

IN THE WORDS OF
THE RENAISSANCE MAN
LIVING IN THE COMPUTER ERA:
A PERSONAL JOURNEY THROUGH
THE QUOTES AND SAYINGS OF
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*To capture the essence of
information in the moment of time*



Minskytron

MARVIN LEE MINSKY

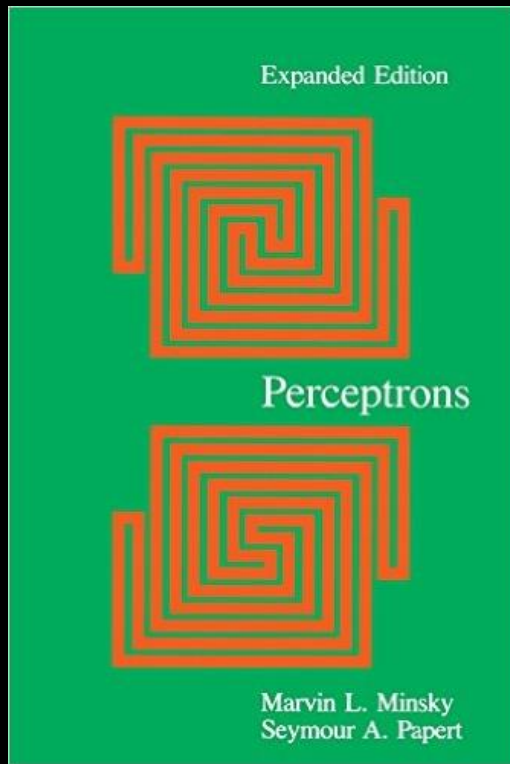


- August 9, 1927 – January 24, 2016
- Philosopher and Cognitive scientist
- Considered the father of Artificial Intelligence (AI)
- Co-founder of the Massachusetts Institute of Technology's AI lab
- Scientist and researcher
- Author of books on AI, Psychology and Philosophy
- Visited Australia on a number of occasions
- Adviser to Stanley Kubrick on 2001: A Space Odyssey
- Pianist, Physicist, Astronomer



PERCEPTRONS: THE COMING OF AI WINTER

1969



The book, which allegedly caused the AI Winter, with the focus on symbolic processing.

- We would like to reassure non-mathematicians who might be frightened by what they glimpsed in the pages ahead.
- Perceptrons make decisions – determine whether or not an event fits a certain “pattern” – by adding up evidence obtained from many small experiments.
- The perceptron was conceived as a parallel-operation device in the physical sense.
- Perceptrons cannot recognise connectedness.
- It is interesting that this more complicated procedure [calculation of weights by minimizing the cost of errors] also lends itself to the multilayer structure.
- We like to think that the perceptron illustrates the possibility of a more organic interaction between traditional mathematical topics and ideas of computation.

FRAMES – THE GOLDEN AGE OF KNOWLEDGE REPRESENTATION

1974



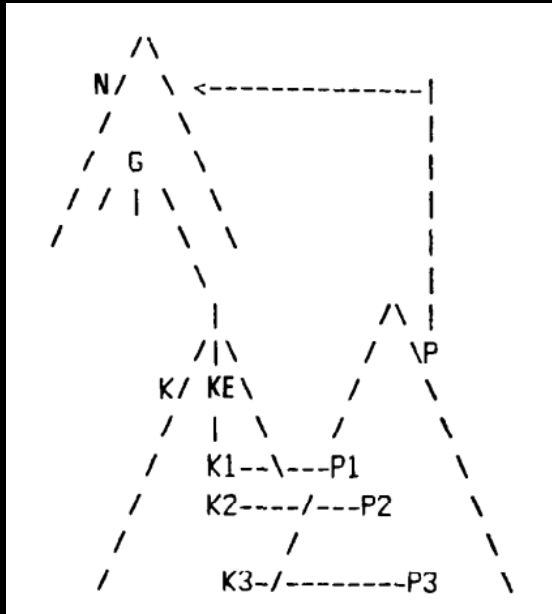
A “memo” that laid the foundations of AI for 20 years, 1970-1980s.

