

Seeing and touching: your mobile brain

Chris Atherton

@finiteattention

I. How our brains see

2. How we synthesise reality

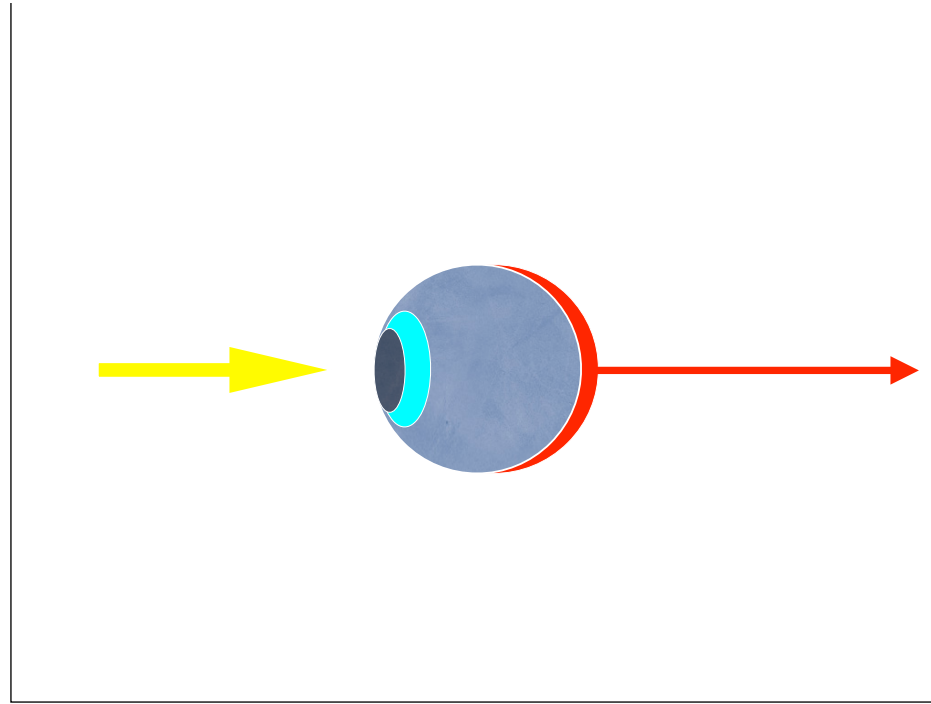
3. How we fail at seeing

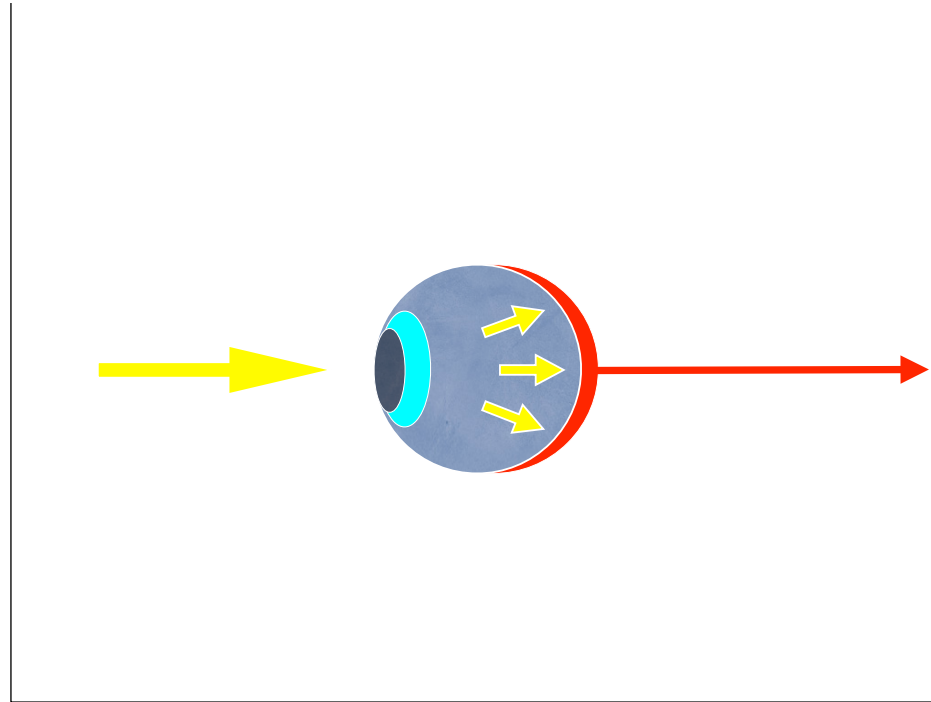
4. Computers and stupidity

5. Married to the Mob(ile)

I. How our brains see



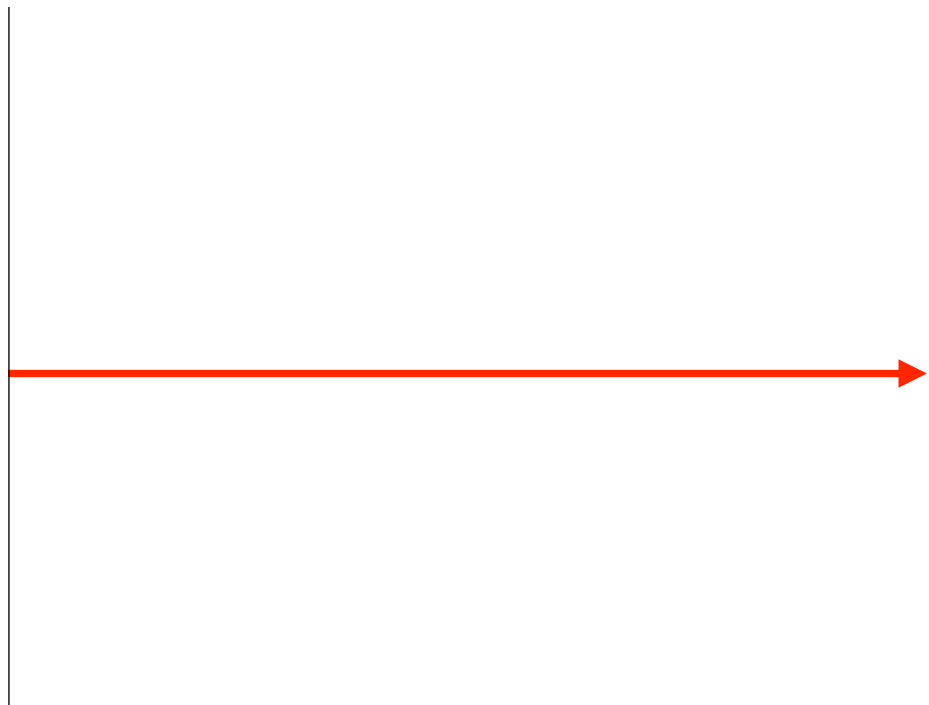


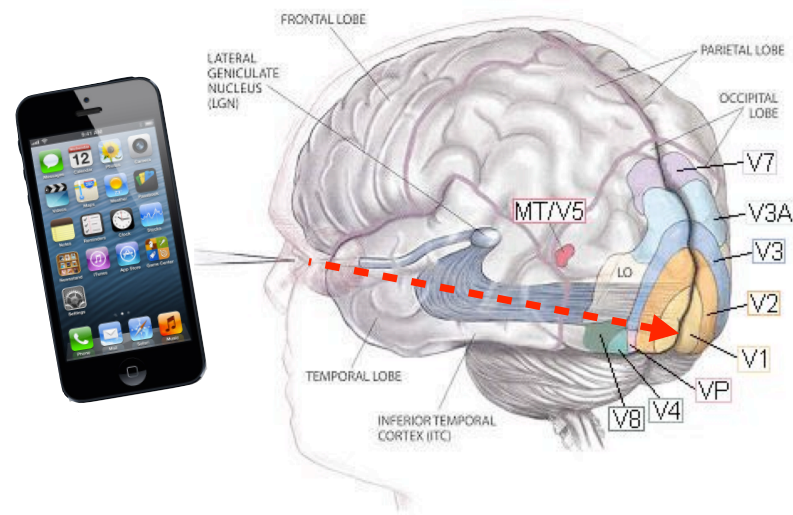


*... different neurones already processing
the information from each **eye** ...*

... *different neurones encode **what** you're
looking at, vs. **where it is** ...*

