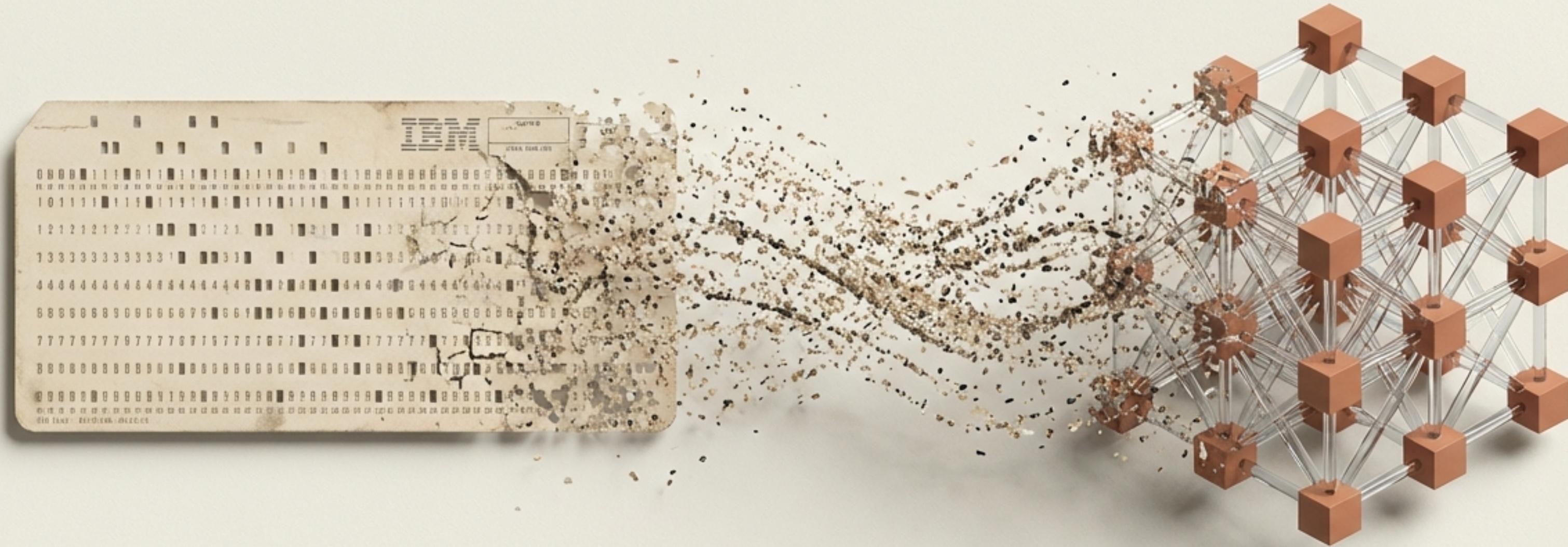


# A History of Artificial Intelligence

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



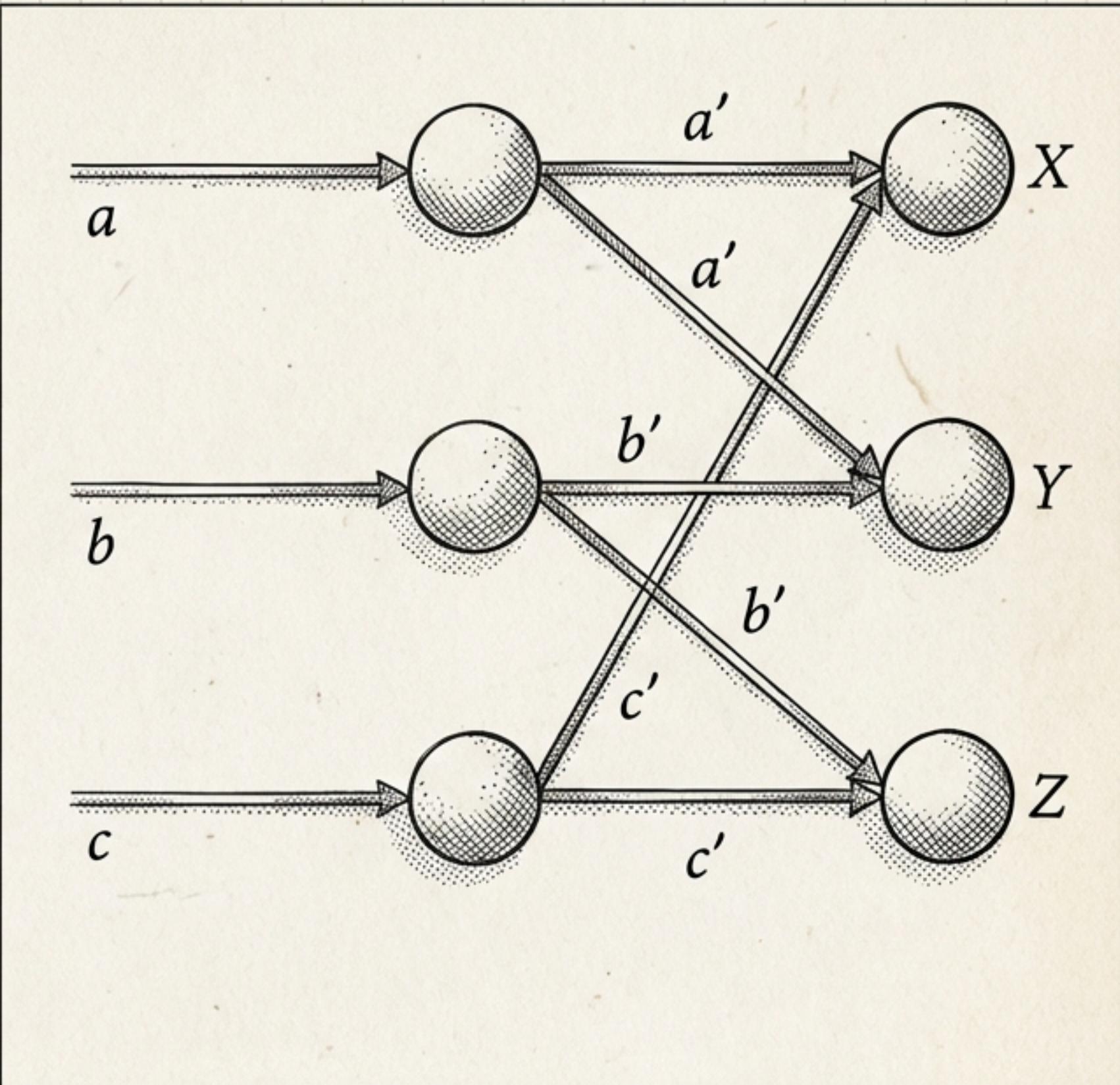
# The Imitation Game (1943–1950)



