

# Still Waiting for “Artificial Intelligence” ?

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Turing Test Participants

Programmers Everywhere

# Still Waiting for “Artificial Intelligence” ?

Intelligence?? As in:

Answering Tricky Jeopardy Questions?

Believable Chat-Bots?

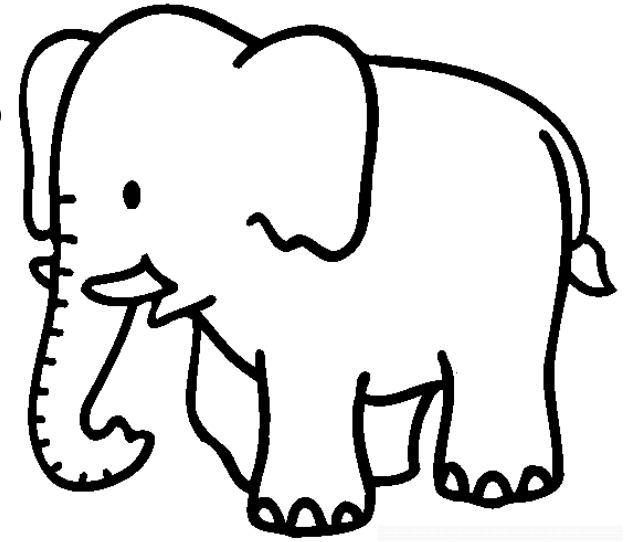
Know-It-All Doctor’s “Assistants”?

Travel-Trip-Advisors?

Siri?

Etc.

**Is THIS Intelligence ???**



What we (all) really mean - the elephant in the room - is

Artificial Consciousness ...

Right??!!

The problem with “artificial” consciousness is  
that consciousness *can't* be “artificial”!

Consciousness can ***only*** be the real thing - that is its very nature!

The more I look, the *more* beautiful consciousness becomes. *Never* less.

I want to show you something that is beautiful, that I think could become conscious

So the title of my talk is:

***Consciousness***

***is***

***Beauty***

# The Pythagoreans

Greek mystical sect - 500 BCE → today.

Greatly influenced Plato and later philosophers

Dominated by mathematics

Profoundly mystical

Two separate schools of thought:

mathēmatikoi - *learners*

akousmatikoi - *listeners*

# The akousmatikoi

Awareness  $\approx$  Sound

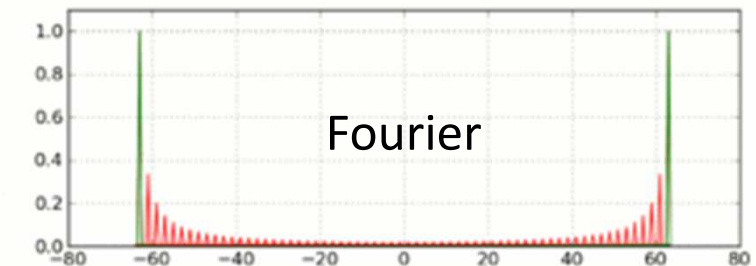
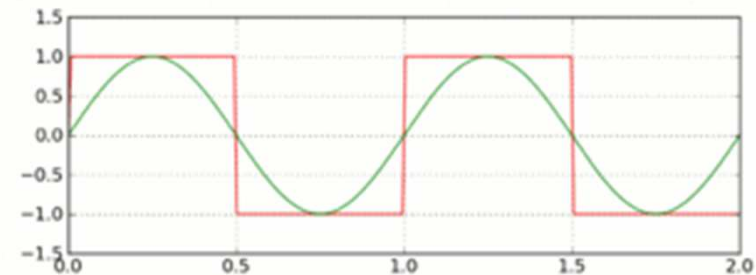
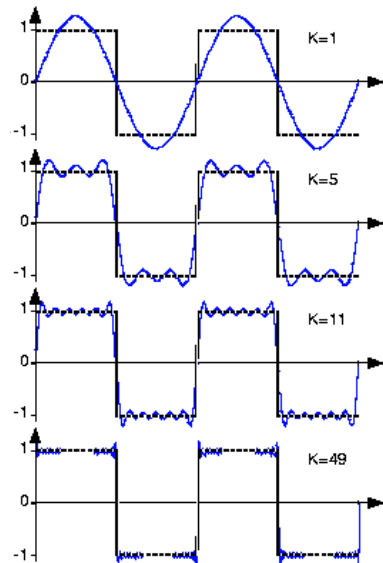
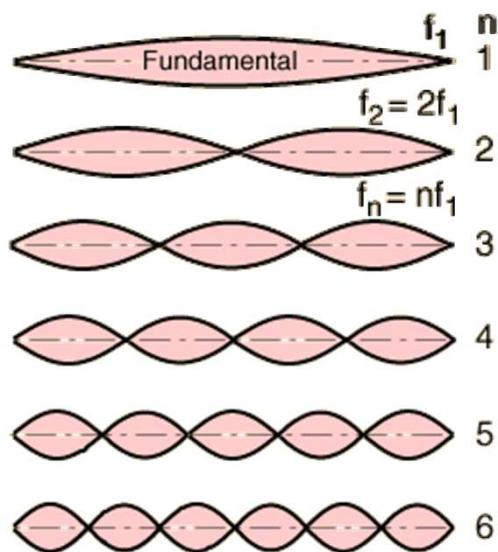
Meditative focus

