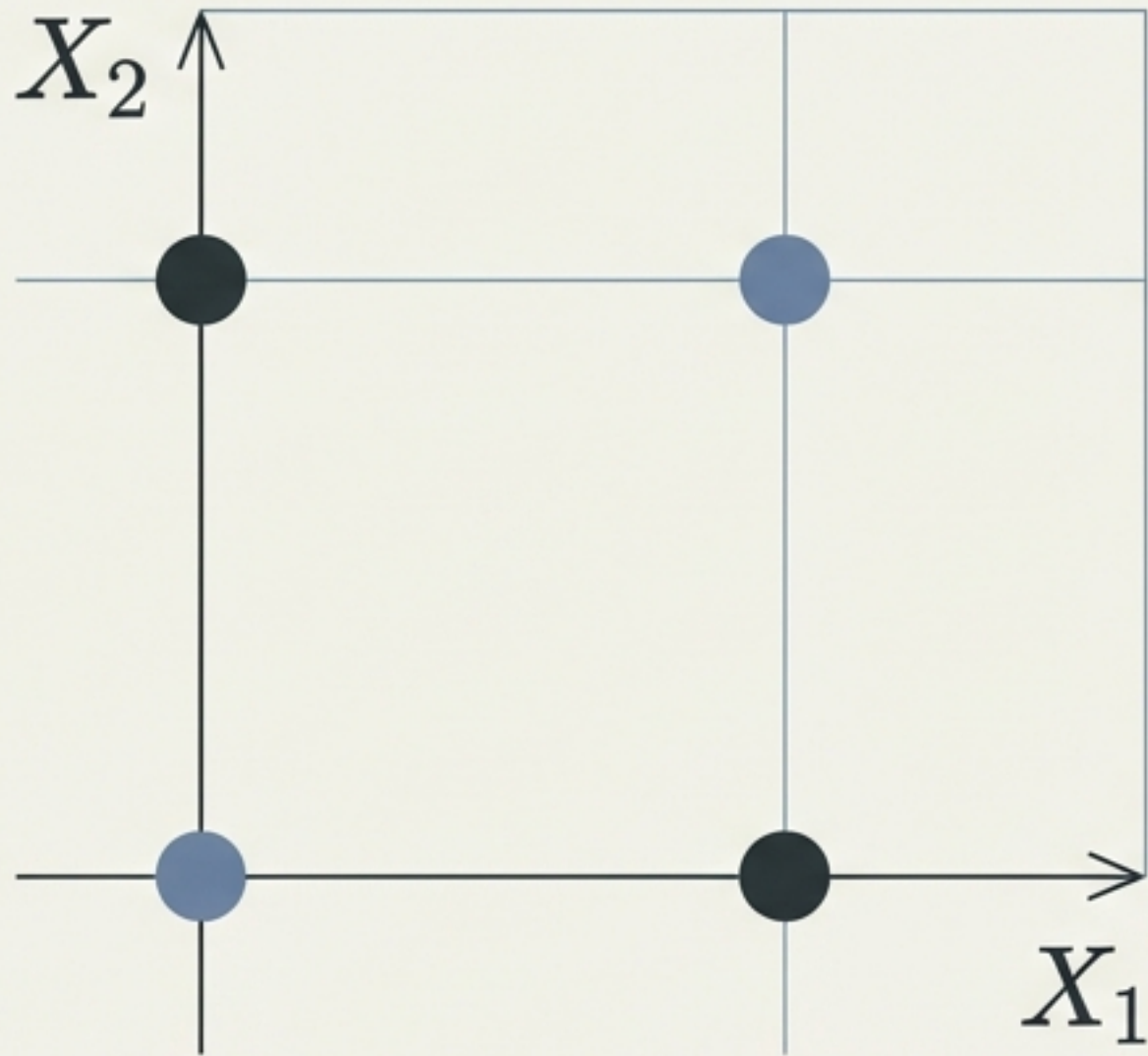
Symbolic AI: The dominance of logic and symbols.

1958: Rosenblatt's Perceptron hardware.

