



The Physiology of Information

**Michael Ridley
Chief Information Officer
and Chief Librarian
University of Guelph**

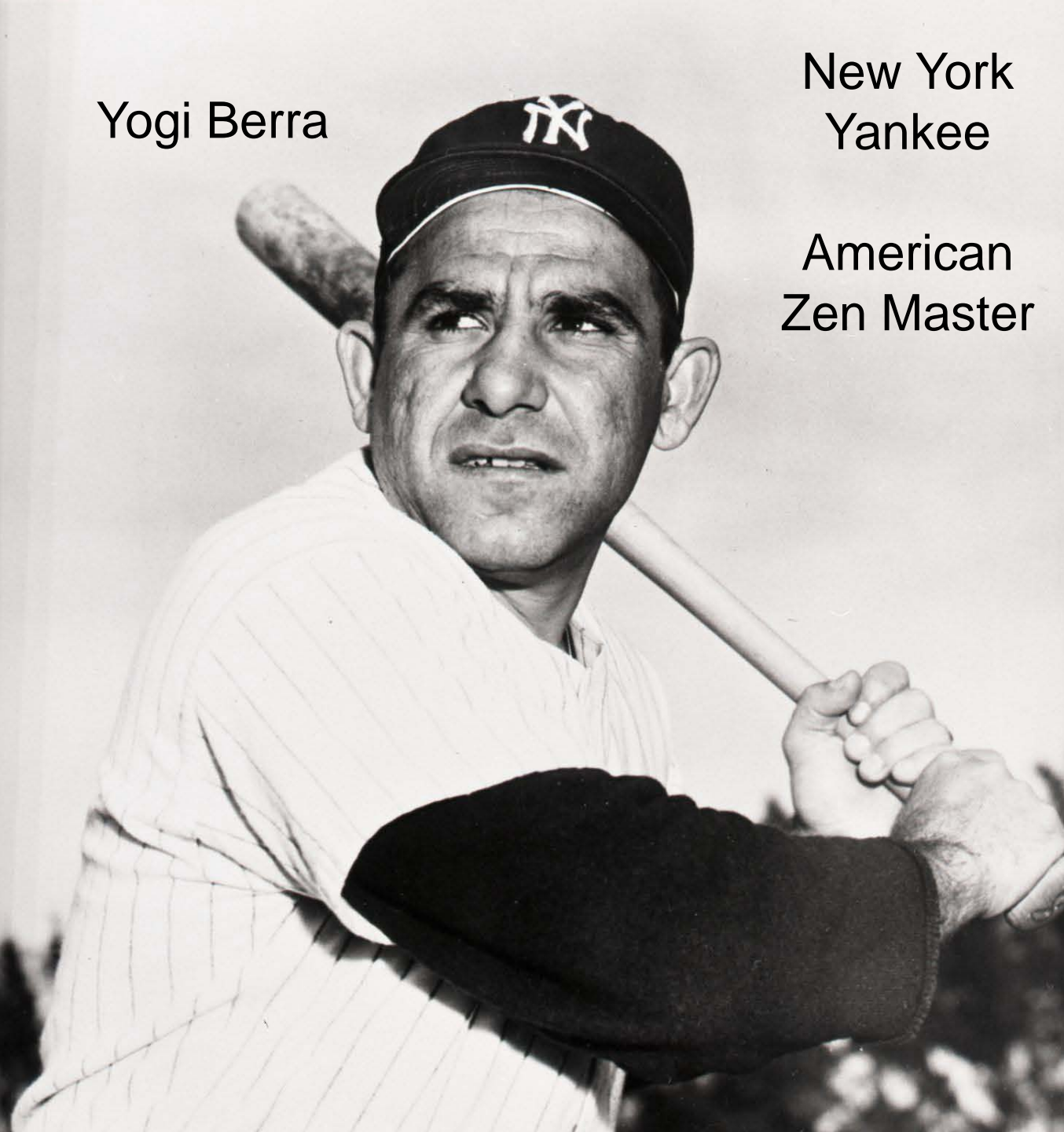
**CANHEIT
McMaster University
June 6, 2011**

Yogi Berra

New York
Yankee

American
Zen Master

“The
future
ain't what
it used
to be.”



CAUTION

**Wacko
Zone
Ahead**

Jeff VanderMeer says:

Sorry, but I think
this guy is an idiot.
Absolute moron.