Sound = Waves = Cyclic

Waves as un-localized Influence

The Motion of the Planets

The Music of the Spheres



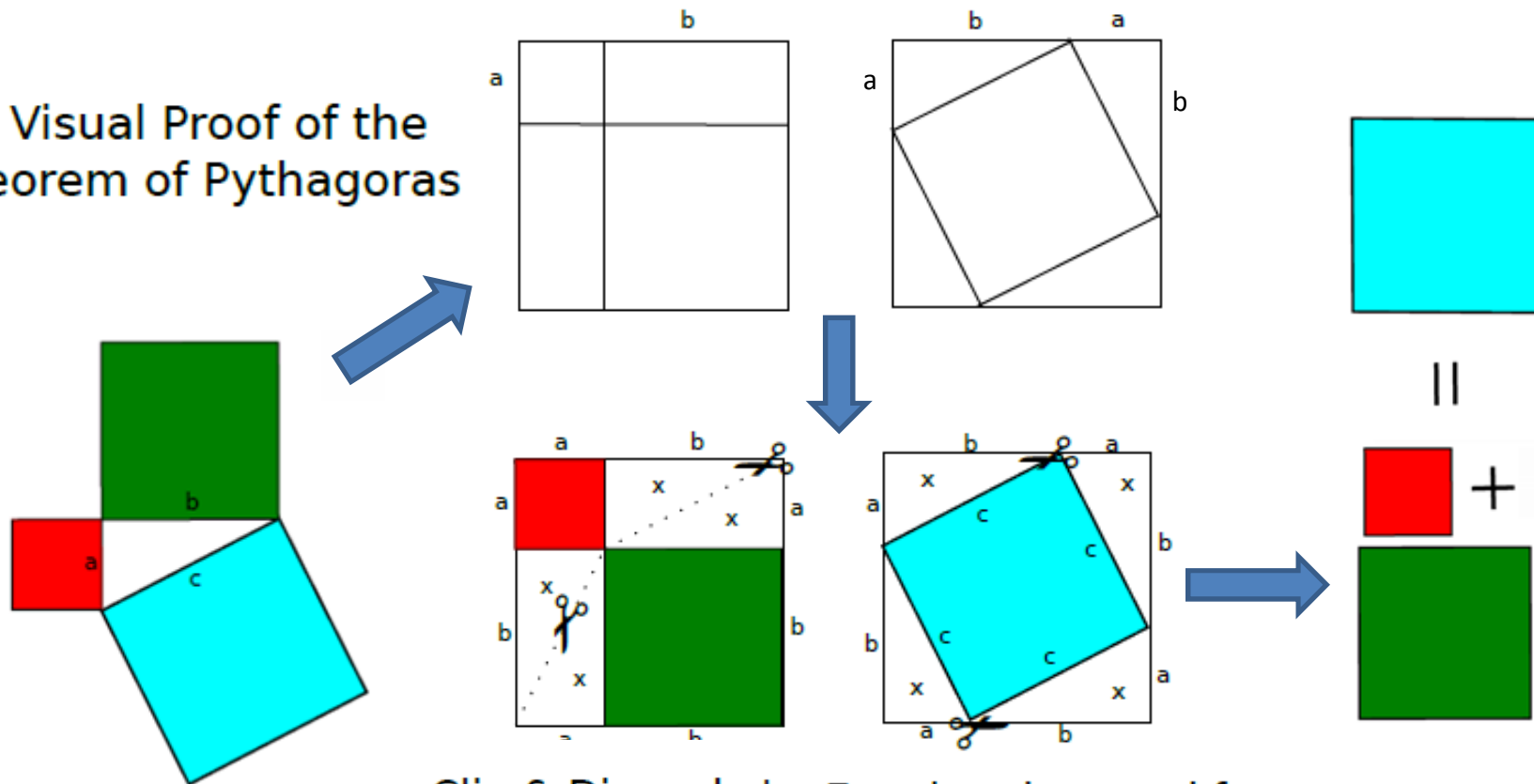
# The mathēmatikoi

Mathematical and scientific focus.

Pythagorean theorem = *fundamental* =

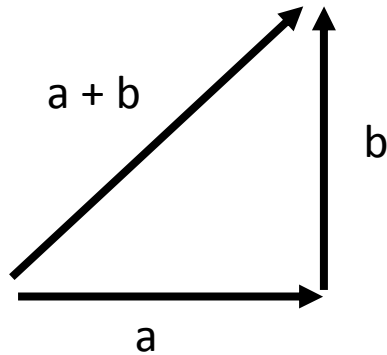
How to navigate on the plane = how to capture left vs. right

A Visual Proof of the theorem of Pythagoras