1966: ELIZA chatbot simulates therapy.

Prediction: Herbert Simon claimed machines would surpass humans in 20 years.

The First AI Winter (1974–1980)

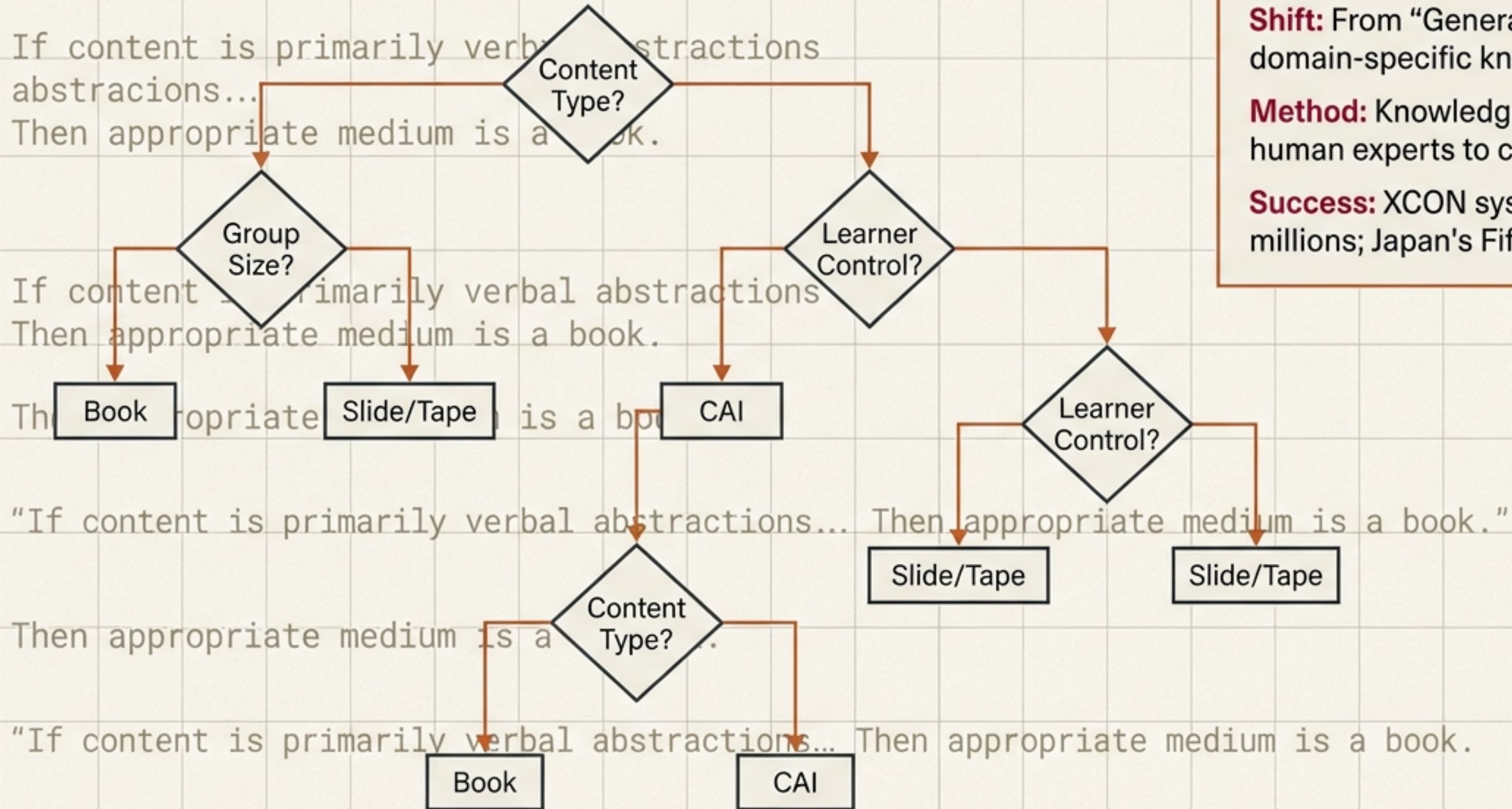


The Trigger: Minsky & Papert's Perceptrons (1969) proved single-layer networks couldn't solve XOR.