**What is
“information?”**

Data
Information
Knowledge
Wisdom

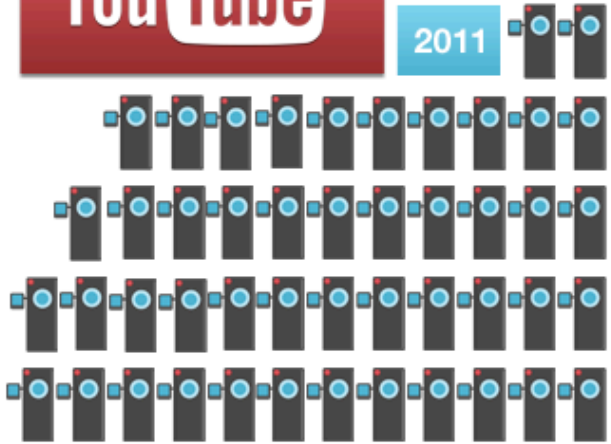
Information Technology

Information Management

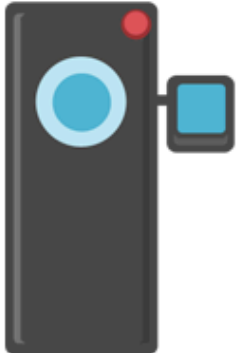
Information Representation



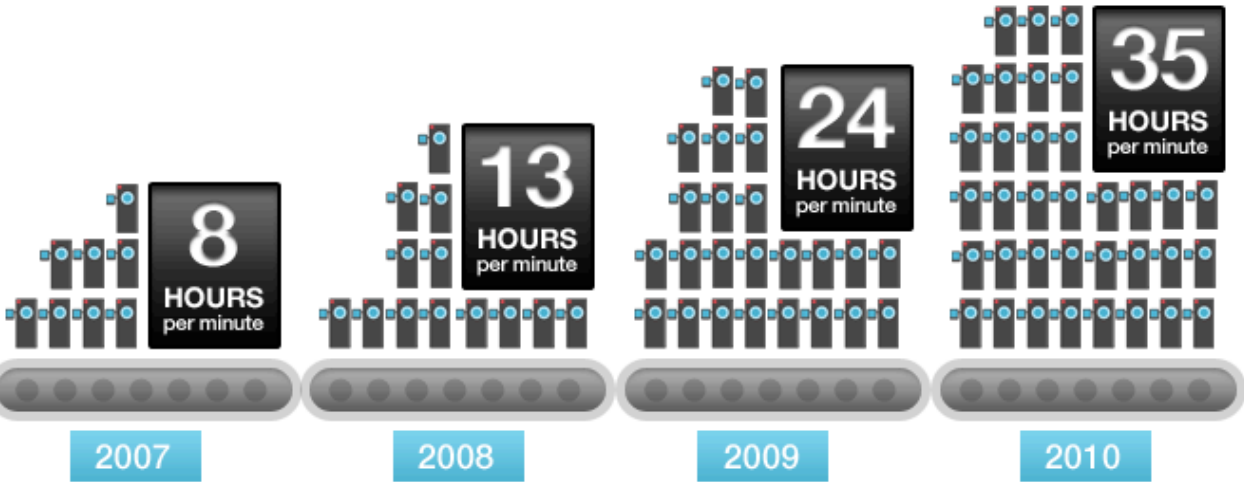
2011



48 HOURS



OF VIDEO UPLOADED EVERY MINUTE



+3

BILLION

views a day on the site



charlie bit my finger

kooljohnmason

238 videos

Subscribe



0:29 / 0:56

CC 360p



Like



+ Add to

Share



10,280,153





Eric Schmidt, ex-CEO of Google

How Much Information?

~~5 exabytes
from 0 to 2003.~~

~~Now 5 exabytes
every 2 days.~~

23 exabytes
in 2003.

Now 23 exabytes
every 7 days.

Nicholas Carr



FRIDAY, APRIL 2, 2010 SEARCH OUR SITE GO

the Atlantic POLITICS BUSINESS CULTURE INTERNATIONAL SCIENCE

JULY/AUGUST 2008 ATLANTIC MAGAZINE

Is Google Making Us Stupid?

What the Internet is doing to our brains

By **Nicholas Carr**

Illustration by Guy Billout



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Presented By Atlantic

"Dave, stop. Stop, will you? Stop, Dave. Will you stop, Dave?" So the superpleads with the implacable astronaut Dave Bowman in a famous and weird toward the end of Stanley Kubrick's 2001: *A Space Odyssey*, Bowman, has to a deep-space death by the malfunctioning machine, is calmly, coolly dis memory circuits that control its artificial "brain." "Dave, my mind is going. "I can feel it. I can feel it."

I can feel it, too. Over the past few years I've had an uncomfortable sense t something, has been tinkering with my brain, remapping the neural circuit

WHAT THE
INTERNET
IS DOING TO
OUR BRAINS

THE Nicholas Carr
AUTHOR OF *THE BIG SWITCH*

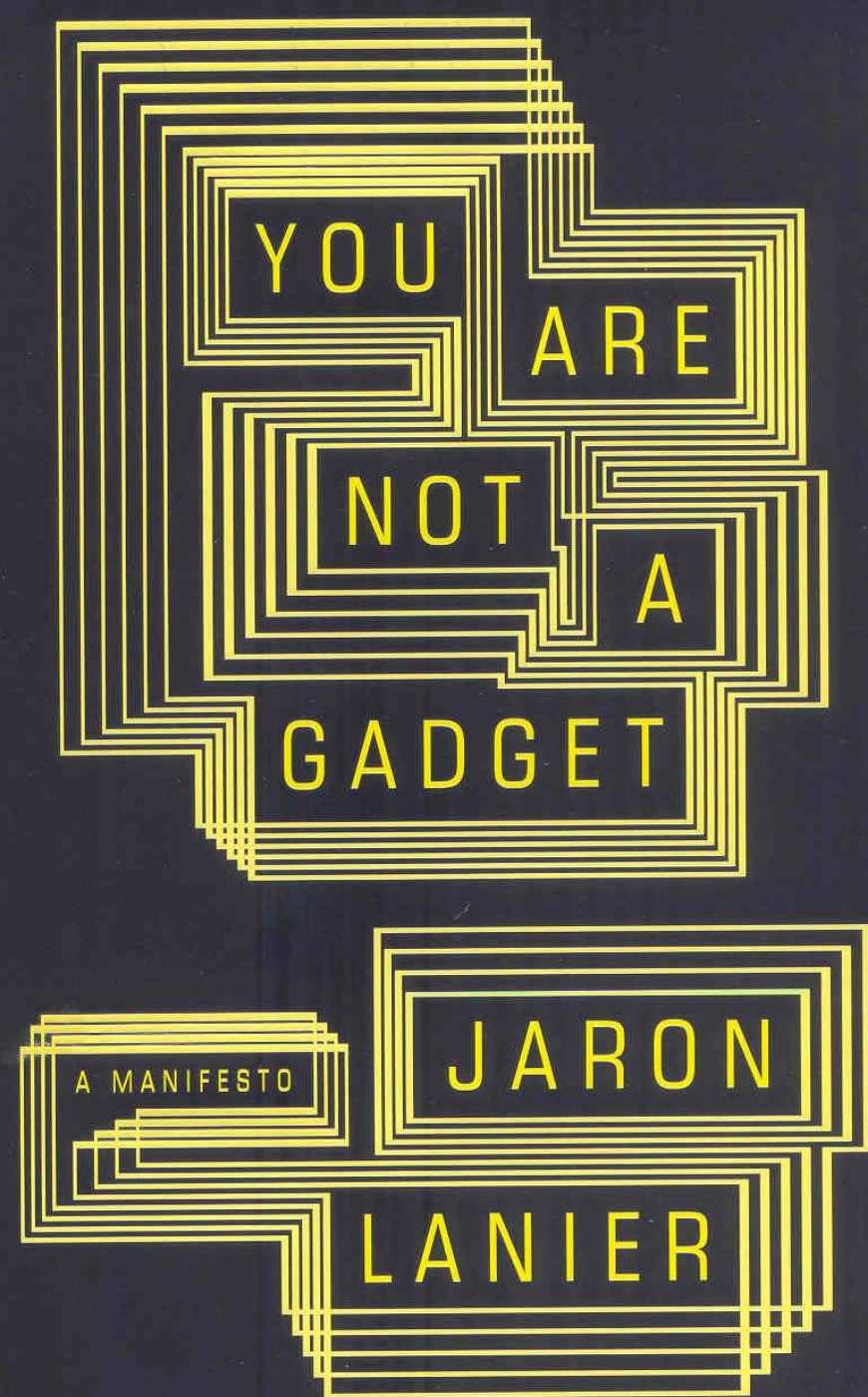
SHALLOWS

“My mind now expects
to take in information
the way the Net
distributes it:
in a swiftly moving
stream of particles.”