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)

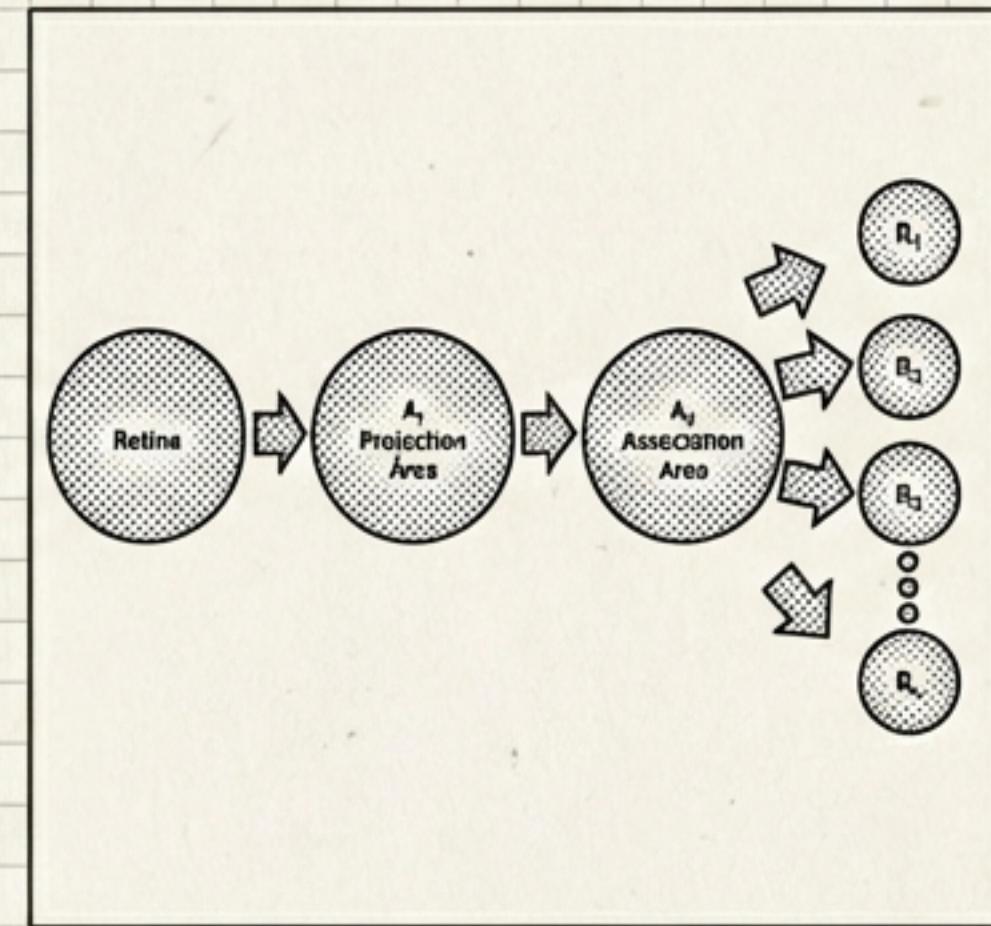
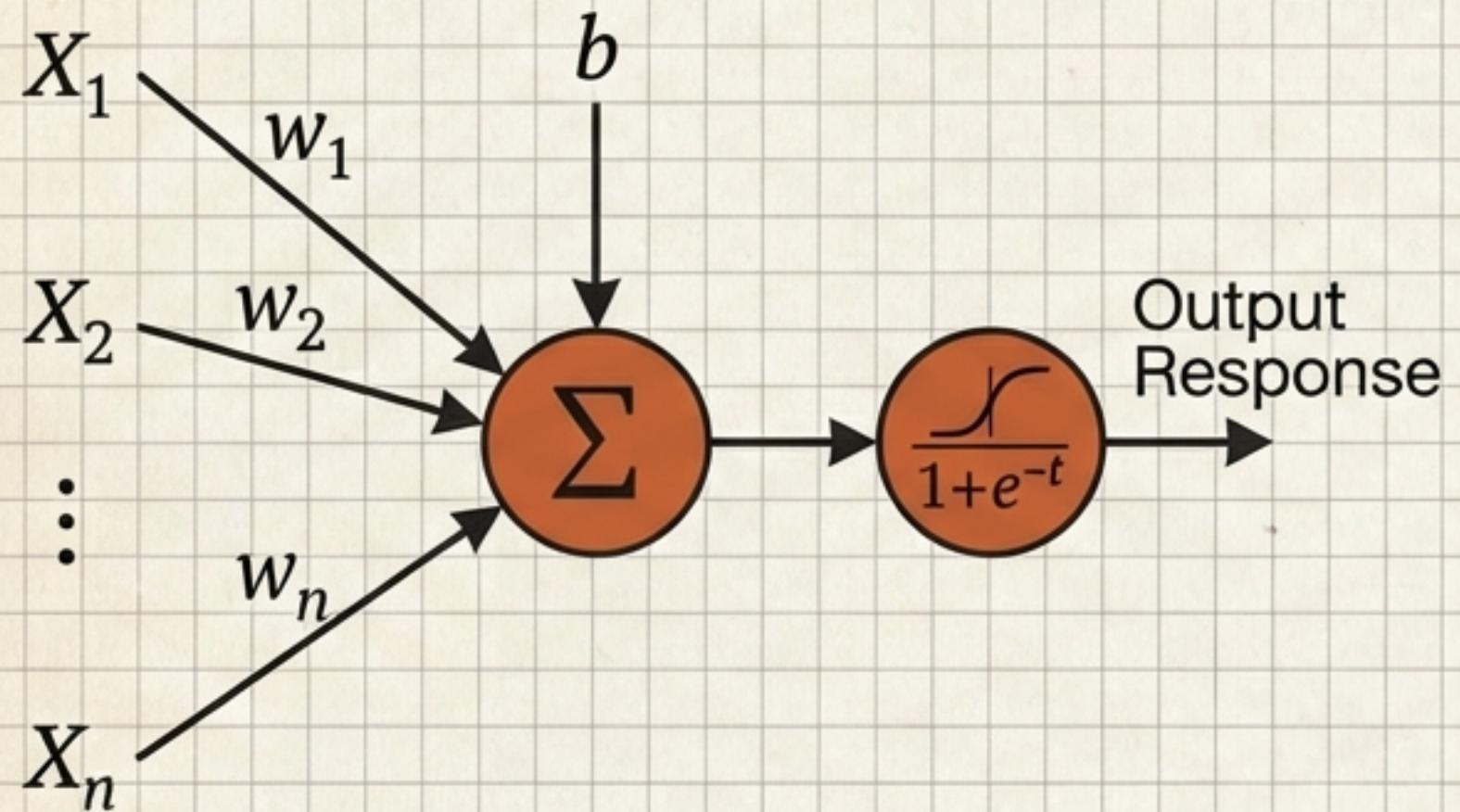
in Helvetica Now Display