The Lighthill Report (1973): Harsh critique led to funding cuts in the UK.

Result: Neural network research abandoned for a decade.

The Expert Systems Boom (1980–1987)

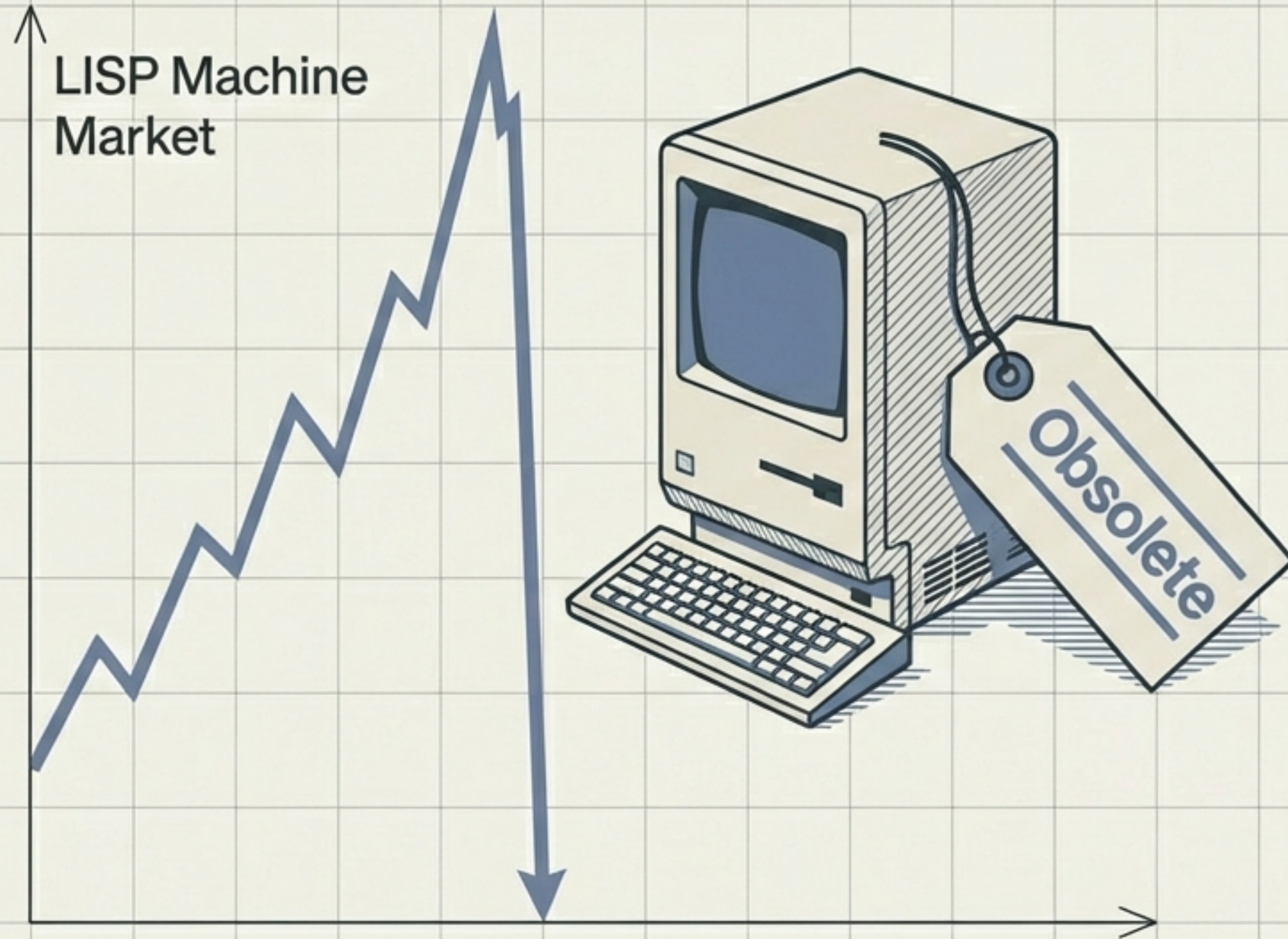


Shift: From “General Intelligence” to domain-specific knowledge.