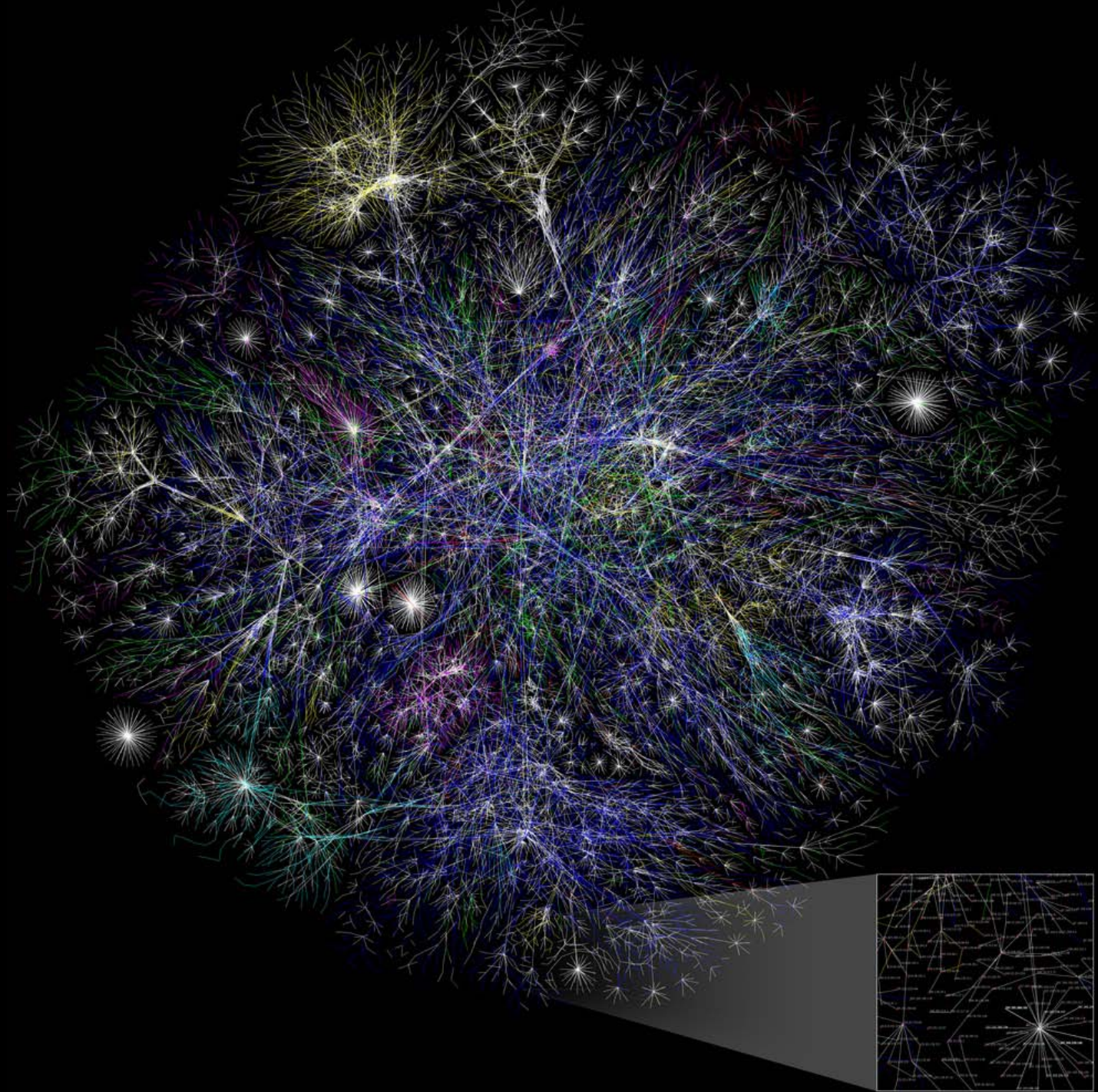
Jaron
Lanier

“I fear that we
are beginning
to design
ourselves
to suit
digital models
of us.”