*“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)



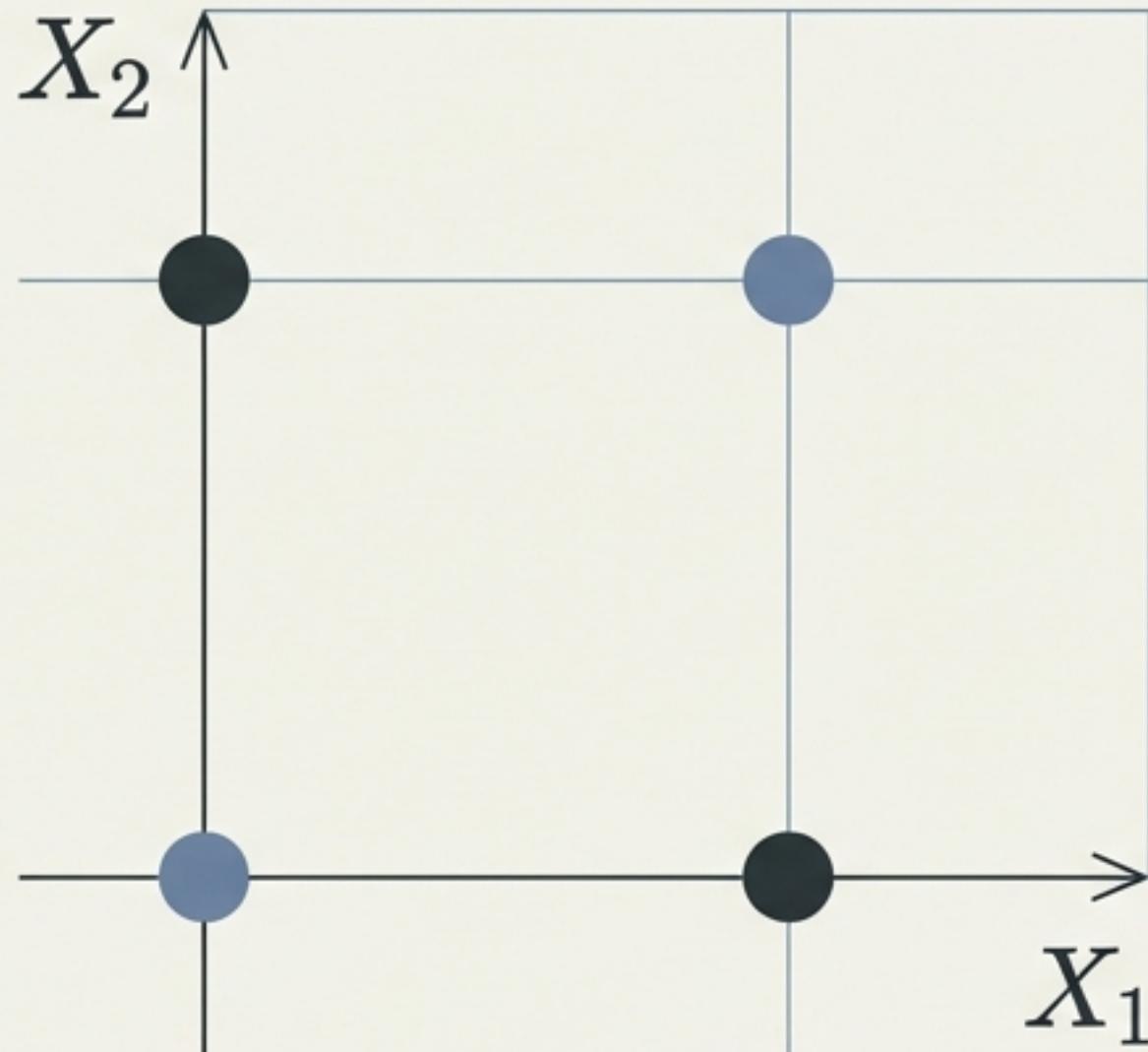
**Symbolic AI:** The dominance of logic and symbols.