Method: Knowledge Engineers interviewed human experts to code If-Then rules.

Success: XCON system saved DEC millions; Japan's Fifth Generation Project.

The Second Winter (1987–1993)



The Problem: Expert systems were brittle and expensive to maintain.

The Crash: Specialized AI hardware lost to generic PCs (Moore's Law).

The Rebrand: "AI" became a stigma; researchers used "Machine Learning" instead.

Deep Blue (1997)



Man vs. Machine

IBM's Deep Blue defeats World Champion Garry Kasparov.

Tech: Brute force calculation (200 million positions per second).

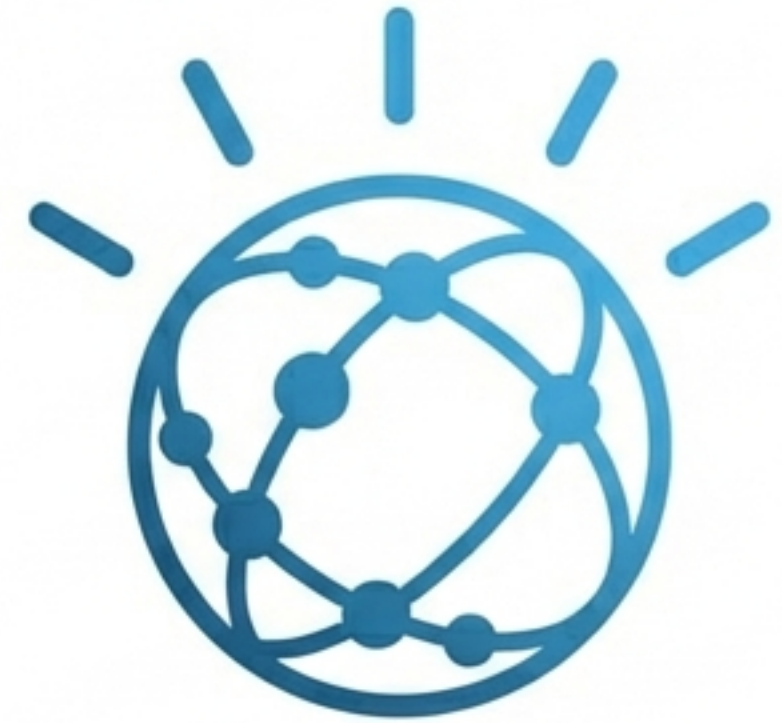
Significance: Strategic complexity mastered without “thinking”.

Big Data & Probability (2000s–2011)



2002: Roomba (Autonomous robotics in the home).

