Asides on Curious and Interesting Things

Complex Networks
CSYS/MATH 303, Spring, 2011

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Outline

Words

People

Probability

Random

Videos

Good science

References

Culturomics:

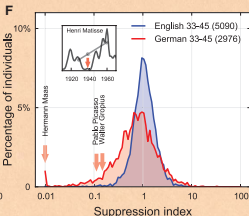"Quantitative analysis of culture using millions of digitized books" by Michel et al., Science, 2011 [1]

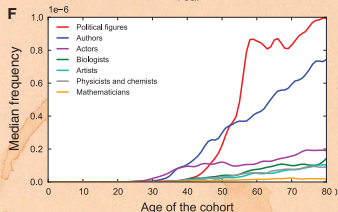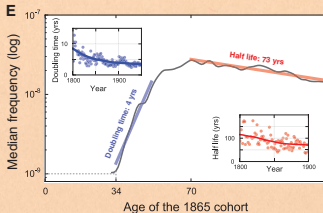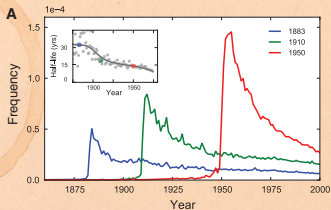http://www.culturomics.org/ (⊞)
Google Books ngram viewer (⊞)

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Selflessness

Radiolab Podcast: "An Equation for Good" (⊞)

▶ Natural selection,

▶ the 'mystery of altrusim',

▶ George Price,

▶ madness.

The Invention of Money

- ▶ "This American Life" Podcast on money and belief (⊞)
- ▶ (1) Brazil and (2) the Fed...

Dynamic networks: Server security
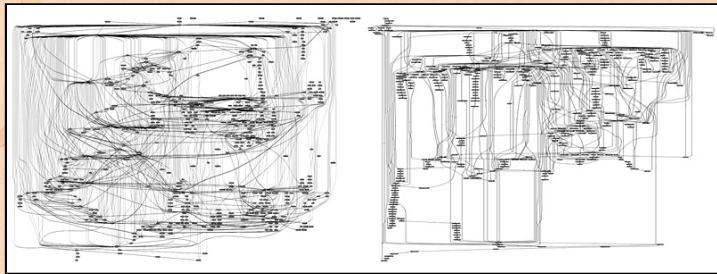
Serving one html page with an image:

▶ Map of system calls made by a Linux server running Apache and Windows server running IIS. Which is which?

Taken from http://www.visualcomplexity.com (⊞)

Homo probabilisticus?

The set up:

▶ A parent has two children

Simple probability question:

▶ What is the probability that both children are boys?

Homo probabilisticus?

Asides

Words

People

Probability

Random

Videos

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References

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Asides

Words
People
Probability
Random
Videos
Good science
References

The set up:

▶ A parent has two children.

Simple probability question:

▶ What is the probability that both children are boys?
▶ 1/4...

Homo probabilisticus?

The next set up:

▶ A parent has two children.

▶ We know one of them is a boy

The next probabilistic poser:

▶ What is the probability that both children are boys?

Homo probabilisticus?

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Asides

Words
People
Probability
Random
Videos
Good science
References

The next set up:

- A parent has two children.
- We know one of them is a boy.

The next probabilistic poser:

- What is the probability that both children are boys?
- 1/3...

Homo probabilisticus?

One more set up:

▶ A parent has two children.

▶ We know one of them is a boy born on a Tuesday

One more probabilistic poser:

▶ What is the probability that both children are boys?

Homo probabilisticus?

One more set up:

► A parent has two children.

► We know one of them is a boy born on a Tuesday

One more probabilistic poser:

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Asides

Words
People
Probability
Random
Videos
Good science
References

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Asides

Words
People
Probability
Random
Videos
Good science
References

One more set up:

- A parent has two children.
- We know one of them is a boy born on a Tuesday.

One more probabilistic poser:

- What is the probability that both children are boys?
- ?

Homo probabilisticus?

One more set up:

▶ A parent has two children.

▶ We know one of them is a boy born on December 31

One more probabilistic poser:

▶ What is the probability that both children are boys?

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- A parent has two children.
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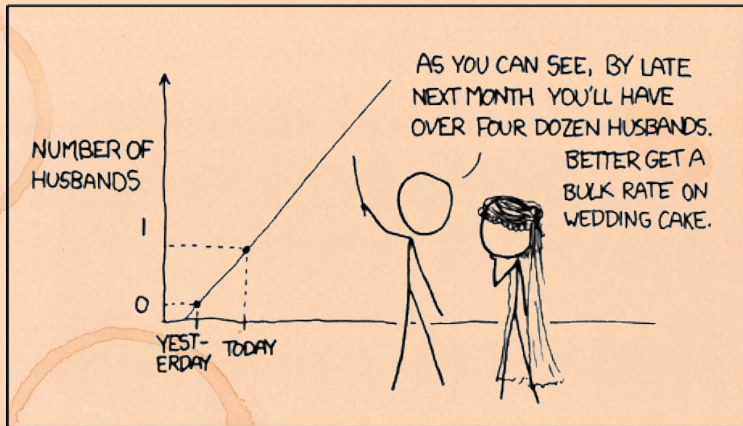▶ What is the probability that both children are boys?
▶ ?