**Blame the
technology.**





abcdefghijklmno

pqrstuvwxyzabc

defghijklmnopqr

stuvwxyzabcdef

ghijklmnopqrstu

01010101010101

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Understanding Media

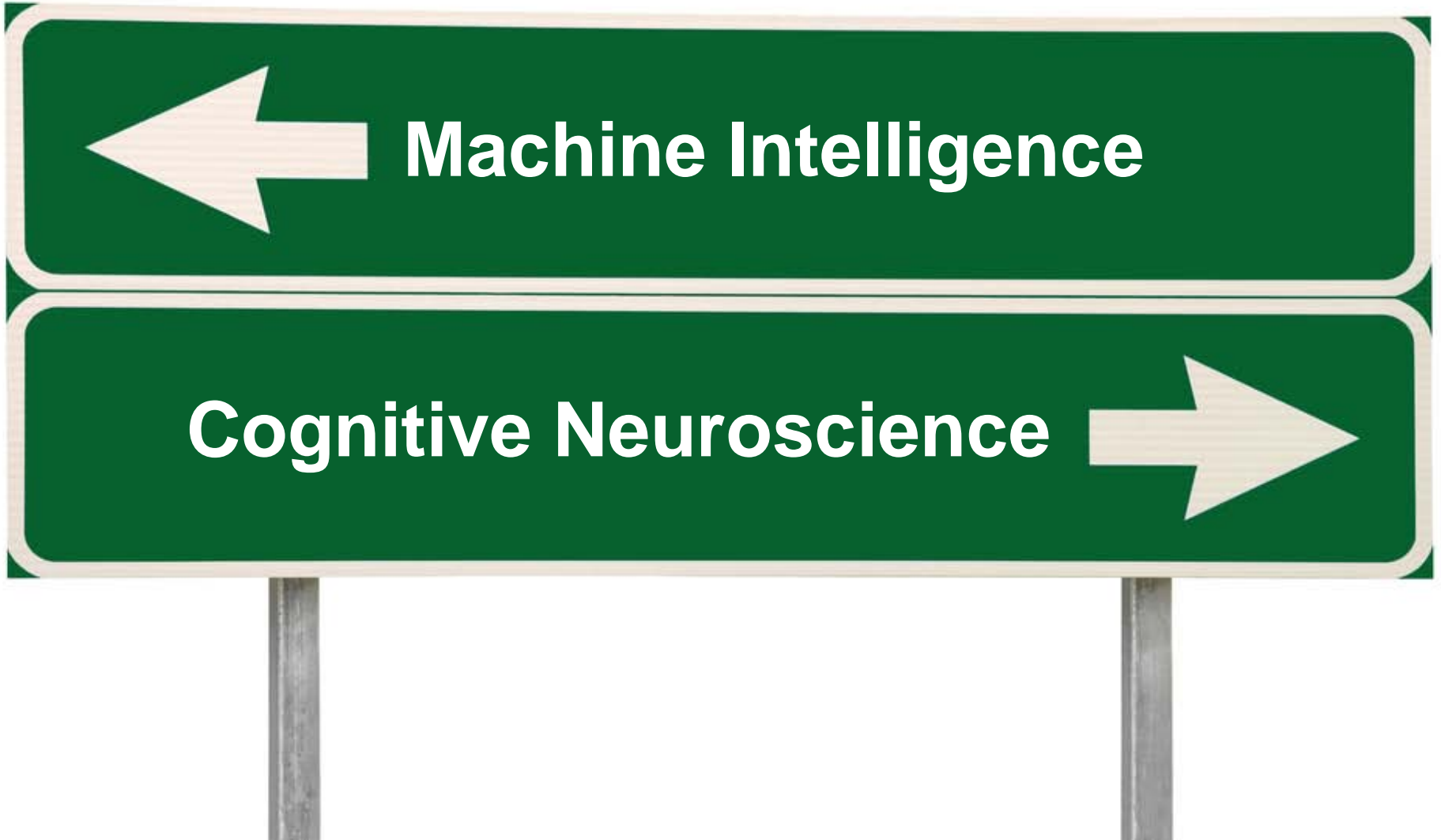


“We shape
our tools
and
thereafter
our tools
shape us.”

Marshall
McLuhan

**Codes are
abstractions of
information.**

Two Critical Directions



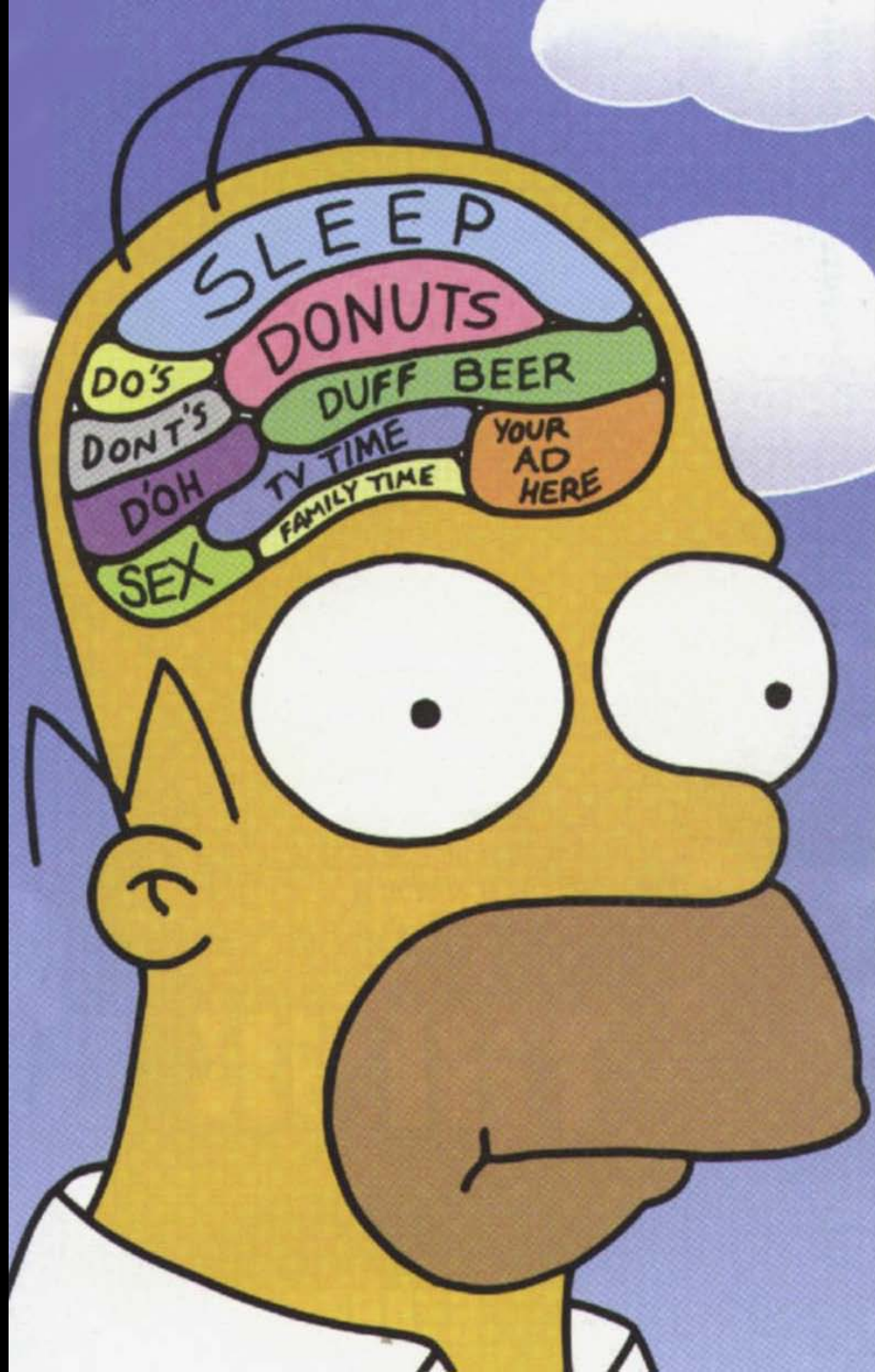
Cognitive Neuroscience

Neurocognitive enhancement: what can we do and what should we do?

“Humanity’s ability to alter its own brain function might well shape history as powerfully as the development of metallurgy in the Iron Age, mechanization in the Industrial Revolution or genetics in the second half of the twentieth century.”

fully as the development of metallurgy in the Iron Age, mechanization in the Industrial Revolution or genetics in the second half of the twentieth century. This possibility calls for

On the leading edge of neurotechnology is psychopharmacology. Our ability to achieve specific psychological changes by targeted