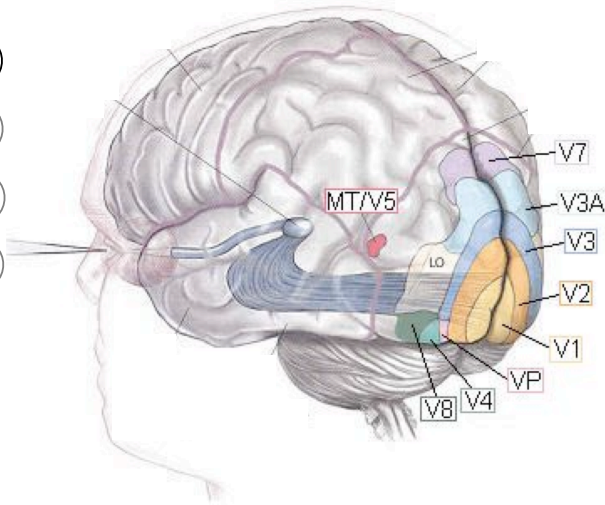
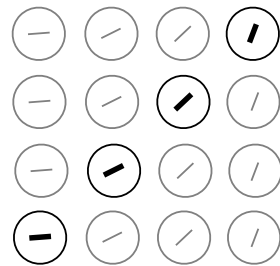
*...different neurones encode **hue** and **contrast** ...*



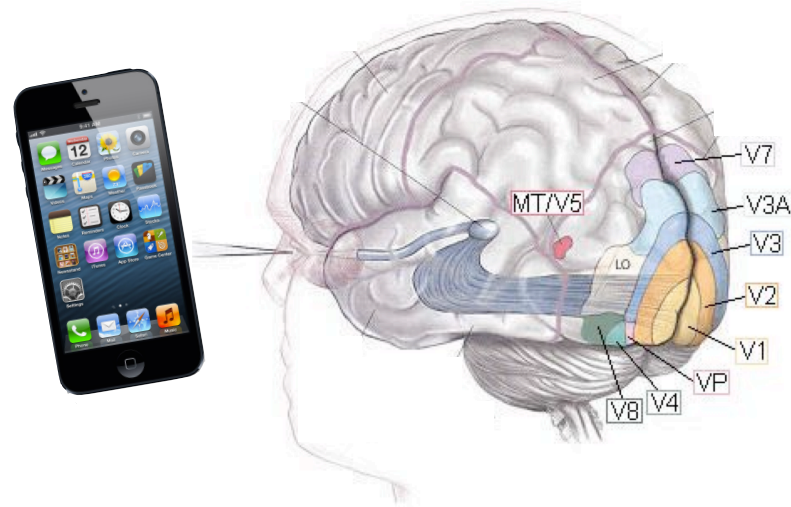


www.owl.net.rice.edu

V1 *line fragments*

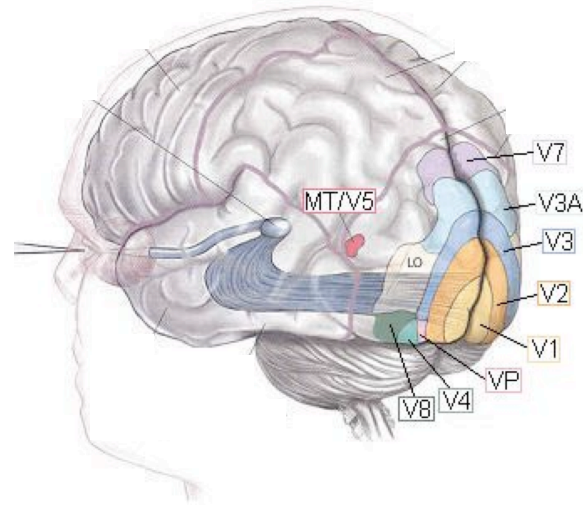
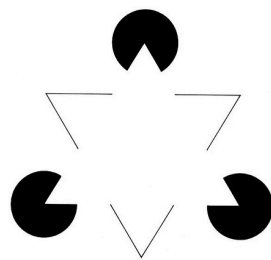