Frames became the core concept for both cognitive scientists and computer programmers.

- Whenever one encounters a new situation (or makes a substantial change in one’s viewpoint) he selects from memory a structure called a frame; a remembered framework to be adapted to fit reality by changing details as necessary.
- A frame is a data structure for representing a stereotyped situation, like being in a certain kind of living room, or going to a child’s birthday party.
- We can think of a frame as a network of nodes and relations.
- Collections of related frames are linked together into a frame-systems.
- Thinking always begins with suggestive but imperfect plans and images; these are progressively replaced by better – but usually still imperfect – ideas.

K-LINES: THE LINES OF THINKING AND MEMORY

1980



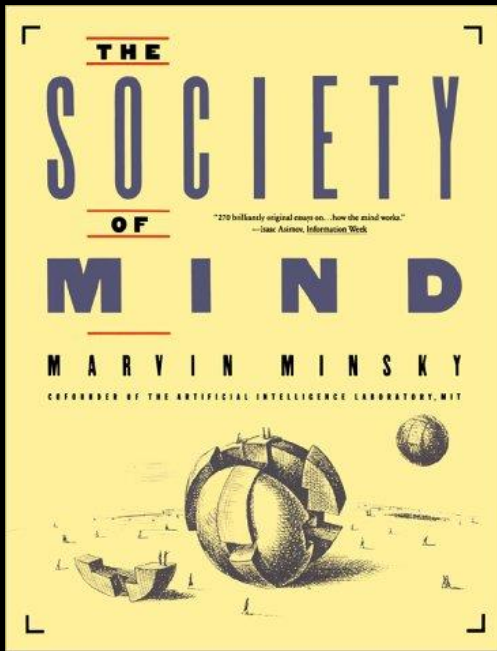
The paper that paved the ways for the Society of Mind, mental agents and spreading activation.

The first attempt to bridge the symbolic and connectionist approaches in AI.

- We shall envision the mind (or brain) as composed of many partially autonomous “agents” - as a “Society” of smaller minds.
- So we shall view memories as entities that predispose the mind to deal with new situations in old, remembered ways.
- When you “get an idea,” or “solve a problem,” or have a “memorable experience,” you create what we shall call a K-line. This K-line gets connected to those “mental agencies” that were actively involved in the memorable mental event.
- [It is] fashionable to speak of representations, frames, scripts, or semantic networks. But while I find it lucid enough to speak in such terms about memories of things, sentences, or even faces, it is much harder so to deal with feelings, insights, and understandings.

MINDS BUILT FROM THE MINDLESS STUFF

1985

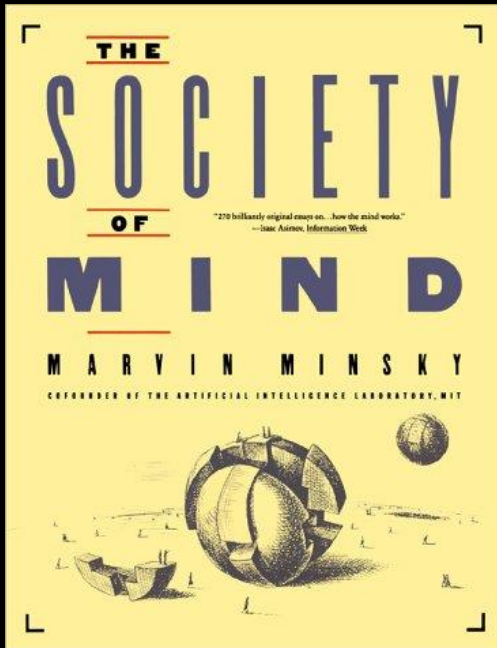


**The Society of Mind by
portrays the mind as a
"society" of mindless
components.**

- We need better theories about how thinking works
- If common sense is so diverse and intricate, what makes it seem obvious and natural?
- What is Life? One dissects a body but finds no life inside. What is Mind? One dissects a brain but finds no mind therein.
- To explain the mind, we have to show how minds are built from mindless stuff.
- It often turned out easier to program machines to solve specialized problems that educated people considered hard than to make machines do things that most people considered easy.
- One function of the Self is to keep us from changing too rapidly.
- Thinking affects our thoughts.