**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)

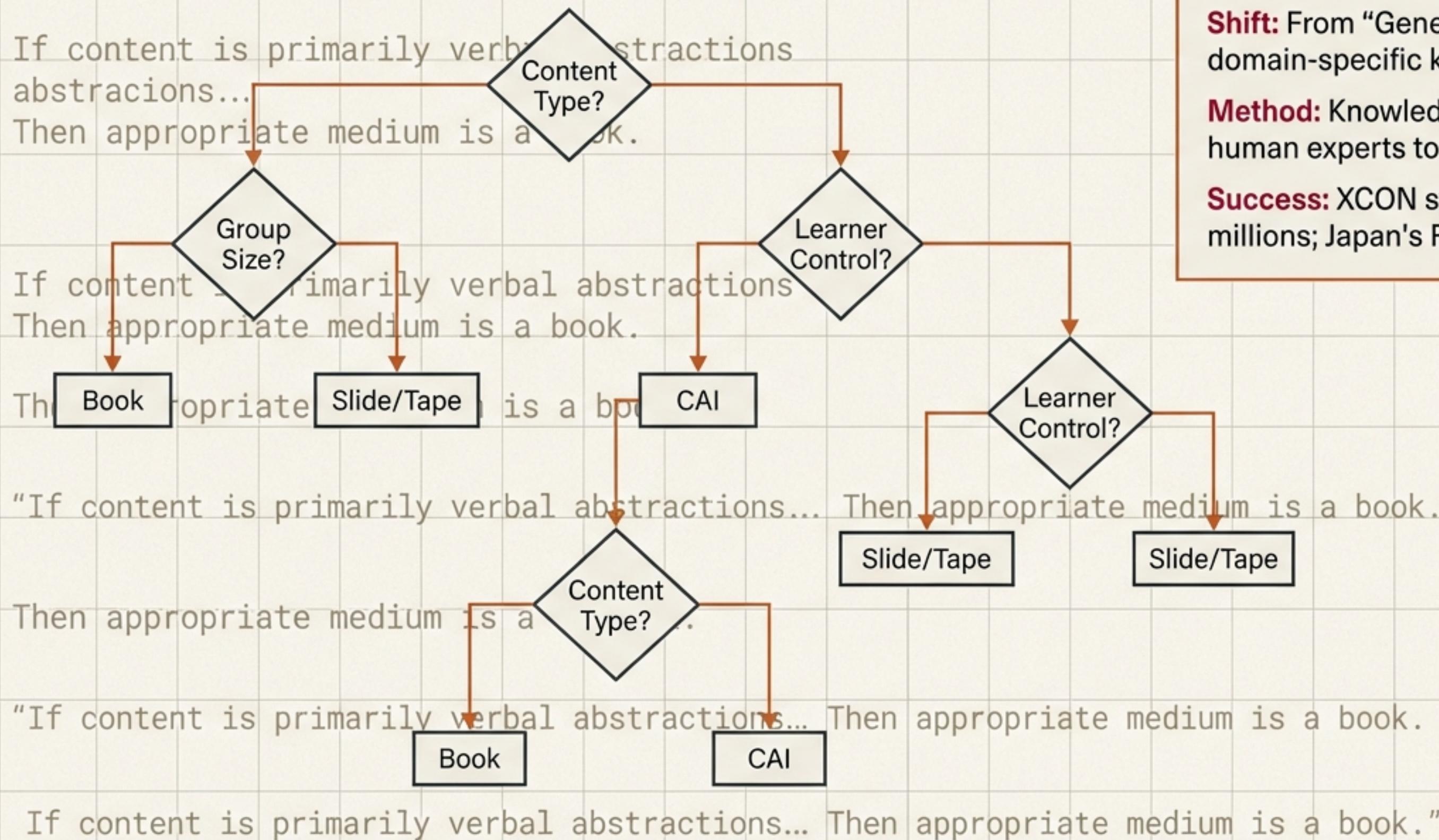


The Trigger: Minsky & Papert's Perceptrons (1969) proved single-layer networks couldn't solve XOR.