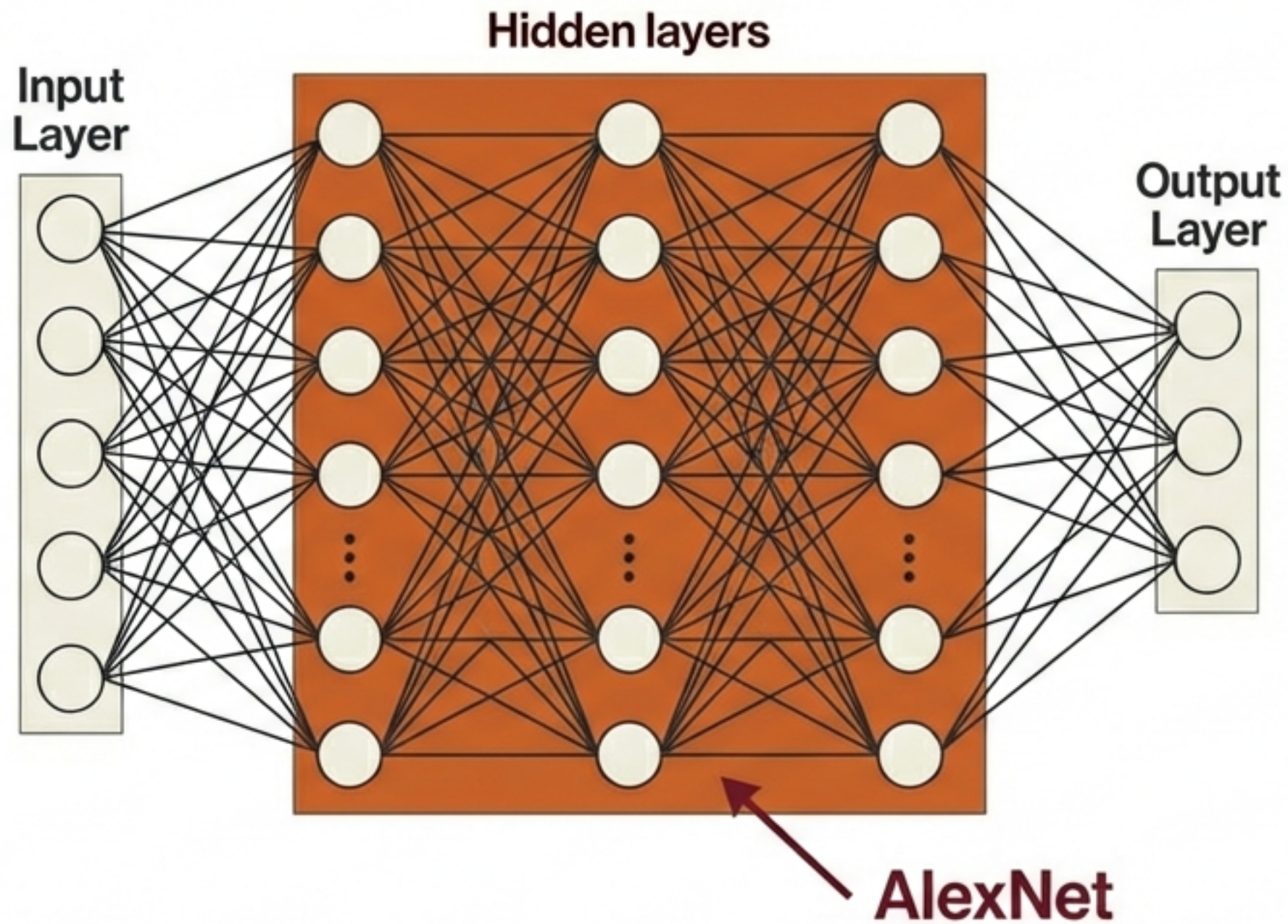
The Shift:
From Logic Rules
to Statistical
Probability.



Watson

2011: Watson wins Jeopardy!
(Natural language via statistics).

The Deep Learning Revolution (2012)



Previous best: 26%

ImageNet Error
Rate: 15.3%

The Trinity of Success:

1. Algorithms
(Backpropagation/Deep Learning)
2. Big Data (ImageNet)
3. Compute (GPUs)

AlphaGo & Intuition (2016)