MINSKY ON THE ELUSIVE AND ABSTRACT

1985

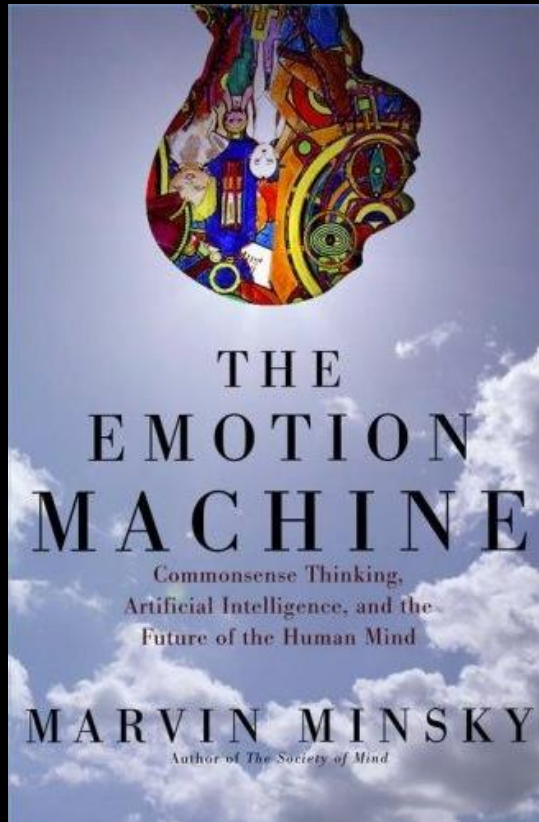


The Society of Mind discusses Intelligence, Learning, Consciousness, Emotions and Machines.

- Our minds contain processes that enable us to solve problems we consider difficult. "Intelligence" is our name for whichever of those processes we don't yet understand.
- The power of intelligence stems from our vast diversity, not from any single, perfect principle.
- Learning is economical.
- Thinking about thought is not so different from thinking about an ordinary thing.
- Whenever anyone does something outstanding, instead of trying to understand the process of thought that did the real work, we attribute that virtue to whichever superficial emotional signs we can easily discern, like motivation, passion, inspiration, or sensibility.
- If you are not a machine, what makes you an authority on what it feels like to be a machine?

THE EMOTION MACHINE

2006



Many phenomena seem magical until we find out what causes them.

- What is *Love*, and how does it work?
- *Love* is a kind of suitcase-like word.
- A brain cannot think about what it is thinking *right now*.
- We must try to *design* - as opposed to *define* - machines that can do what our minds can do.
- Our minds did not evolve to serve as instruments for observing themselves, but for solving such practical problems as nutrition, defense, and reproduction.
- The World Wide Web contains more knowledge than any one person could ever learn. However, it does not explicitly display the knowledge one needs for understanding what all those texts mean.
- We all think without knowing how we think—and we do it so fluently that we scarcely ever ask about what thinking it is and how it might work.

MINSKY ON BRAIN, SELF AND EXISTENCE

- Brain is an amazing object.
- Brain does not work in a simple ways.
- The way to understand the brain, is to understand how thinking works.
- We get resourcefulness from having many resources and not from having wonderful and smart ones.
- There isn't any one thing that's consciousness, there is a lot of stuff.
- The word consciousness is a very convenient because it's the name for all of the things your mind does that you don't have any idea about.
- I don't think there is any Self.
- The idea of God is wonderful because it's the answer to all questions you can't understand.
- There is something wrong with the word exist.