V2 *what and where*



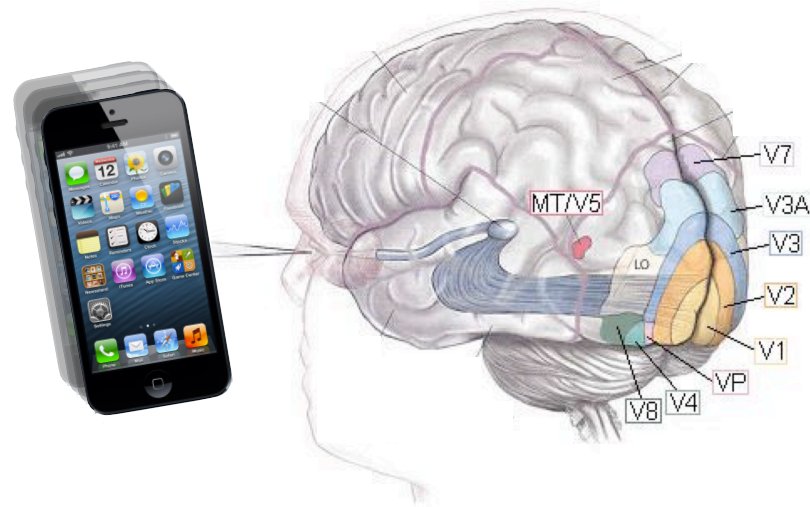
www.owl.net.rice.edu

V2 *illusory contours*



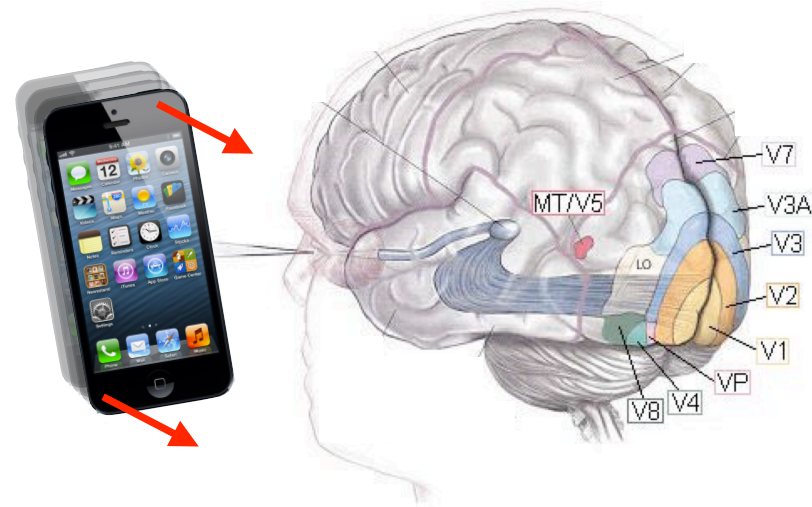
www.owl.net.rice.edu

V3 *motion*



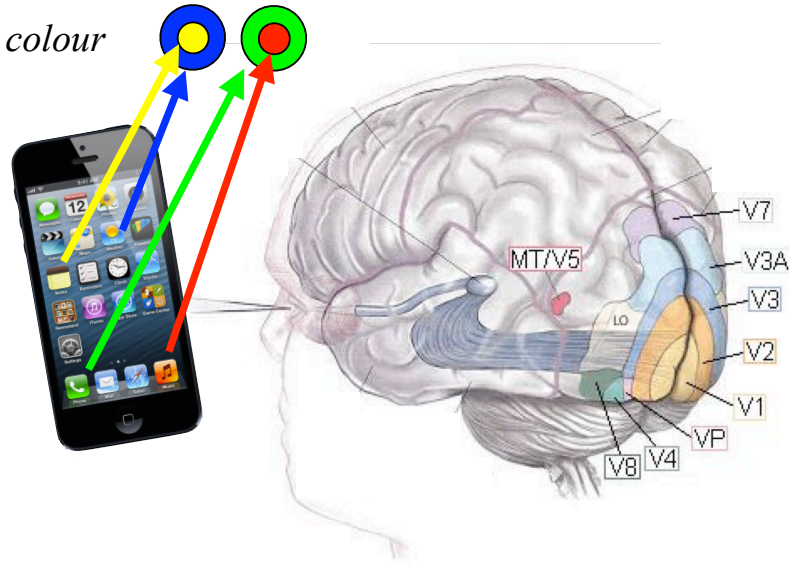
www.owl.net.rice.edu

V5 *motion and direction*



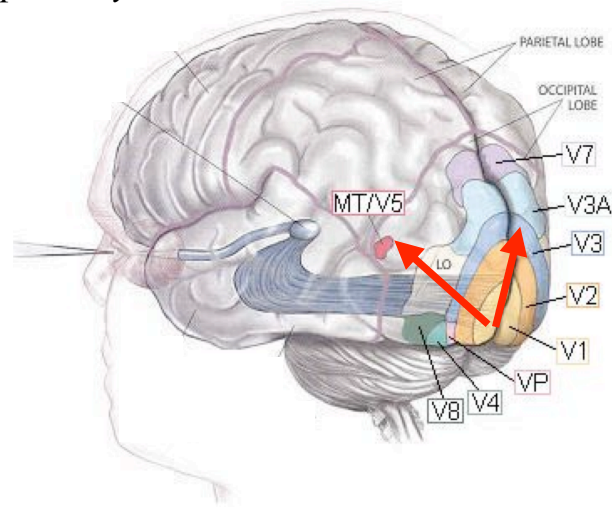
www.owl.net.rice.edu

V4 colour



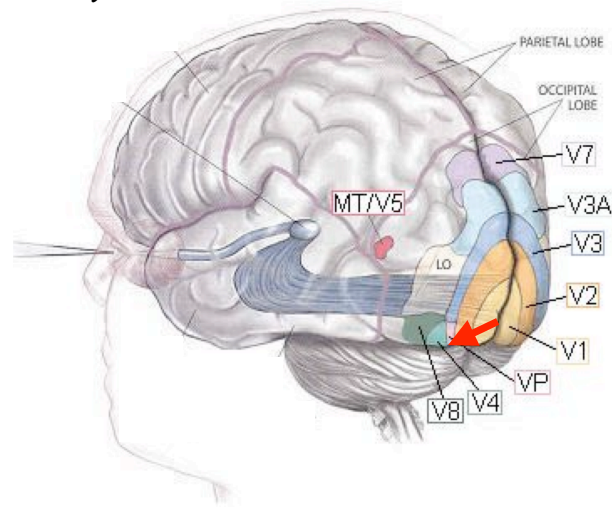
www.owl.net.rice.edu

Where *fast pathway*

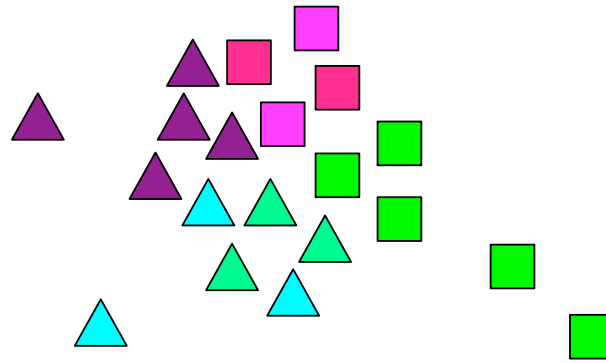


www.owl.net.rice.edu

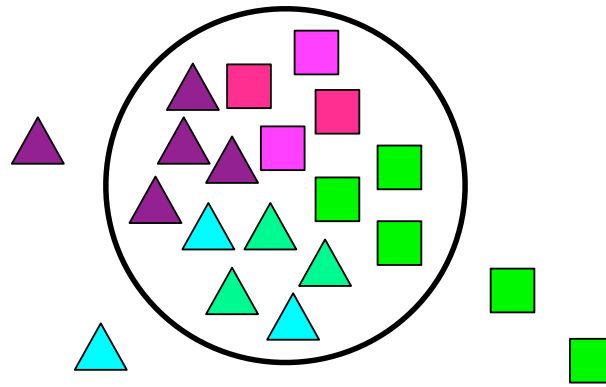
What *slow pathway*