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)

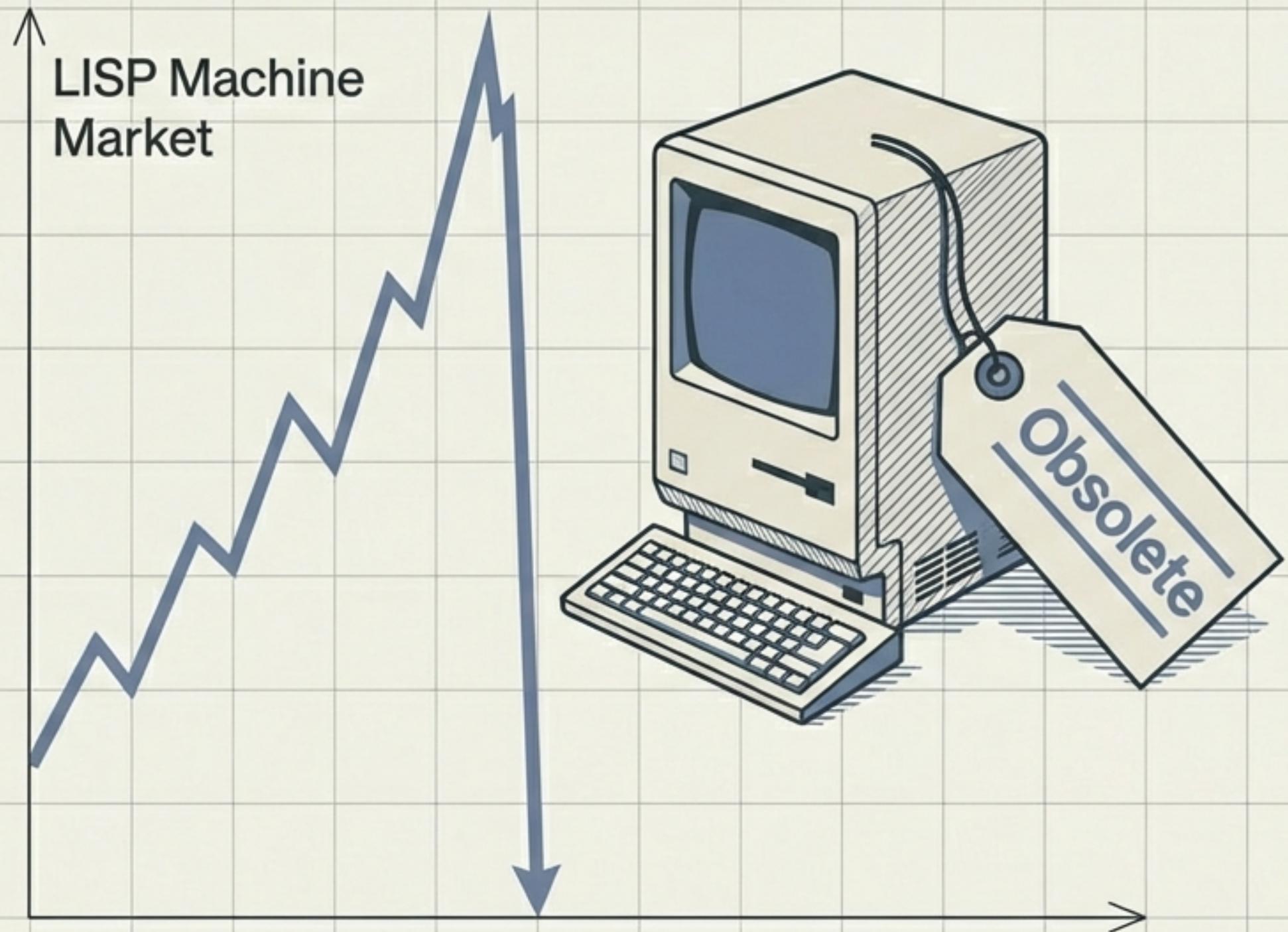


**Shift:** From “General Intelligence” to domain-specific knowledge.

**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).

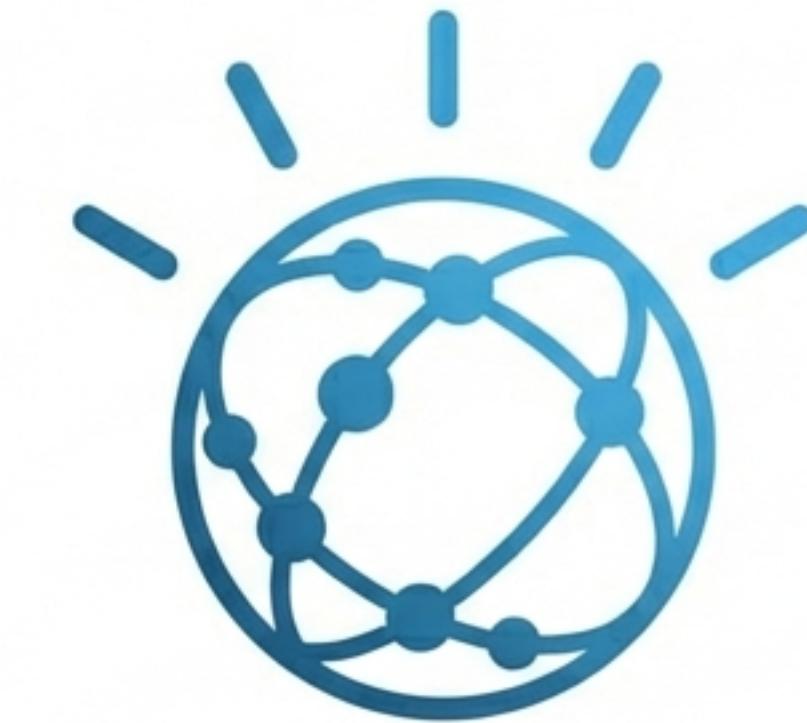
Significance: Strategic complexity mastered without "thinking".