SLEEP

DONUTS

DO'S

DUFF BEER

DONT'S

TV TIME

YOUR
AD
HERE

D'OH

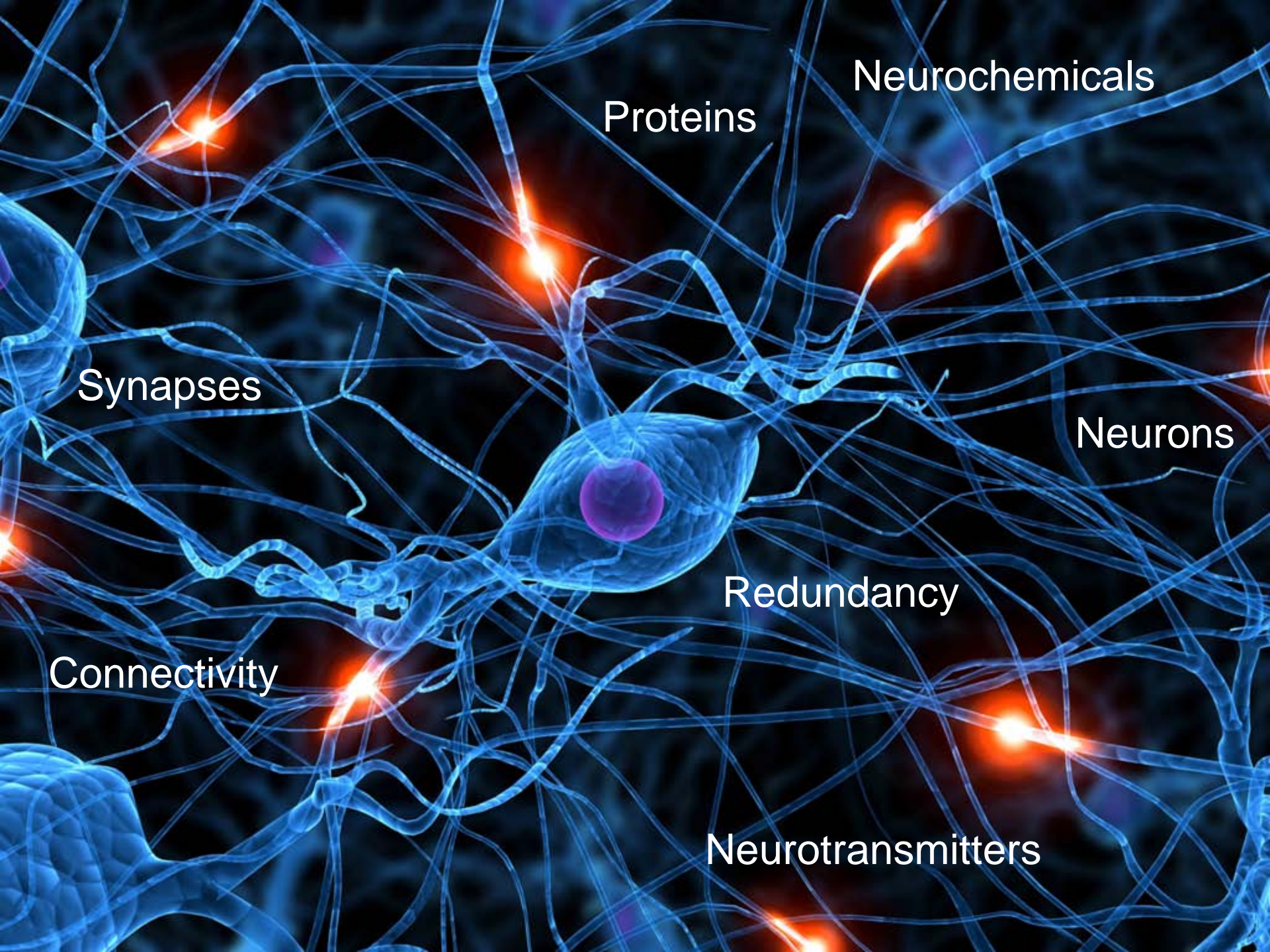
FAMILY TIME

SEX

Brain

≠

Computer



Neurochemicals

Proteins

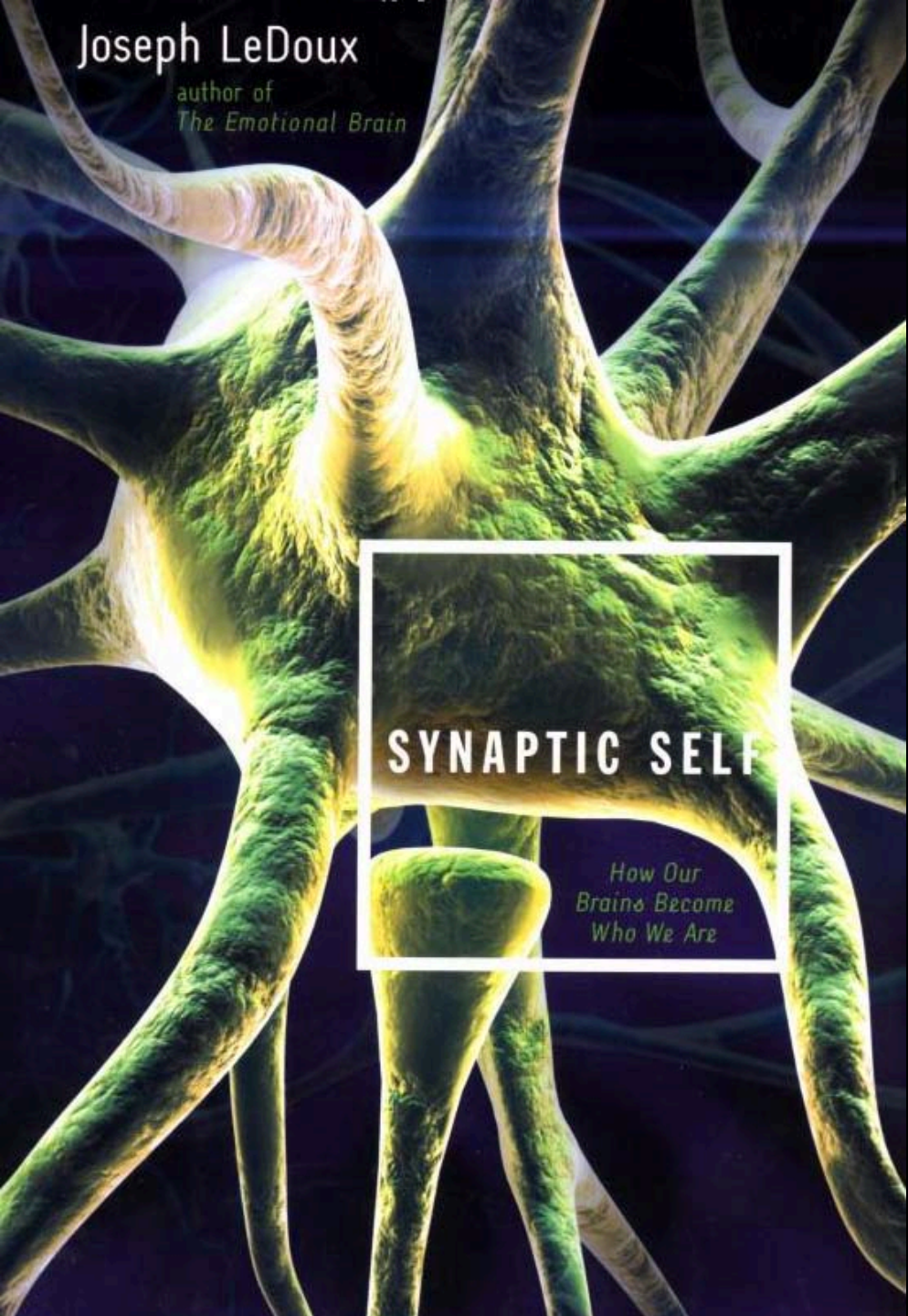