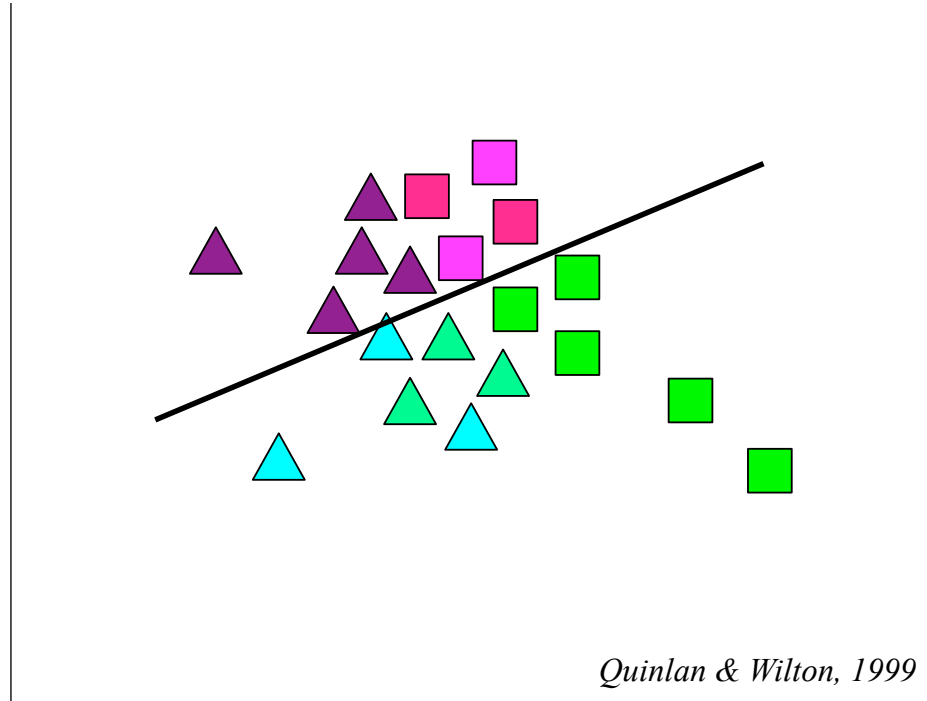
www.owl.net.rice.edu

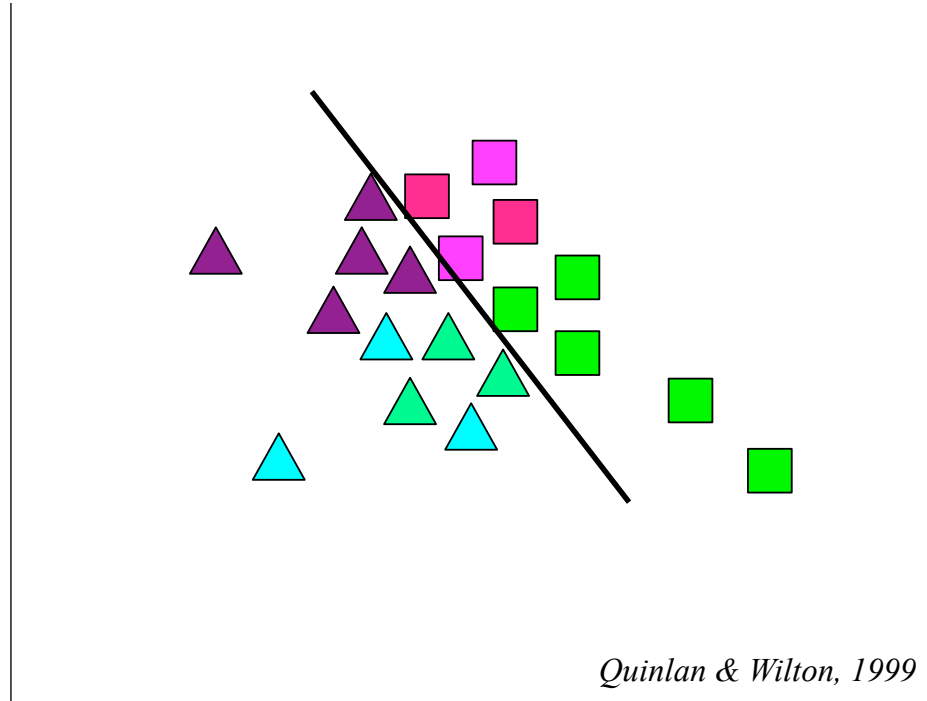


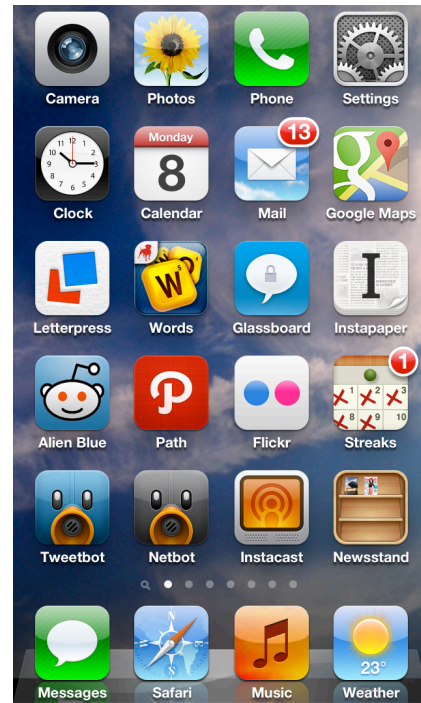
Quinlan & Wilton, 1999



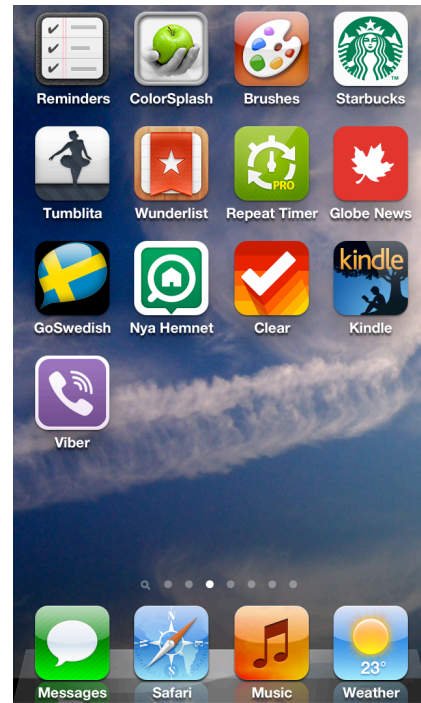
Quinlan & Wilton, 1999



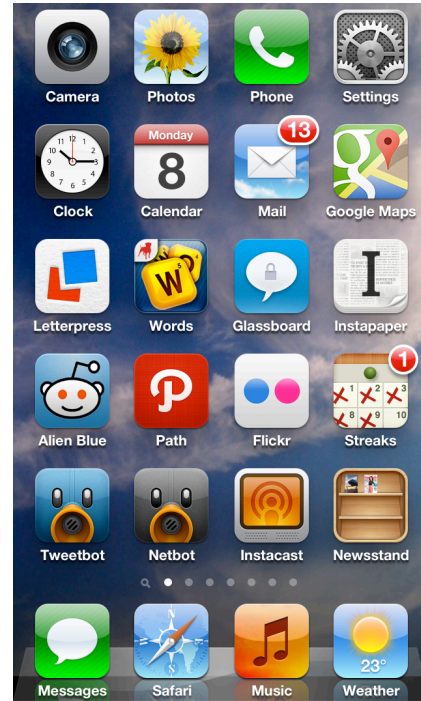






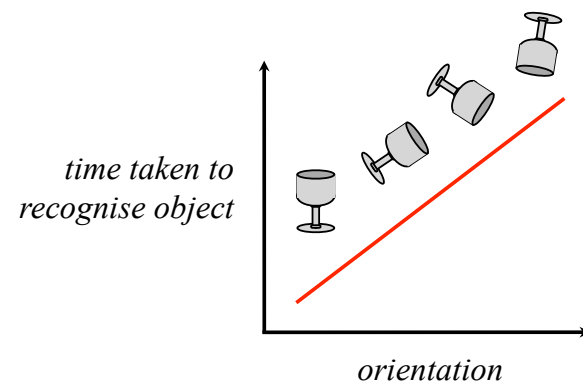




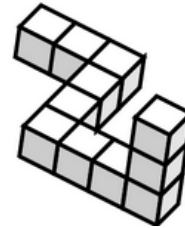
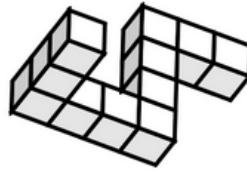




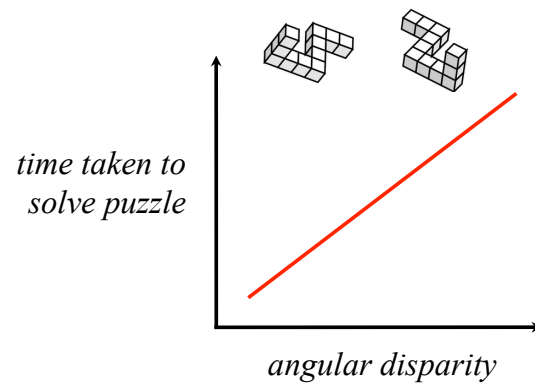
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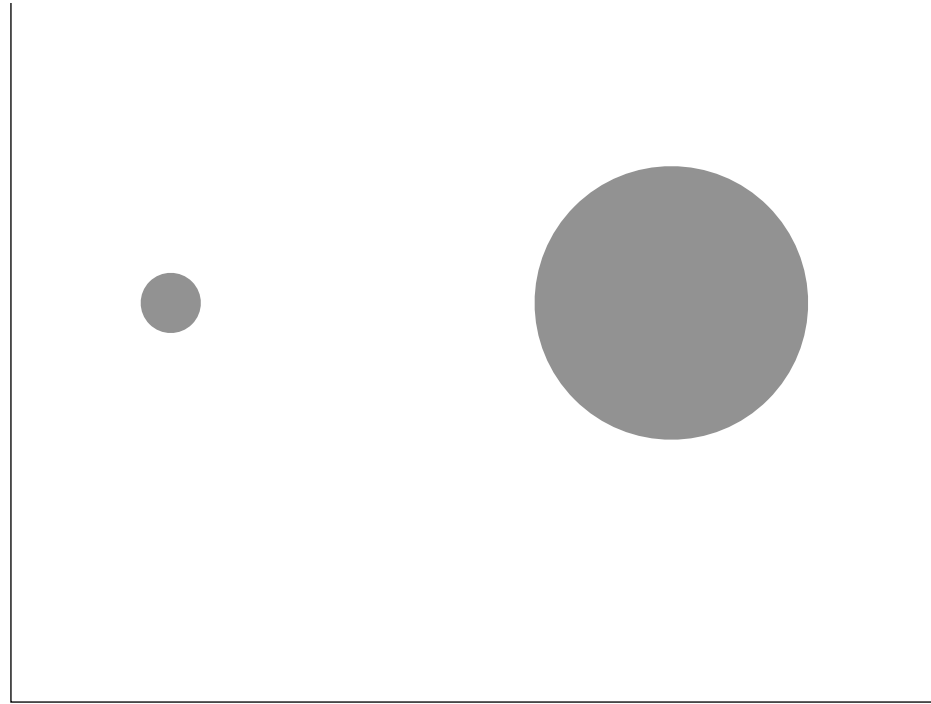
Jolicoeur, 1985