# Big Data & Probability (2000s-2011)



**2002:** Roomba (Autonomous robotics in the home).

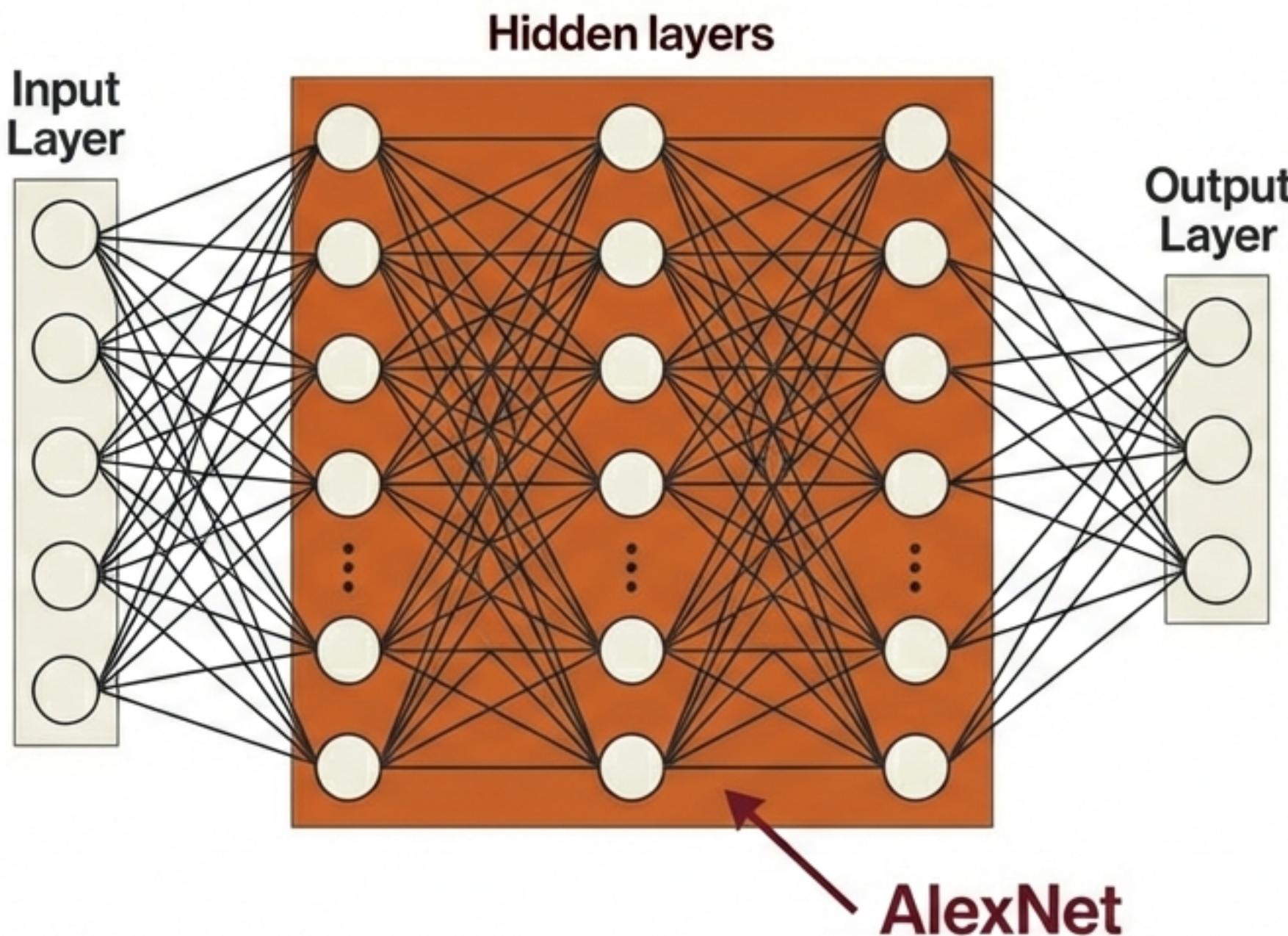
**The Shift:**  
From Logic Rules  
to Statistical  
Probability.