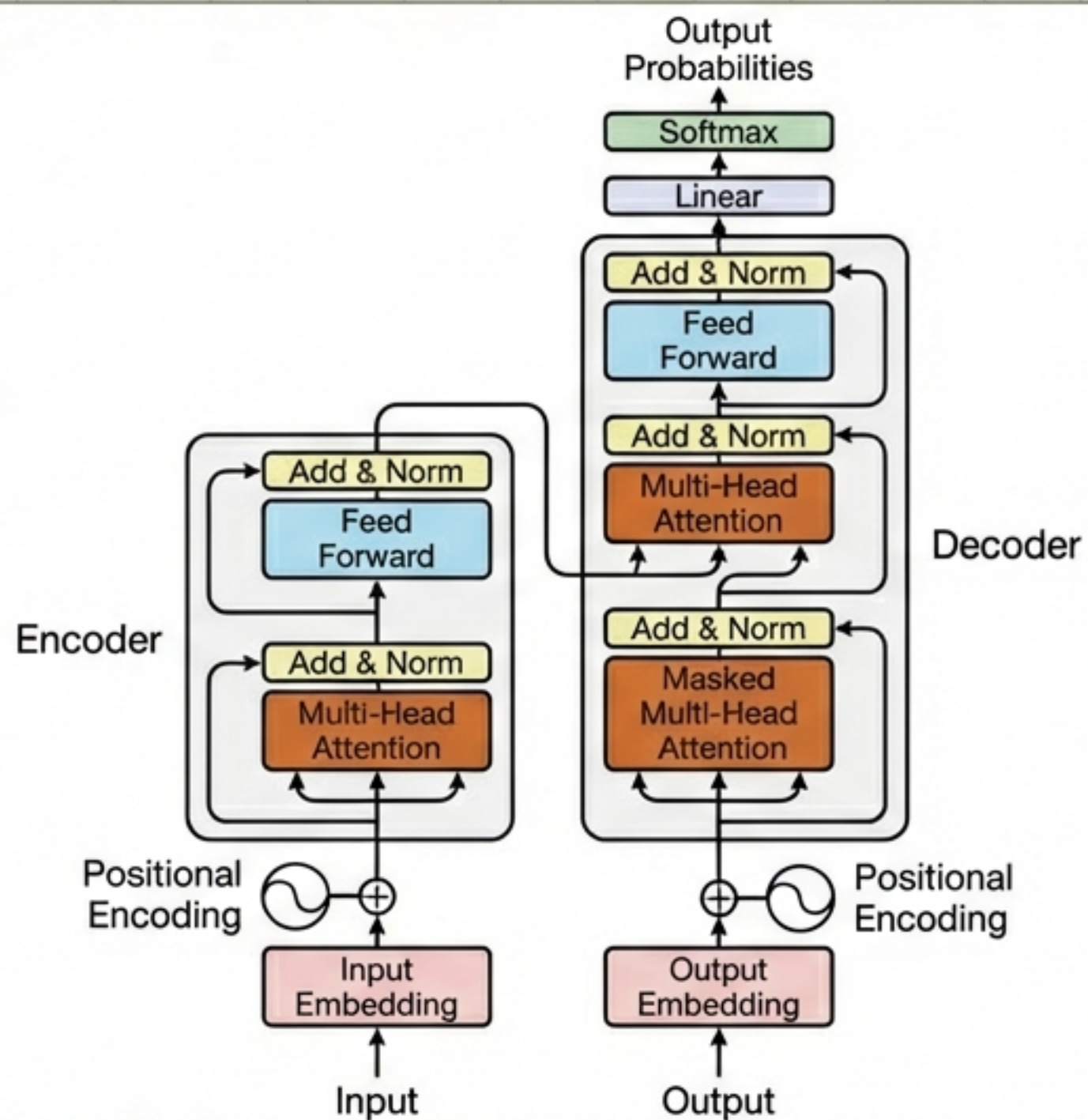


Challenge: Go has more positions than atoms in the universe.

Solution: Deep Reinforcement Learning (Self-play).

Result: Defeated Lee Sedol 4-1. Move 37 was seen as “creative” and “divine”.

'Attention Is All You Need' (2017)



- **The Innovation:** Self-Attention mechanisms.
- **Breakthrough:** Allowed parallel processing of entire sentences, replacing sequential RNNs.
- **Impact:** The Foundation of GPT (Generative Pre-trained Transformer).