Synapses

Neurons

Redundancy

Connectivity

Neurotransmitters



Joseph LeDoux
author of
The Emotional Brain

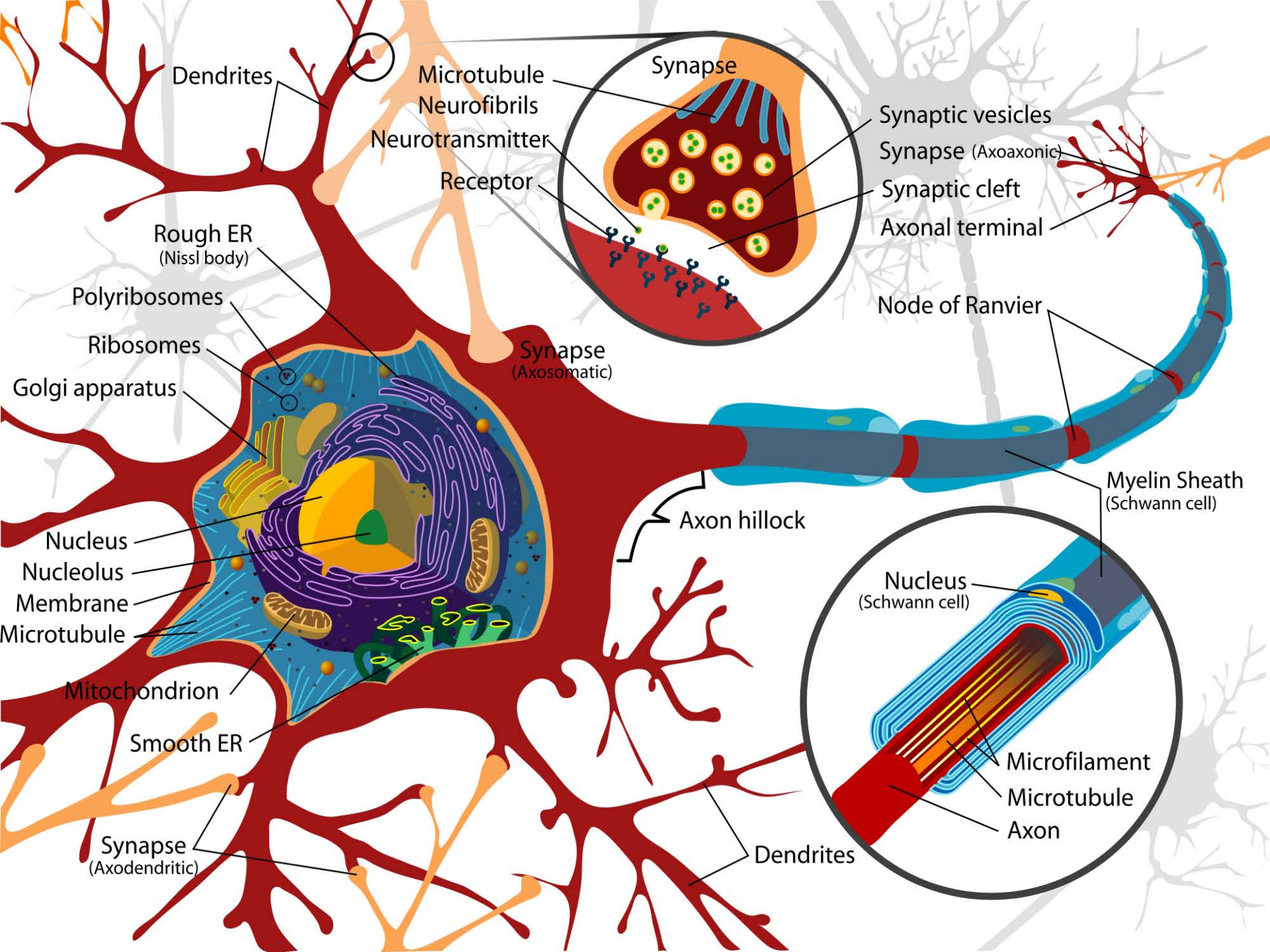
SYNAPTIC SELF

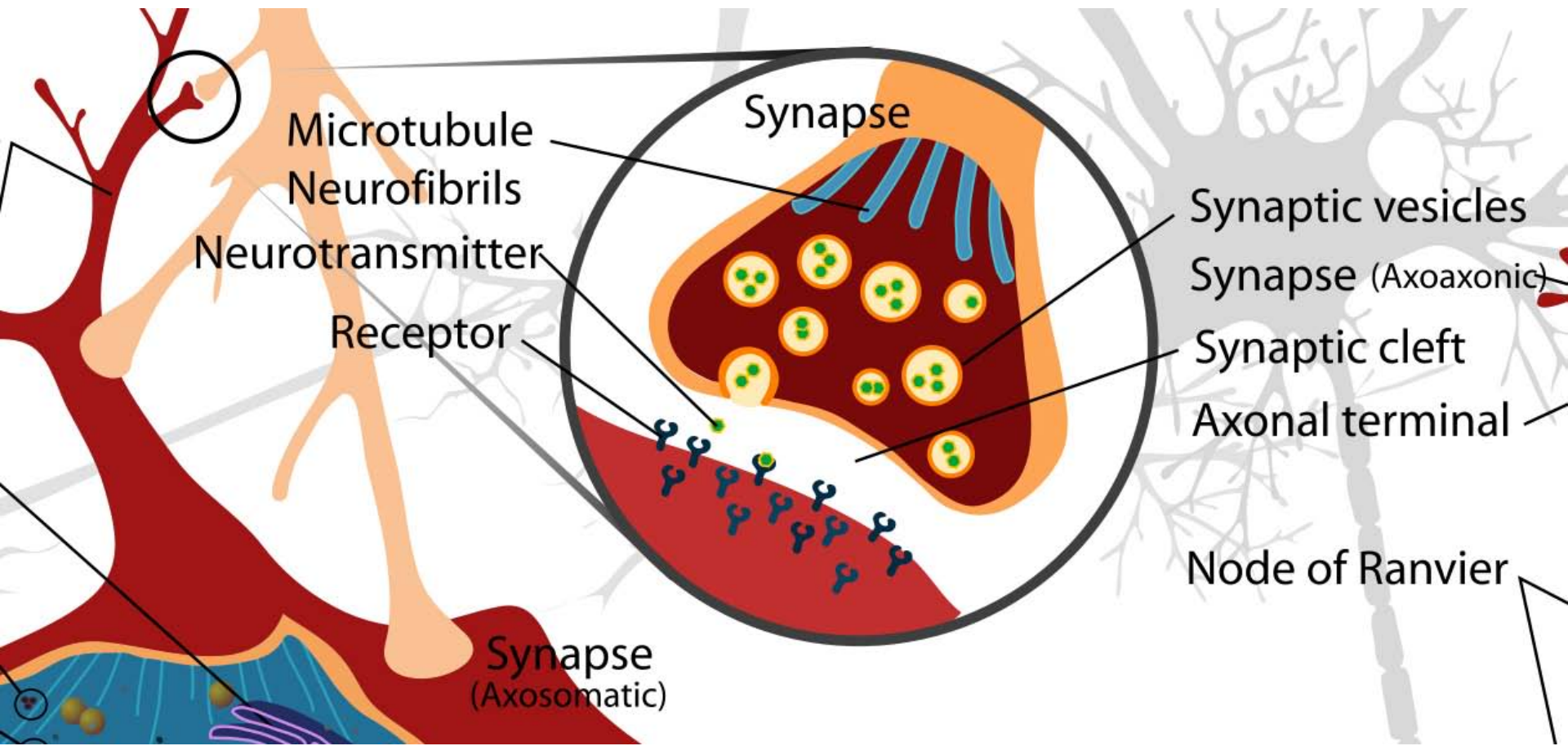