**Watson**

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

# The Deep Learning Revolution (2012)



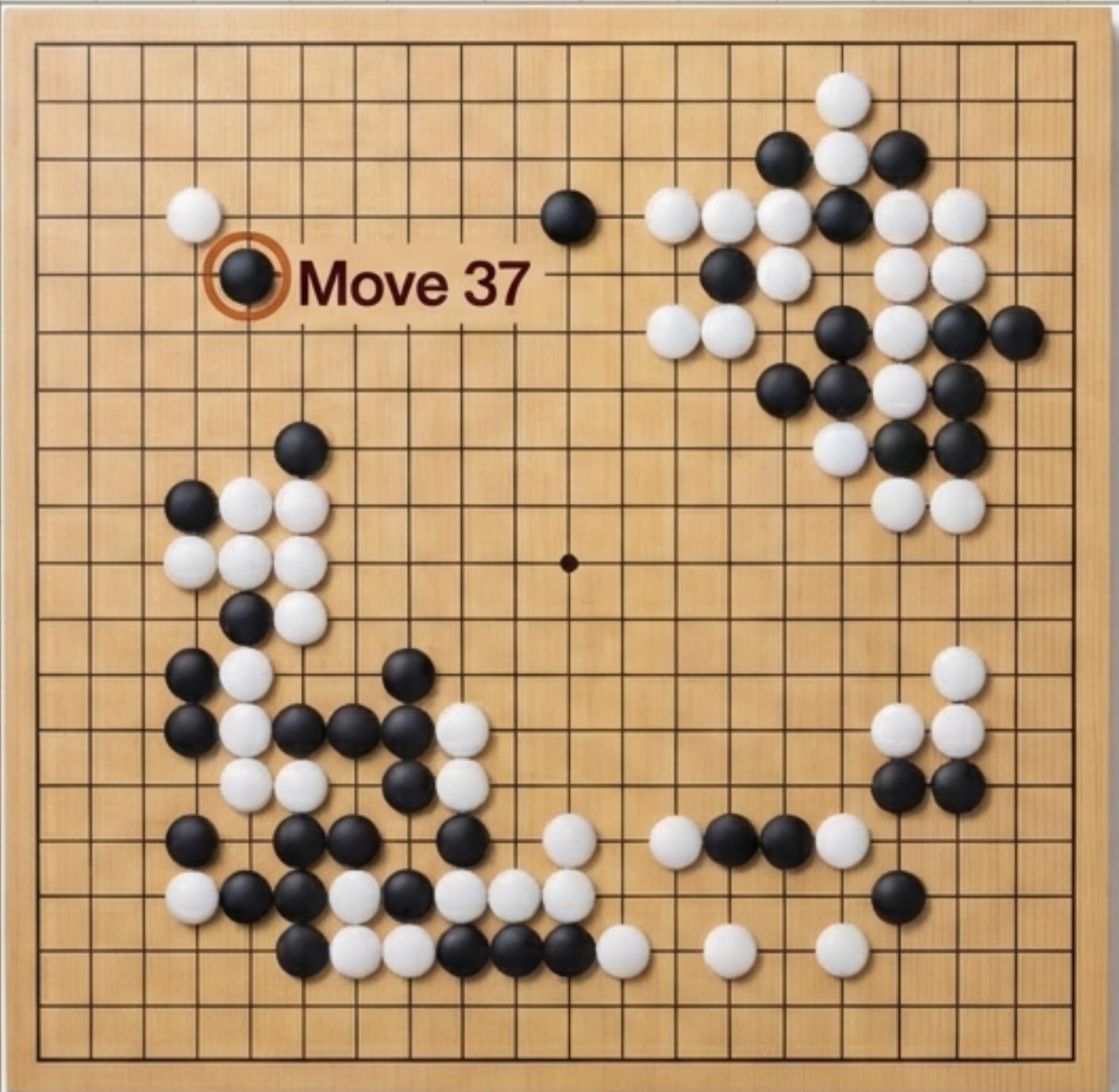
Previous best: 26%



## The Trinity of Success:

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

# AlphaGo & Intuition (2016)

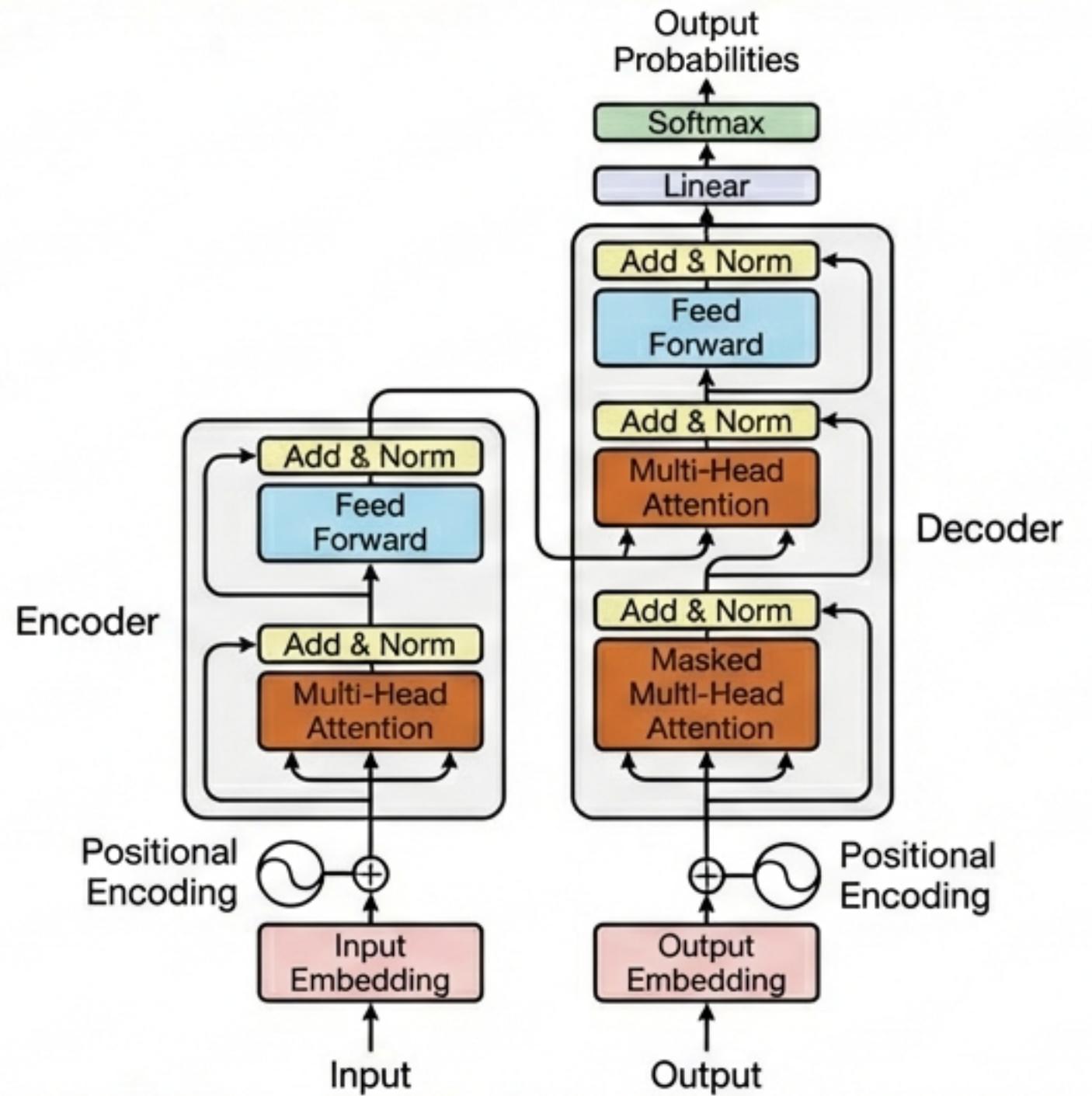


**Challenge:** Go has more positions than atoms in the universe.

**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(
    "preferent": "methods",