hesslow.com

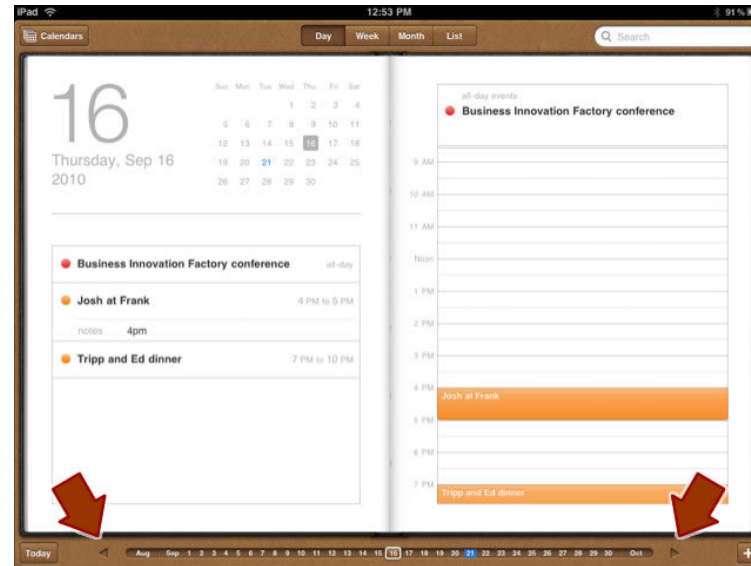


Shepard & Metzler, 1971

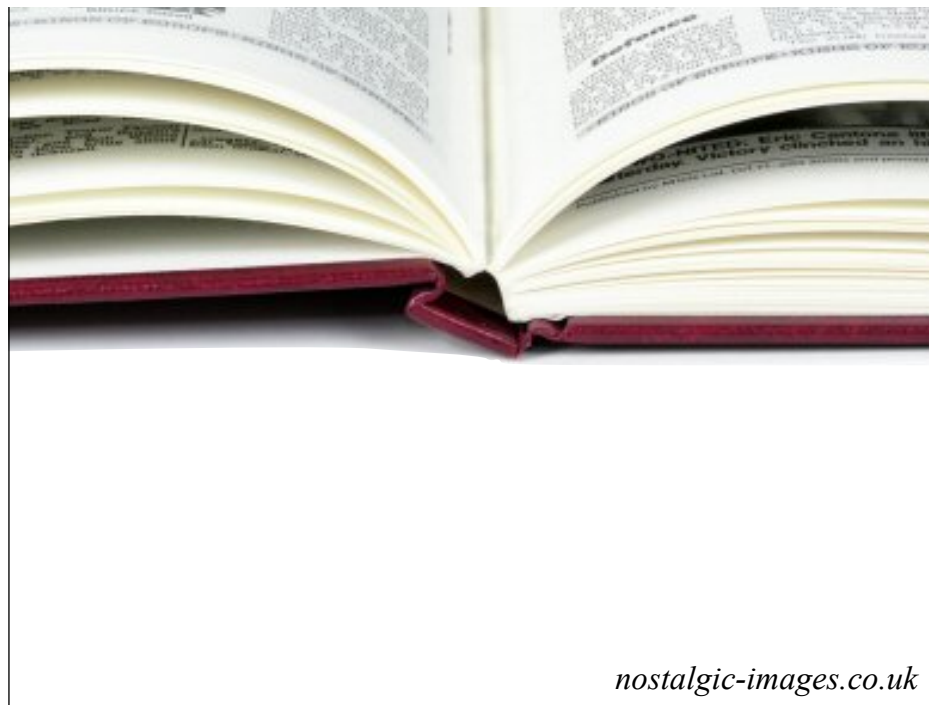


*our brains seem to
really like reality*

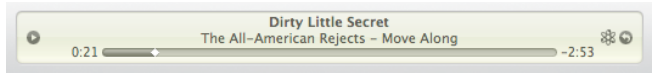


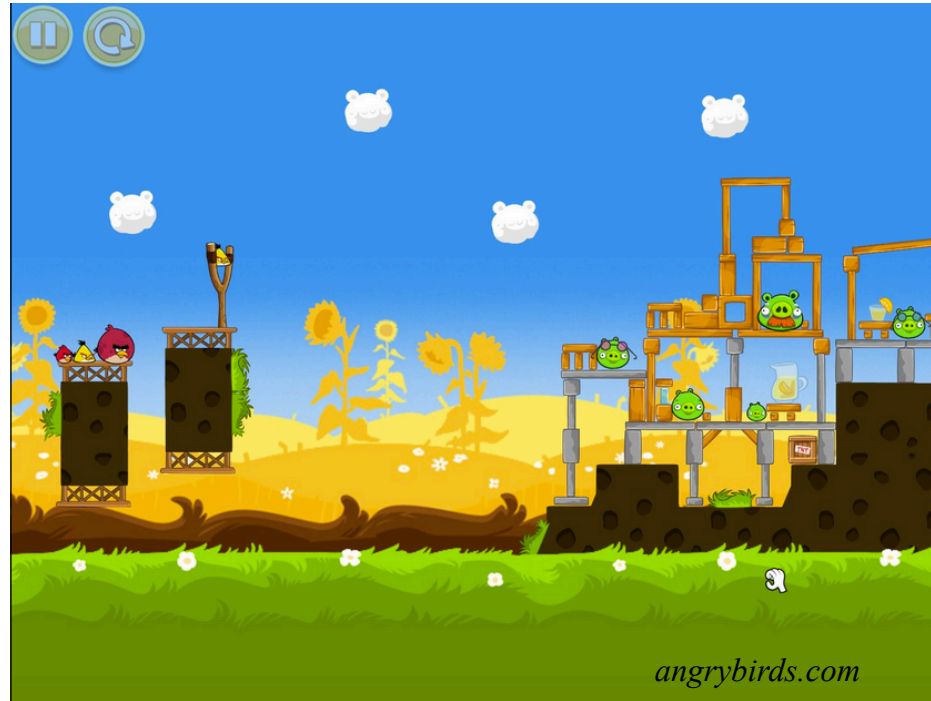


globalmoxie.com

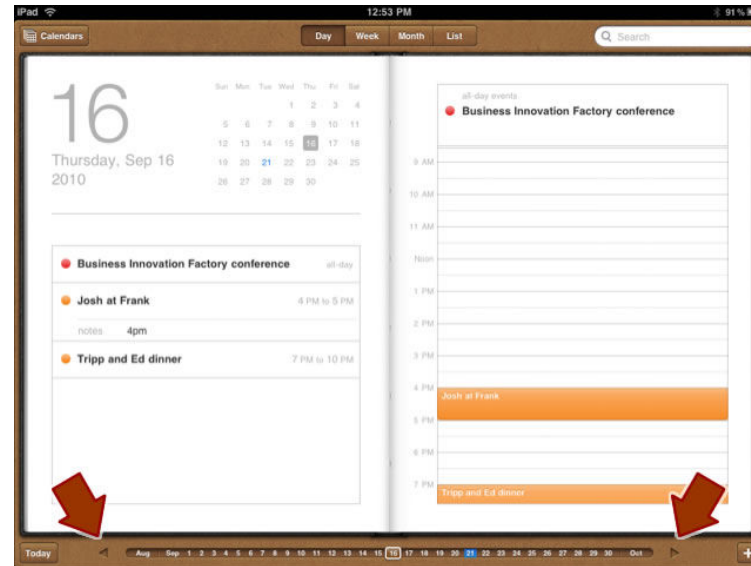


nostalgic-images.co.uk





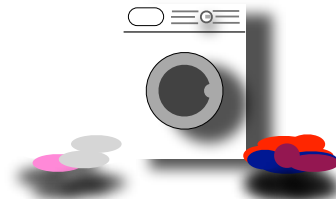
mental models



globalmoxie.com

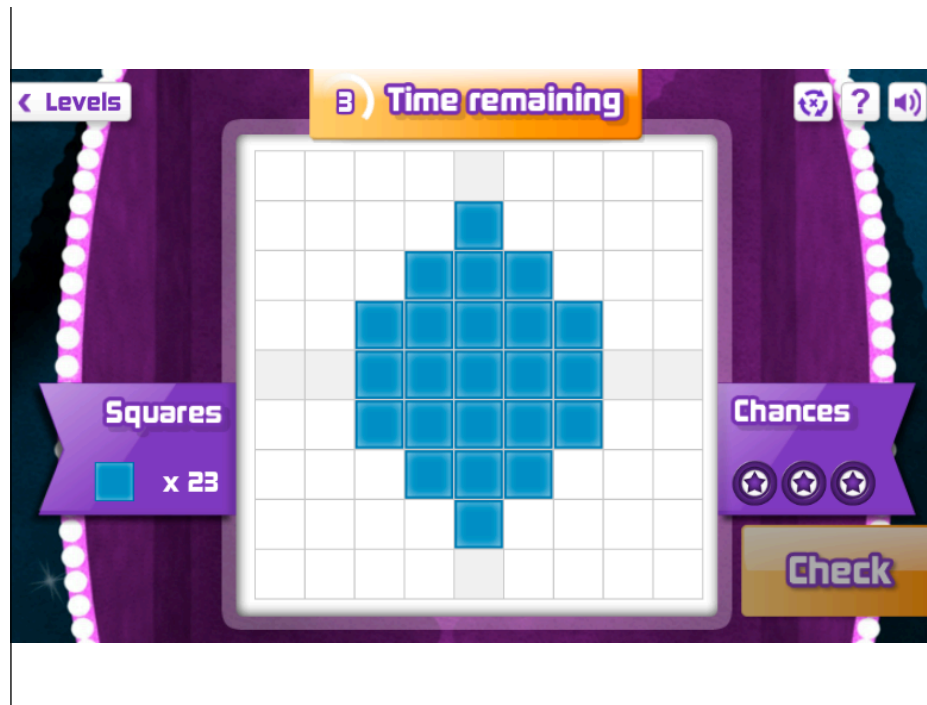
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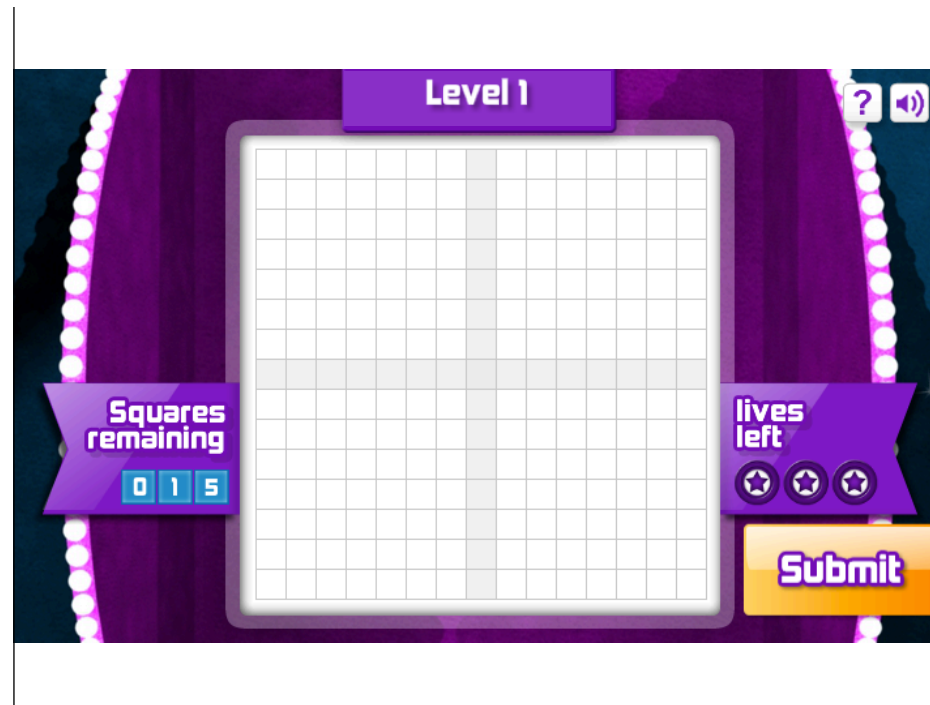
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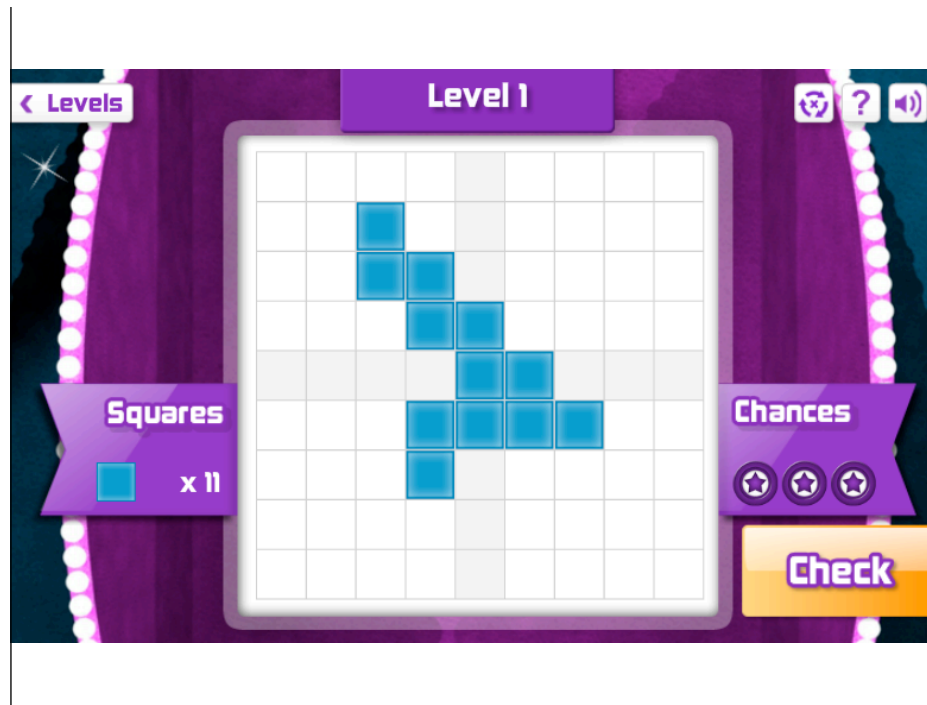