*How Our
Brains Become
Who We Are*

“You are
your synapses.

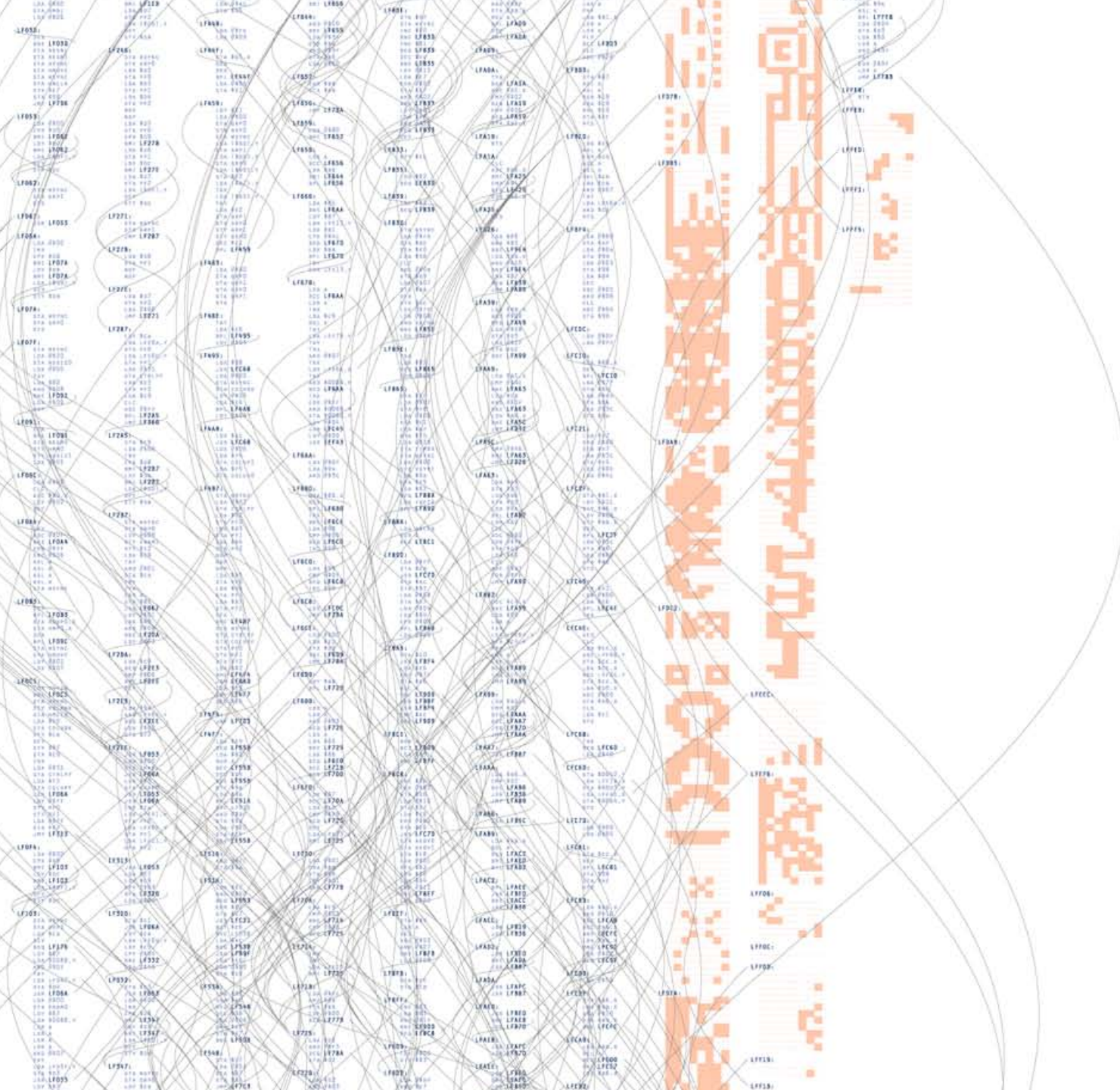
They are
who you are.”

Joseph LeDoux
The Synaptic Self





Pac-Man (Atari 2600)