Prediction:

Asides

Words
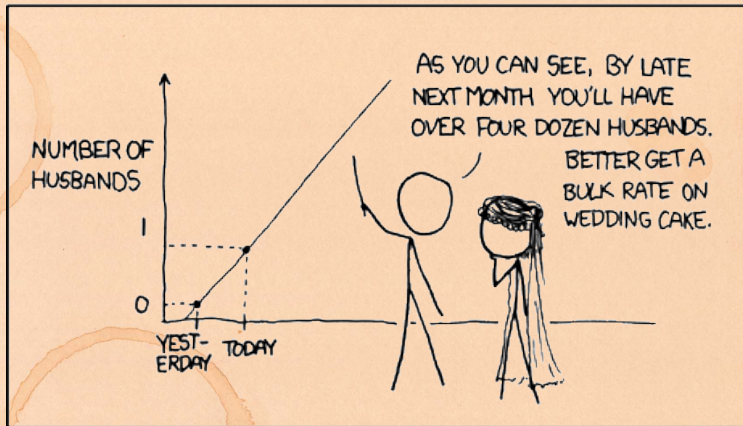People
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Videos
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References

Prediction:

http://xkcd.com/605/ (⊞)

By the third trimester, there will be hundreds of babies inside you...
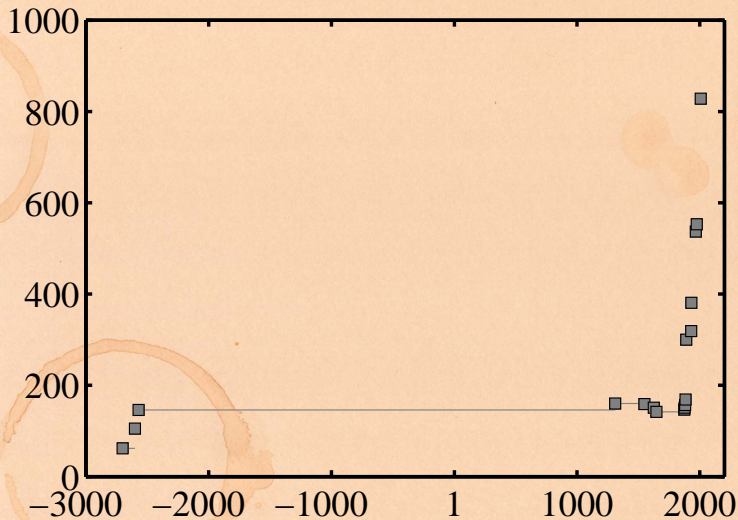
What's this?

Mimicry—the lying lyrebird

Whimsical but great example of real science:

"How Cats Lap: Water Uptake by *Felis catus*" (⊞)
Reis et al., *Science*, 2010.

A Study of Cat Lapping

Adult cats and dogs are unable to create suction in their mouths and must use their tongues to drink. A dog will scoop up liquid with the back of its tongue, but a cat will only touch the surface with the smooth tip of its tongue and pull a column of liquid into its mouth.

Liquid sticks to smooth tip.

A single lap is about 3/100 tsp.
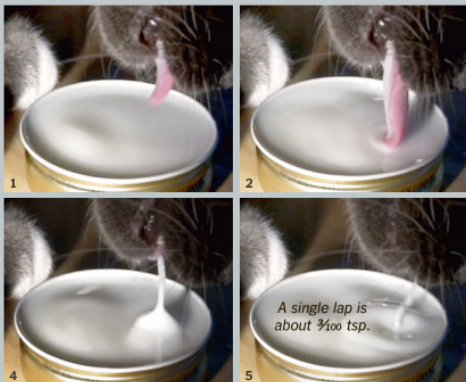
Source: Science   THE NEW YORK TIMES; IMAGES FROM VIDEO BY ROMAN STOCKER, SUNGHWAN JUNG, JEFFREY M. ARISTOFF AND PEDRO M. REIS

Amusing interview here (⊞)

Universal numbers

- Accidents of evolution give us 5 + 5 = 10 fingers and hence base 10.
- We could be happy about 6, 8, or 12.

Universal numbers

▶ Accidents of evolution give us 5 + 5 = 10 fingers and hence base 10.

▶ We could be happy about 6, 8, or 12.

▶ Beep.

Great moments in Universality

Phyllotaxis
Add pictures

Richard Wiseman's research:

▶ http://www.quirkology.com (⊞)

▶ Letter writing exercise...

Richard Wiseman's research:

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Quirkology

People who draw letters so others can read them tend to:

- be high 'self-monitors'
- be concerned with how others see them
- adapt better to social situations
- skilled at altering how others see them
- be more adept at lying...

People how draw letters so they can read them tend to:

- be low 'self-monitors'
- follow their inner values
- remain the same across social settings
- be less adept at lying...

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Probability
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Videos
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References

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Quirkology

► And those who convince themselves they drew their letters the opposite way to what they really did...

Quirkology

► And those who convince themselves they drew their letters the opposite way to what they really did. . .

are good at deceiving themselves.

References I

[1] J.-B. Michel, Y. K. Shen, A. P. Aiden, A. Veres, M. K.
Gray, The Google Books Team, J. P. Pickett,
D. Hoiberg, D. Clancy, P. Norvig, J. Orwant, S. Pinker,
M. A. Nowak, and E. L. Aiden.
Quantitative analysis of culture using millions of
digitized books.
Science Magazine, 331:176–182, 2011. pdf (⊞)