Bransford & Johnson, 1972

3. How we fail at seeing

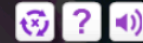






< Levels

Level 1



Nearly there
43%
CORRECT

Squares

Chances

You need 60% to unlock the next level

Play again
3 chances left



NEXT LEVEL LOCKED

Check

< Levels

4 Time remaining



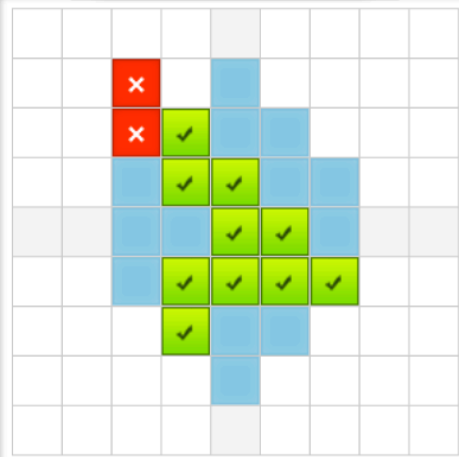
Squares

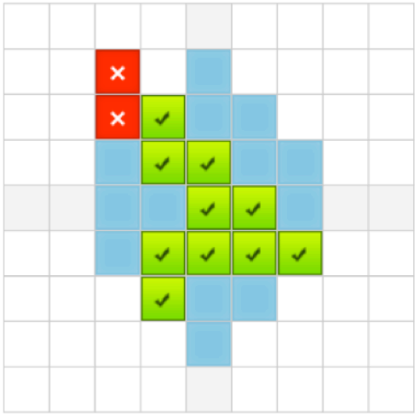
 x 11

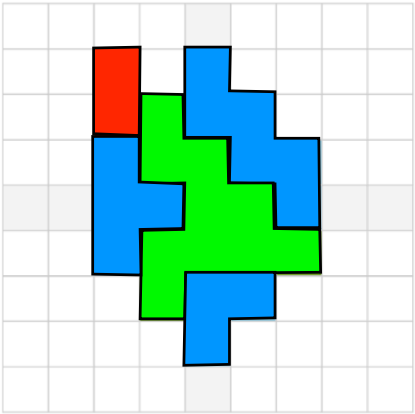
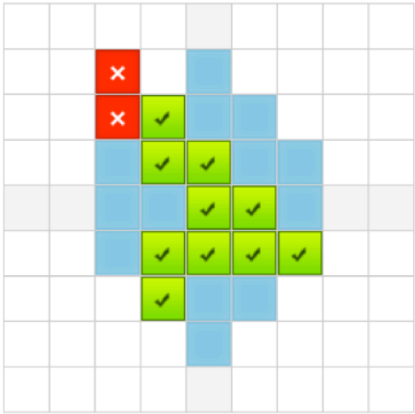
Chances

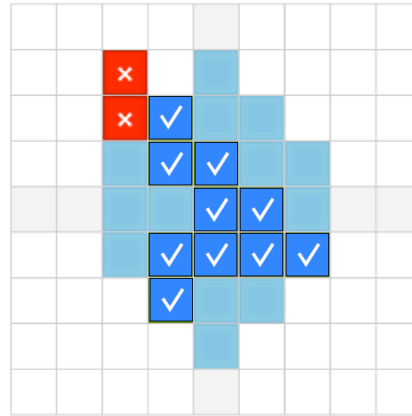


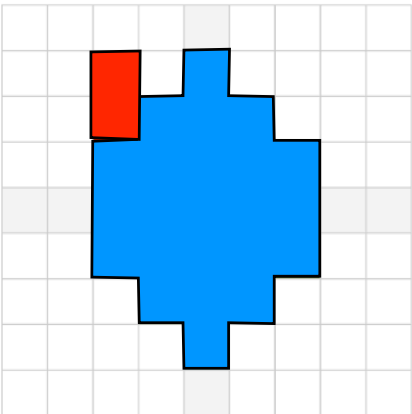
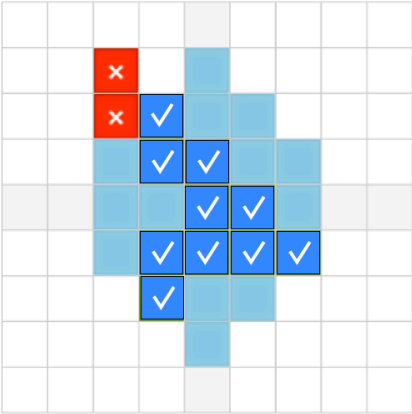
Check

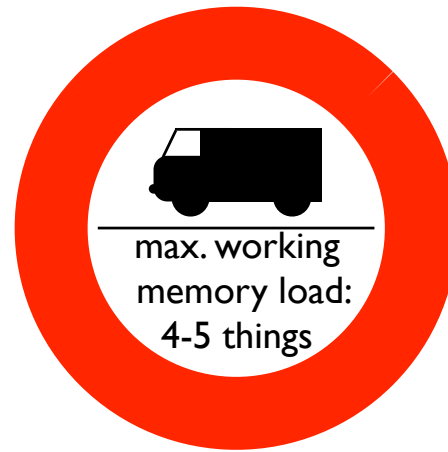














“change blindness”