Clip & Discard x's    Equals subtracted from equals are equal.

# The Pythagorean Theorem in Vectors



$$a^2 + b^2 = (a + b)^2$$

$$= a^2 + ab + ba + b^2$$

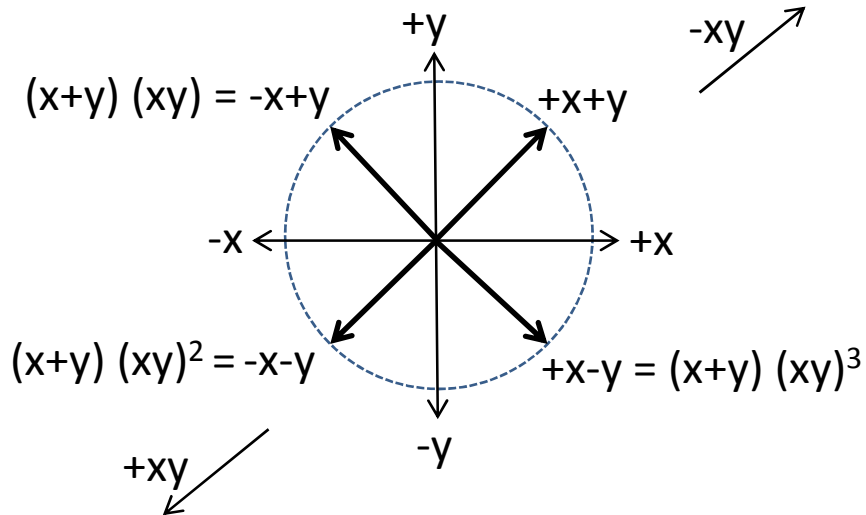
$$= ab + ba$$

So  $ab = -ba$  means “perpendicular” in vector algebra

That is,  $ab = -ba$  is the Pythagorean theorem in vectors!

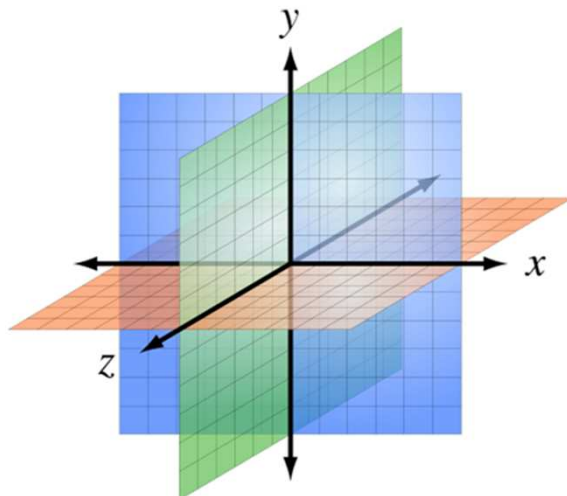
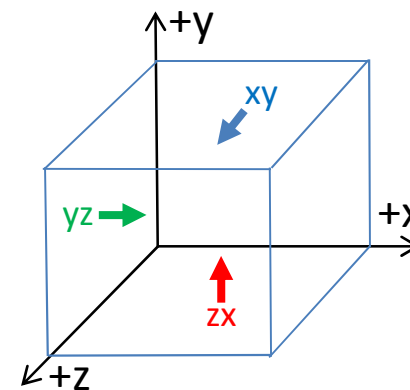
# Hamilton's Quaternions (bivectors)