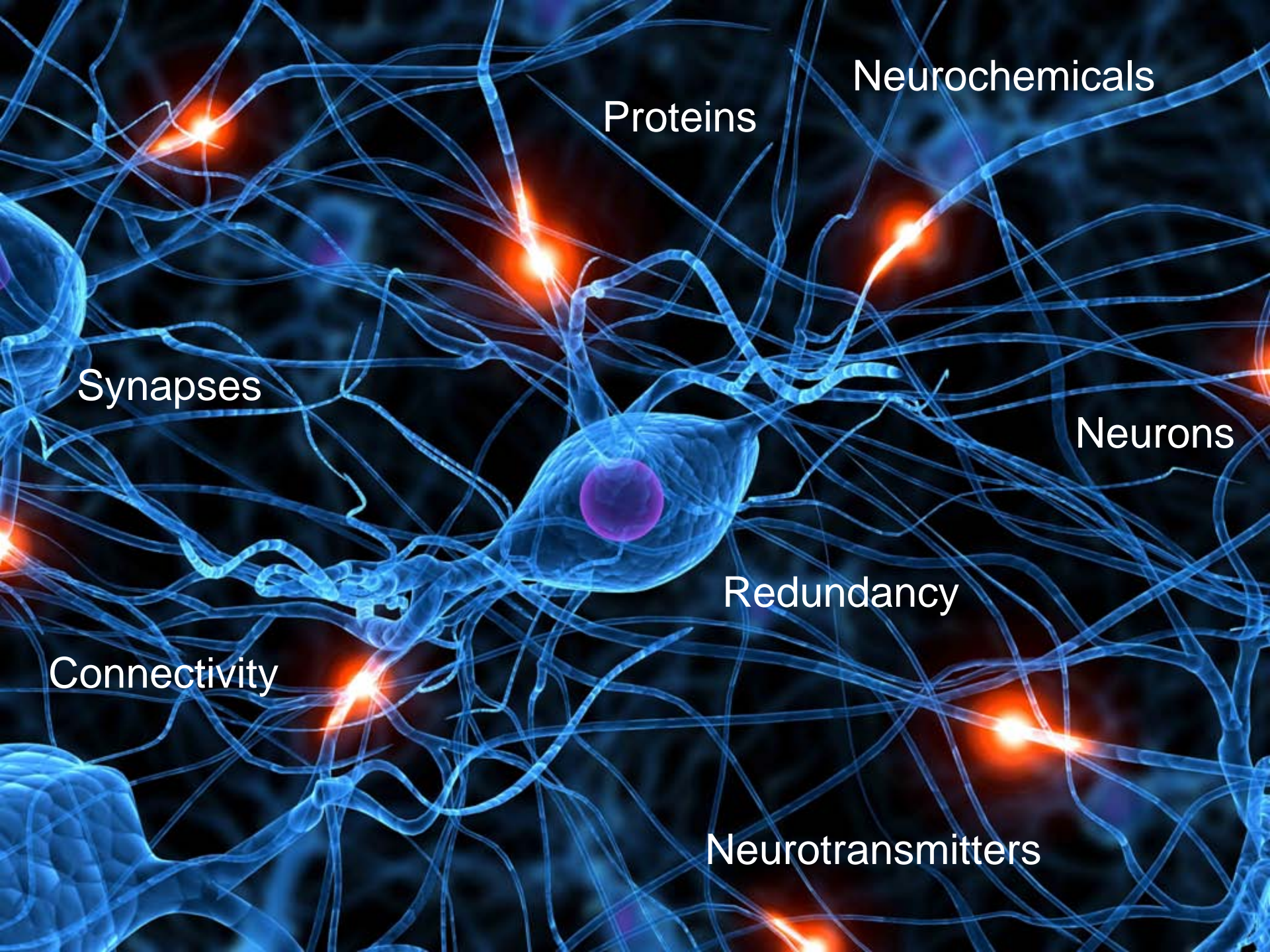


10^{11} Neurons

10^{14} Synapses

10^{36} IPv6 Address Space

What if ?



Neurochemicals

Proteins

Synapses

Neurons

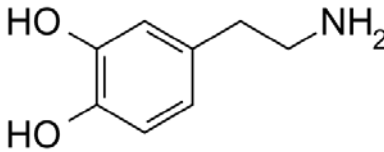
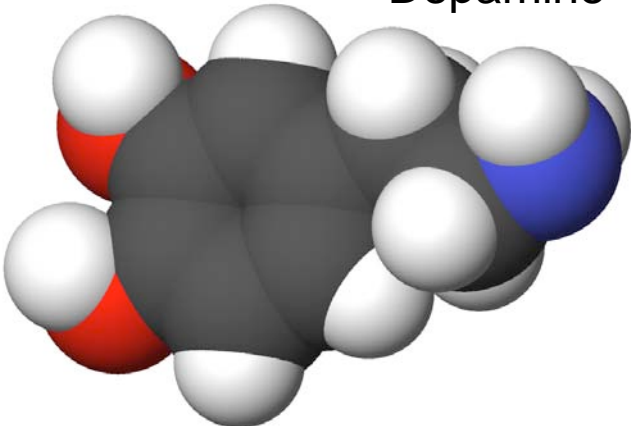
Redundancy

Connectivity

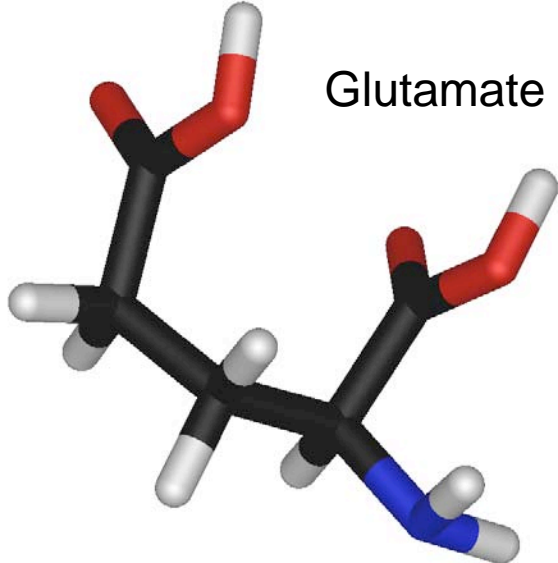
Neurotransmitters

Neurotransmitters: the new information tools

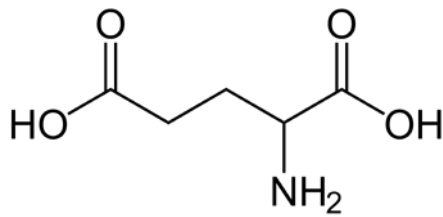
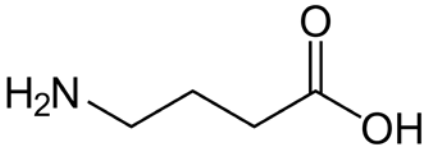
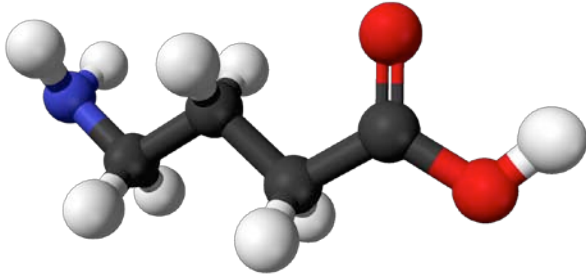
Dopamine



Glutamate



GABA



**Codes are
abstractions of
information.**

**Neurophysiology
is the information.**

Psychopharmacology



**The future of
information
is not digital
but neurological**



The Physiology of Information

**Michael Ridley
Chief Information Officer
and Chief Librarian
University of Guelph**

**CANHEIT
McMaster University
June 6, 2011**



Email:
mridley@uoguelph.ca

Twitter:
[mridley](https://twitter.com/mridley)

Website & Blog:
www.michaelridley.ca