Flash prototype interlude

4. Computers and stupidity

attention

4. Computers and stupidity

us

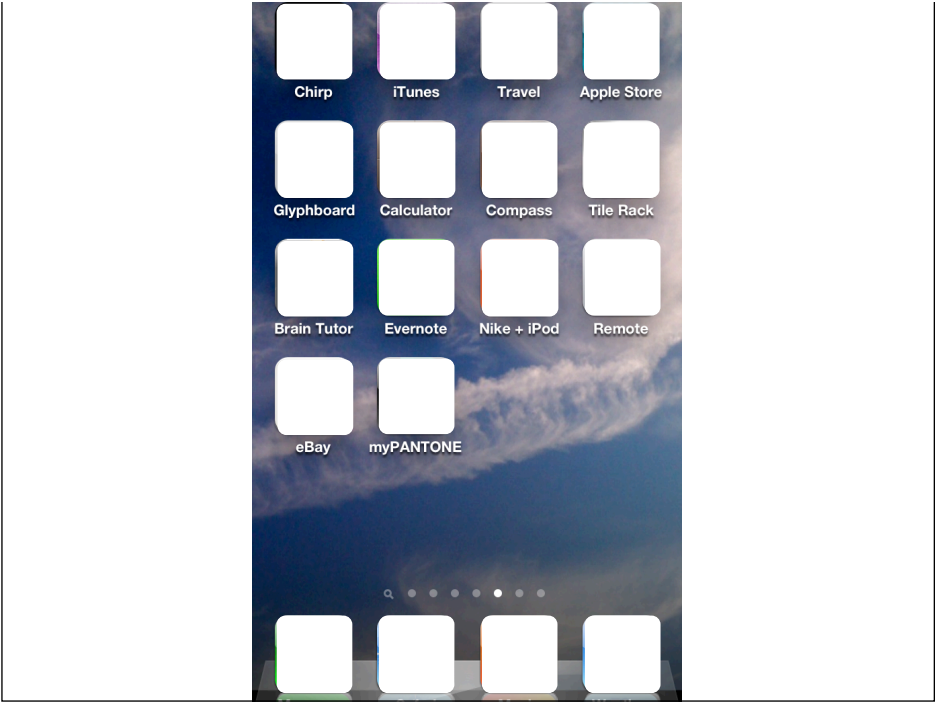
attention

4. Computers and stupidity

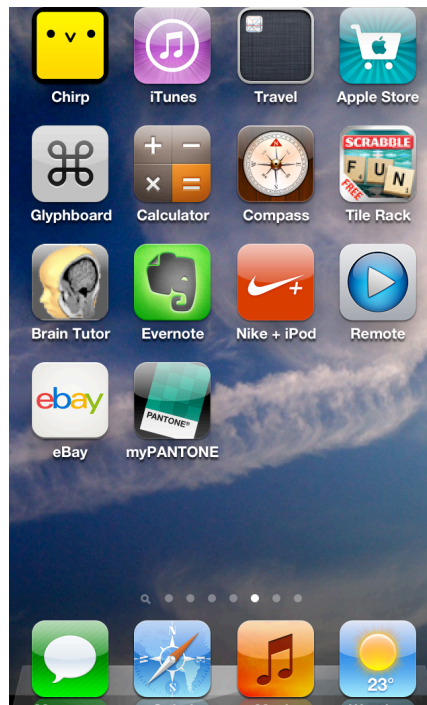
4. *Cyborgs* us

attention

~~4. Computers and stupidity~~







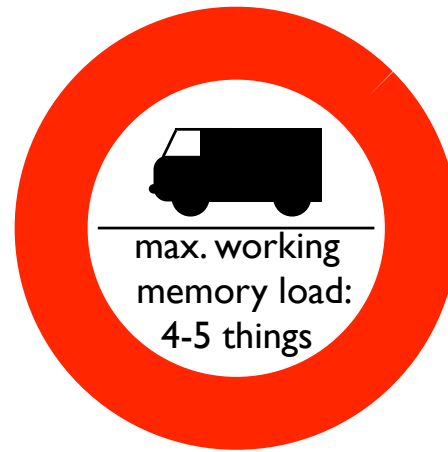


“magic number 7” +/- 2

Miller, 1956

“magical number 4”

Cowan, 2001




important note

Q Bob

Cancel


LinkedIn Network



Bob Knowles

Freelance language teacher at CanDo Languages


2nd



Bob Gower

Leadership Development Consult...


2nd



Bob McGettrick

Principal Architect at KANA Soft...


2nd



Bob Devall

Practice Leader, Projects and Programmes at Computacenter...


2nd



Bob Harrison

Technical Writer/Editor - Defence, IT, Software, Telecomms, Medica...


2nd



Bob Jose

Sales Director


2nd



Bob McLain

Owner at Bob McLain Media

2nd



Bob Fletcher

Account Director at Media Power

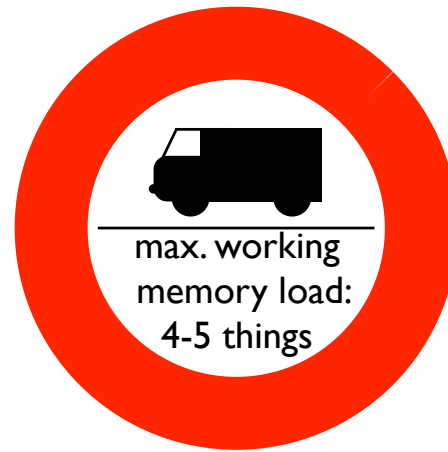
2nd

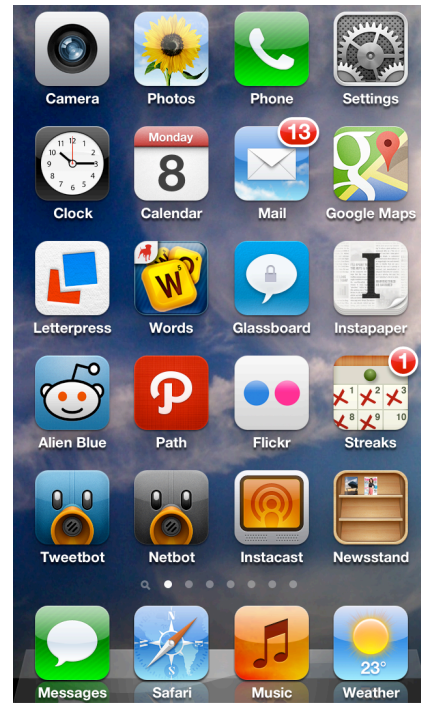
subitization











Calendars

All Calendars

+

◀

April 2013

▶

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

● 07:00 Frühstück

● 09:15 Kaffee

● 21:00 Call Dad

● 21:00 Get train to airport

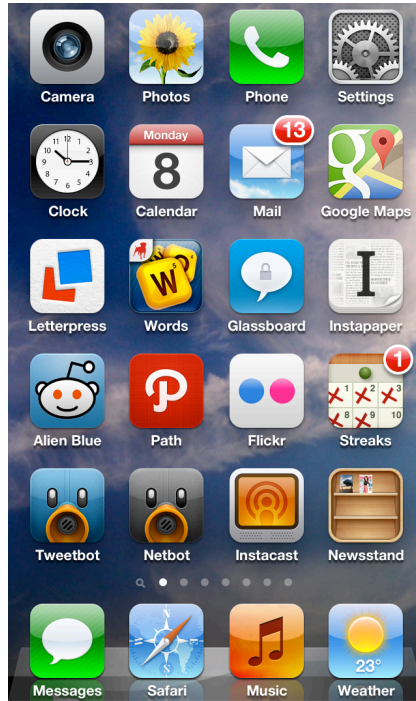
Today

List

Day

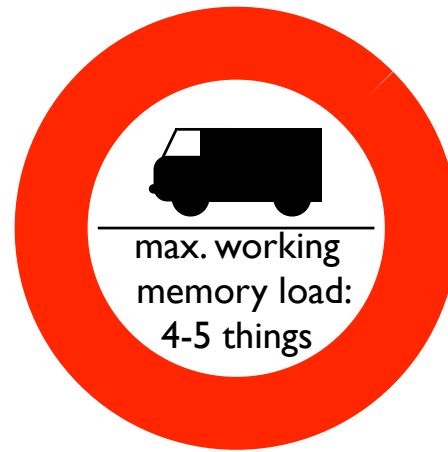
Month

⌵



*Infinite
working
memory*





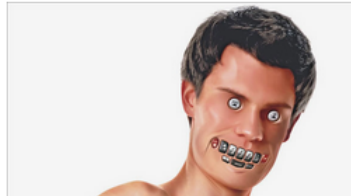


WIRED MAGAZINE: ISSUE 15.10

TECH BIZ : PEOPLE 

Your Outboard Brain Knows All

By Clive Thompson  09.25.07



We're running out of memory.

I don't mean computer memory. That stuff's half-price at Costco these days. No, I'm talking about human memory, stored by the gray matter inside our heads. According to recent research, we're remembering fewer and fewer basic facts these days.