    "prefertend_torm": "itred_a Tal", seannments.
)
print(tokenizer.decode(output[0]))
```



CODE SNIPPET: GPT-3

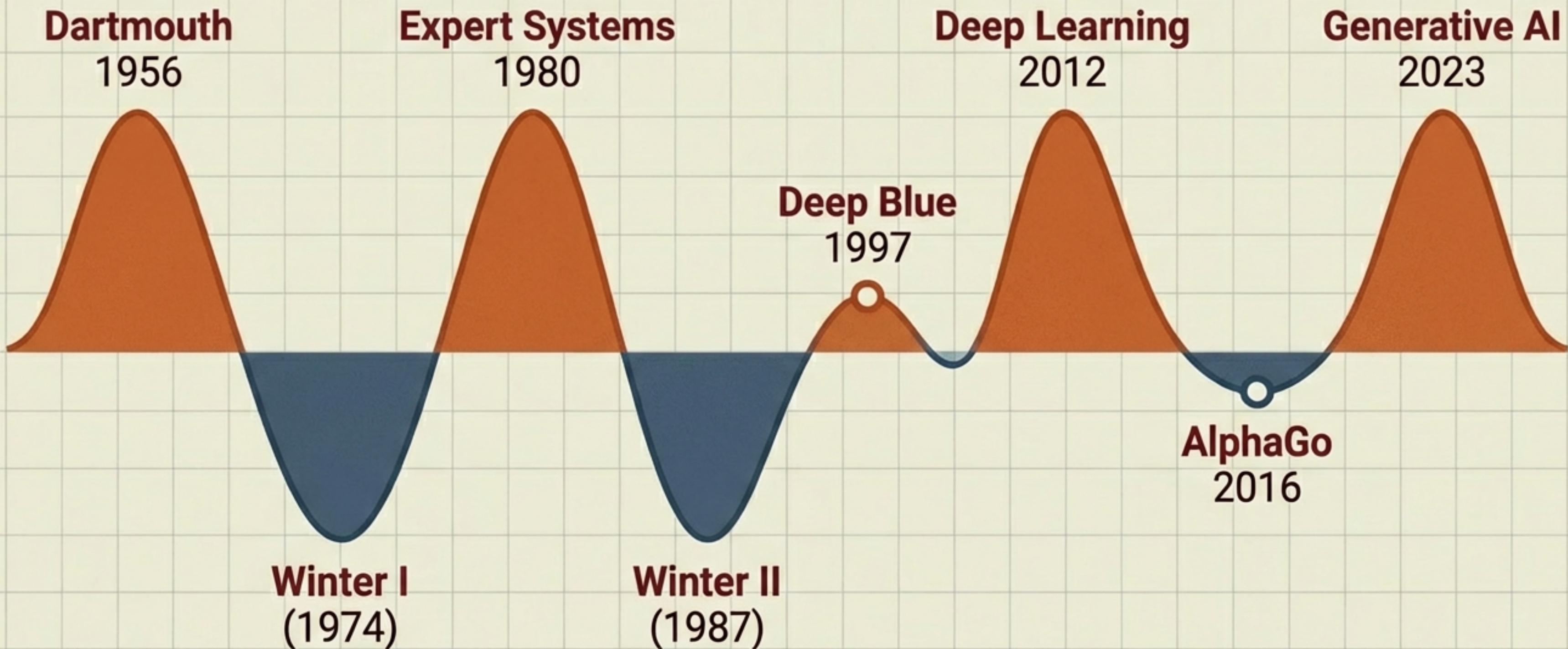
DALL-E/MIDJOURNEY: SURREAL CREATION

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?

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**The Cycle:** Hype is often followed by reality checks.

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

**The Frontier:** Artificial General Intelligence (AGI).