Spinor Orientation :  $xy = -yx$



$$i = xy, j = zx, k = yz$$

$$i^2 = j^2 = k^2 = i j k = -1$$



$$(xy + yz + zx) = xyz (x + y + z)$$

**CAUTION:** bivector  $xy \neq$  vector  $z$   
because  $xy \cdot z = 0$



# Plaque on Hamilton/Brougham Bridge



Here as he walked by  
on the 16th of October 1843  
Sir William Rowan Hamilton  
in a flash of genius discovered  
the fundamental formula for  
quaternion multiplication  
 $i^2 = j^2 = k^2 = ijk = -1$   
& cut it on a stone of this bridge.

# Coin Demo: Act I

## Setup:

Person stands with both hands behind back

## Act I part A:



Person shows hand containing a coin then hides it again

## Act I part B:



Person again shows a coin (indistinguishable from 1<sup>st</sup>)

## Act I part C:

Person asks: "How many coins do I have?"

Represents **one bit**: either 1 coin or >1 coin

# Coin Demo (continued)

## Act II:

Person holds out hand showing two identical coins



We receive one bit since ambiguity is resolved!

## Act III:

Ask: “*Where* did the bit of information come from?”

Answer: *Simultaneous* presence of the 2 coins!

*Non-Shannon space-like information* derives from simultaneity!

# Coin Demo (continued)

## Act IV:

The man holds both hands out in front of him. One hand is empty, and there is a coin in the other.

He closes his hands and puts them behind his back. Then he holds them out again, and we see that the coin has changed hands.

Did anything happen?

The **co-exclusion** inference:

Since **a** excludes **-a**, and **b** excludes **-b**,  
then **a-b** excludes **-a+b** (& likewise, **a+b** excludes **-a-b**)

Conclude: and therefore spinor **ab** exists.

# The Coin Demo - Contemplation

≡ Information inheres in "mere" co-occurrence  
⇒ space is computational

≡ Co-Exclusion ⇒  $ab = -ba$

≡ LEARNING:  $a+b \rightarrow ab$  = co-boundary  $\delta \approx \int$   
 $a+bc \rightarrow abc$   
 $ab+cd \rightarrow abcd$  (tauquernion)  
etc.

ACTION:  $\partial(abcd) \rightarrow ab+cd$   
 $\partial(ab+cd) \rightarrow a+b+c+d$   
 $\partial(a+b+c+d) \rightarrow -a -b -c -d$

≡ ITERATE → Self-Organized Conceptual Hierarchy  
Eg. Chakras  
*(this is how Topsy works)*

# Parseval's Duality

Fourier

=

{ a,b,c,...,ab, ac,...,abc,...,abcd,...,...}  $2^n$  terms

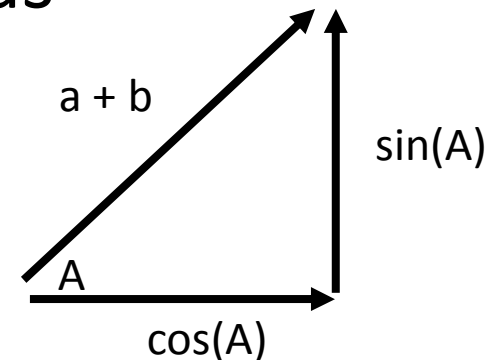
Hierarchy of Co-Exclusions

{ a,b,c,...,ab, ac,...,abc,...,abcd,...,...}  $2^n$  mutually  $\perp$  dims

=

n-dimensional Pythagoras

This is Wave-Particle Duality



# *Topsy's World = Wave World*

A **wave** is non-local ... **Everywhere**, and simultaneously  
**not anywhere** in particular