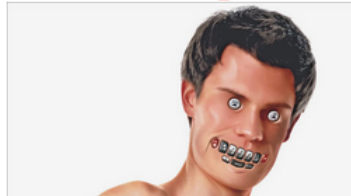
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My Blog, My Outboard Brain

by [Cory Doctorow](#), author of [Essential Blogging](#)
05/31/2002



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My Blog, My Outboard Brain

by [Sam Oostorow](#), author of [Essential Blogging](#)

05/31/2002

Facebook and internet 'can re-wire your brain and shorten attention span'

By FIONA MACRAE

UPDATED: 08:33, 15 September 2010

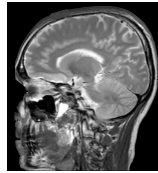
[Comments \(12\)](#) | [Share](#)  +1 5  Tweet 18  Like 411

An obsession with computer games and social networking sites may be changing the way people's minds work, one of the country's most eminent brain scientists has warned.

The Oxford University expert believes constant computer and internet use may be 'rewiring the brain', shortening attention spans, encouraging instant gratification and causing a loss of empathy.

Susan Greenfield said: 'For me, this is almost as important as climate change.

Site that should know better

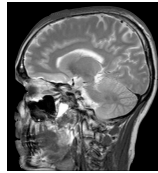


**OBLIGATORY
BUT WHOLLY
UNRELATED
BRAIN PIC**

Title that belongs in a tabloid newspaper

Story about usability or UX or some aspect of software-related human experience that turns out to have no supporting evidence in it from brain studies of any kind, though it may mention the brain several times.

Site that should know better



↑
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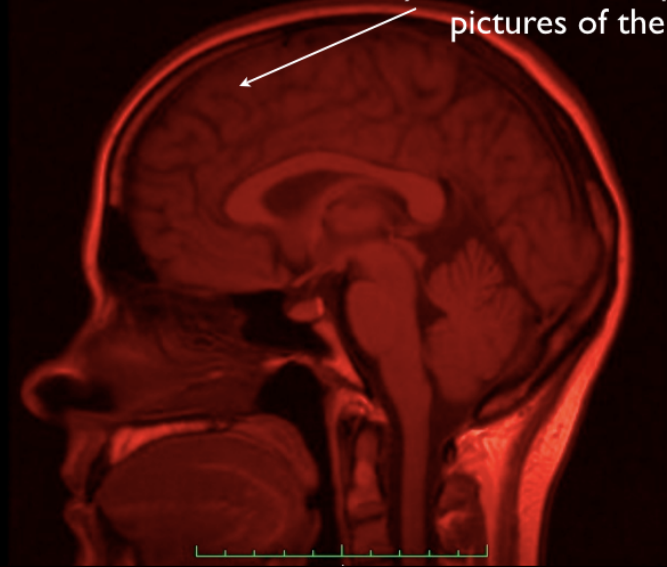
**story more likely to be
rated as exhibiting good
scientific reasoning**

McCabe & Castel, 2008

*“the seductive allure of
neuroscience explanations”*

Skolnick Weisberg et al., 2008

The part of the brain that shuts off
critical analysis when it sees pretty
pictures of the brain



<http://flickr.com/photos/quinn/4252155172>

“the seductive allure of ‘seductive allure’”

Farah & Hooke, 2013

Nicholas Carr:

My next book, [The Shallows: What the Internet Is Doing to Our Brains](#), argues that the tools we use to think with – our “intellectual technologies” – not only shape our habits of thought but exert an actual physical influence on the neurons and synapses in our brains.

roughtmlpe.com

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rougtype.com

5. Married to the Mob(ile)

‘embodied cognition’







my-wardrobe.com



customisable best friend



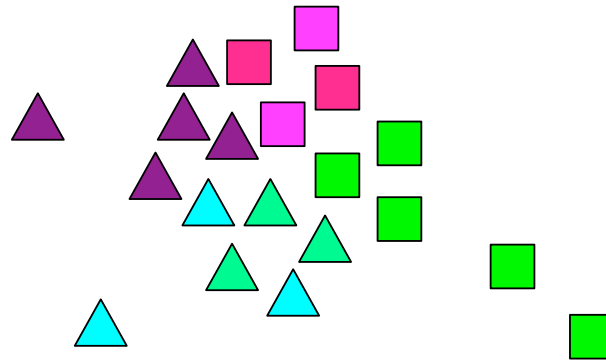
“mere exposure” effect

e.g. Zajonc, 2001



nedhardy.com

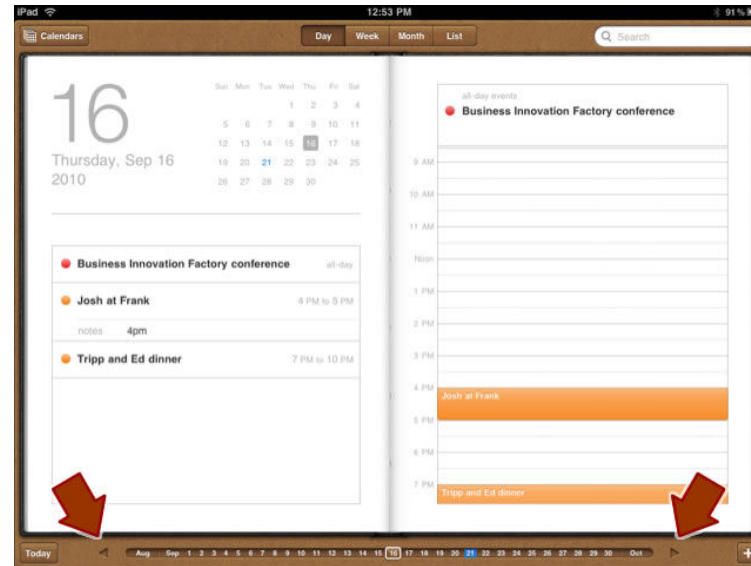
SO ...



Quinlan & Wilton, 1999

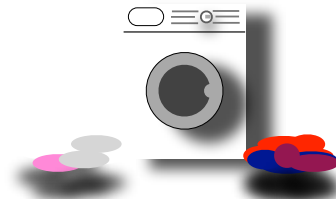




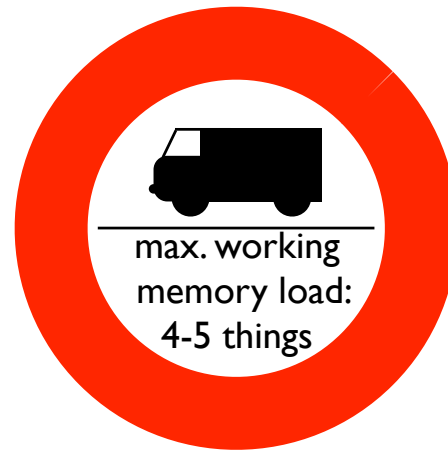


globalmoxie.com

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Bransford & Johnson, 1972



< Levels

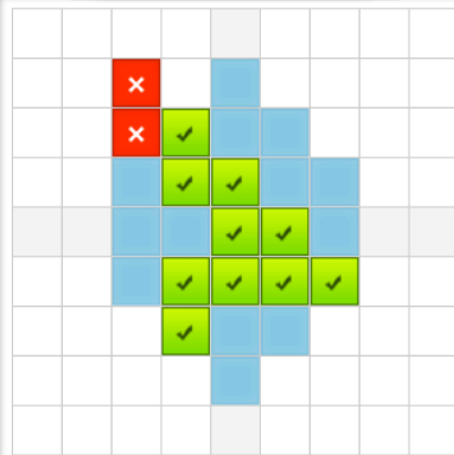
4 Time remaining



Squares



x 11



Chances



Check

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By FIONA MACRAE

UPDATED: 08:33, 15 September 2010

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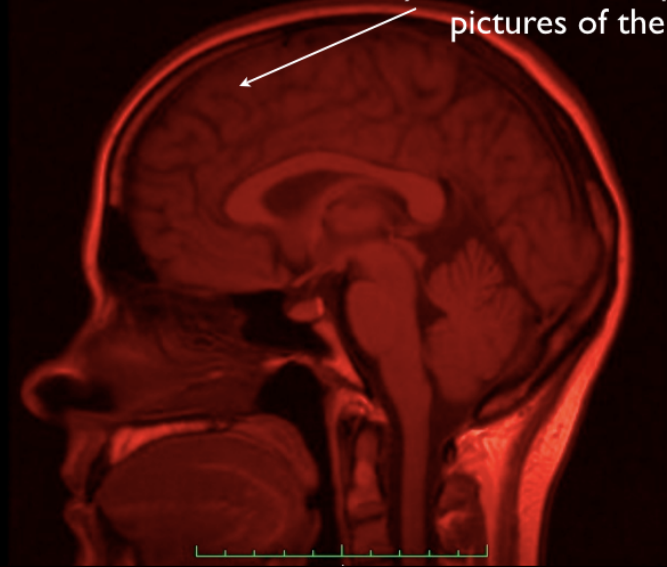
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The part of the brain that shuts off
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<http://flickr.com/photos/quinn/4252155172>



thanks for listening :)

@finiteattention