The Generative Spring (2020s)

```
import torch
import torch import reaps

model = GPT2LMHeadModel.from_pretrained("gpt2")
model = GPT2LMHeadModel.from_pretrained("gpt2")

output = model.generate(
    "prefersent": "methods",
    "prefertend_torm": "ltred_a [a]", segments
)
print(tokenizer.decode(output[0]))
```

CODE SNIPPET: GPT-3



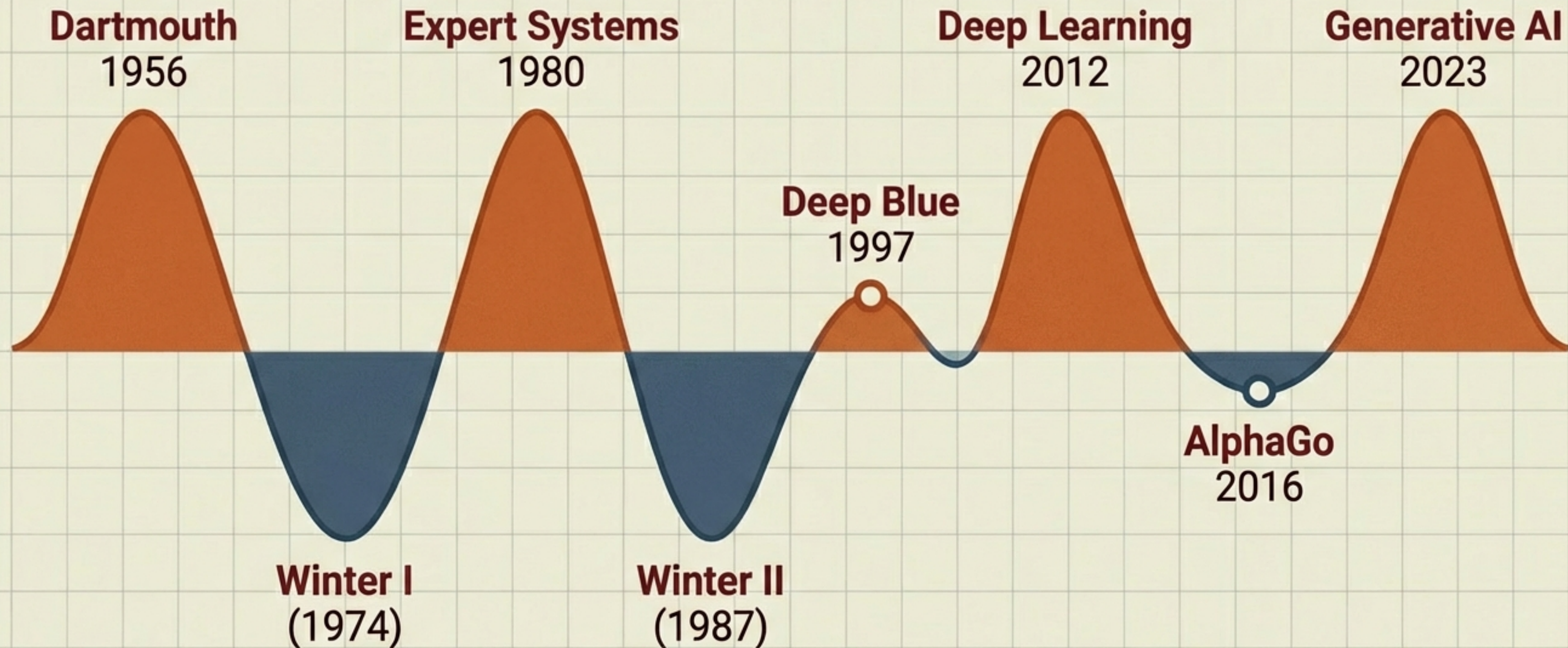
DALL-E/MIDJOURNEY: SURREAL CREATION

How can I help you today?

CHATGPT: CONVERSATIONAL AI

- **Large Language Models:** GPT-3, GPT-4, ChatGPT.
- **Emergence:** Models predicting the next word suddenly learned to reason and code.
- **Generative Media:** Expansion into image, video, and audio.

The Path to Intelligence



What Comes Next?



The Cycle: Hype is often followed by reality checks.

The Evolution: Hand-crafted Rules → Statistical Learning → Generative Intelligence.

The Frontier: Artificial General Intelligence (AGI).