**Interviews with
Ray Kurtzweil,
Lawrence Robert Kuhn
and discussions with
Daniel Dennet**

SUMMARY & REFLECTION

Things Minsky wrote about:

Microscopy, Perceptrons, Neural Nets, Brain, Mind, Memory, Turing Machines, Lisp, Vision and Language, Music, AI, Knowledge Representation, Telepresence, Robotics, Theoretical Physics, Astronomy, Nanotechnology, Logo, Jokes and Emotions

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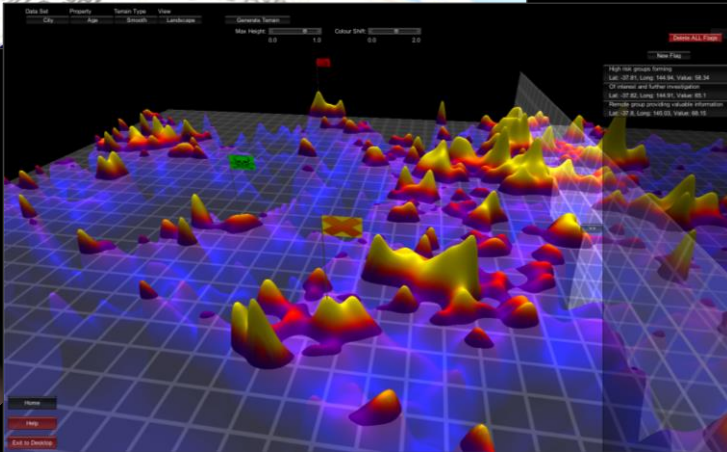
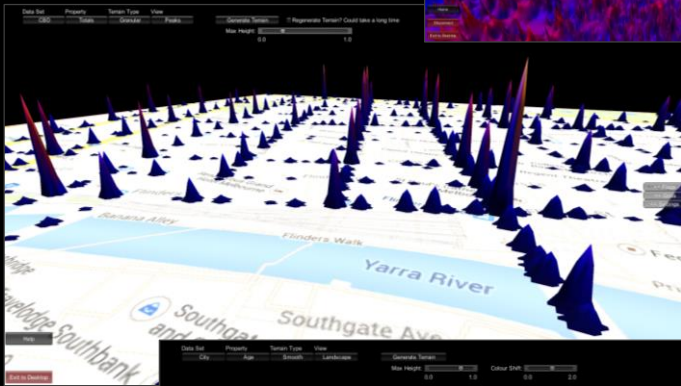
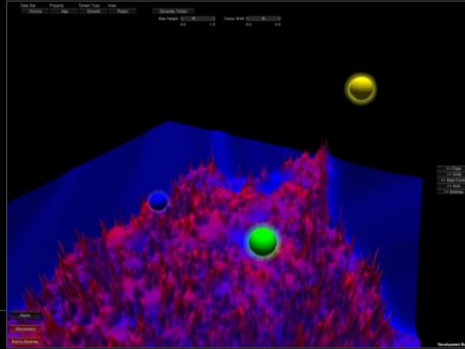
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SAS VISUAL ANALYTICS COLLABORATORY

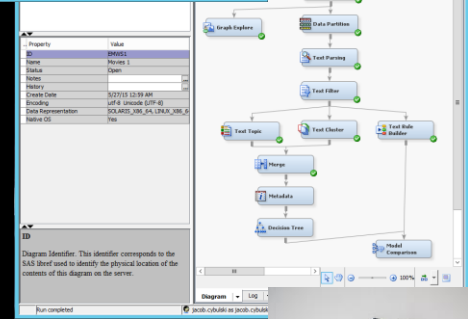
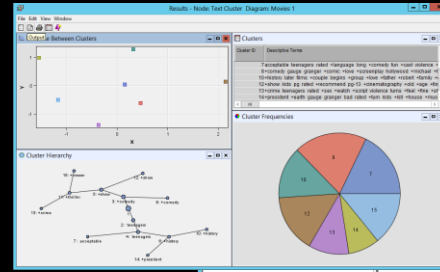
JACOB @ DEAKIN

Enquiry



3D Visual Analytics –
No barriers to stop you

Software
tools



To give students
Electro-Sets
and Tinker Toys
(Minsky 2015)



Devices

Education