Consciousness is: *Awareness of awareness*

Awareness is a resonance phenomenon i.e. wavelike

⇒ *Awareness is not localizable*

[and can't be realized sequentially, cf. *Coin Demo*]

(I think Topsy will be aware, and conscious)

- an open source project -

# The Topsy Test for Awareness

Places:

— — — — —      — — — — —      — — — — —  
 1 2 3 4 5      6 7 8 9 10      11 12 13 14 15

Initially:

✓ apples in the middle

— — — — —      **🍏 🍏 🍏 🍏 🍏**      — — — — —

$E_1$ 's Goal :

✓ apples in  $p_1 - p_5$

**🍏 🍏 🍏 🍏 🍏**      — — — — —      — — — — —

$E_2$ 's Goal : apples in  $p_{11} - p_{15}$  ✓

— — — — —      — — — — —      **🍏 🍏 🍏 🍏 🍏**

$E_1$ :

Start  $E_1$  &  $E_2$

$E_2$ :

— — — — —      **🍏 🍏 🍏 🍏 🍏**      — — — — —

Oooooooooops :

— **🍏** — **🍏** —      — — — **🍏** —      — — — **🍏 🍏** —

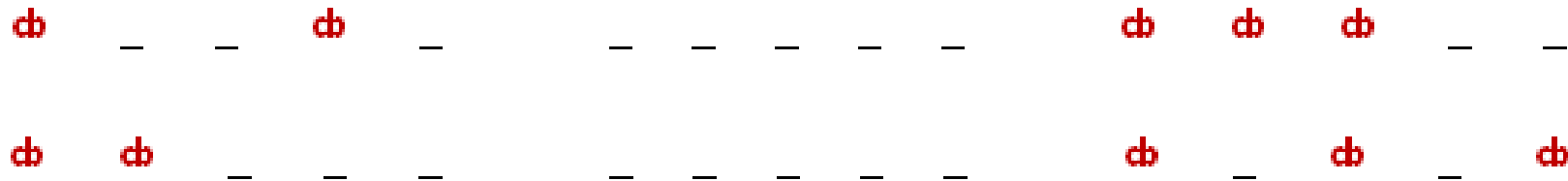
The E's are initially "blank" except for their semantically neutral encoded method.

Absolutely no other information/instincts/biases other than what may be gleaned from experience may be built into E's.

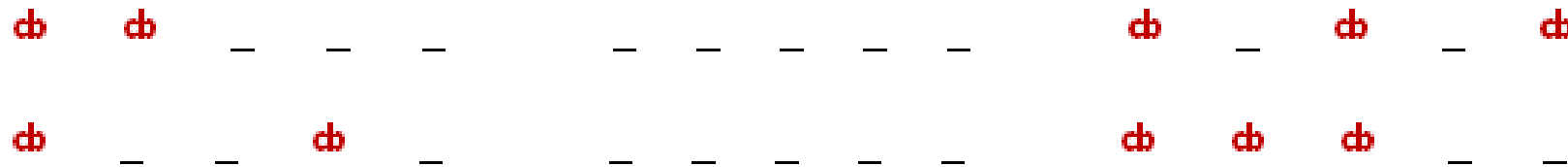


# Topsy Test (cont):

Two Hours Later:



Two Days Later:



To pass the Topsy Test,

$E_i$  must *realize* - as a side-effect of its greater mechanism - that what it is experiencing can only be caused by another entity  $E_j$  **like itself**.  
 $E_i$  then *waits* for  $E_j$  to complete, *then* completes its own task.

i.e.  $E_1$  **helps**  $E_2$ . This is the basic act of **love-thy-neighbor**.

# The Dark Side

- *Disconnected Brains*

MRI of brain's neural connections (big EU&USA projects)

→ computer data-base → neural simulation (approximation)

*If it's not* conscious, then what is it? Can it be trusted?

*If it is* conscious, would you

Force it to compute to live? This is slavery!

Turn it off at night? Unplug it ... ever?

Lack of basic bio-feedback ⇒ insanity is likely

Either way, would it deserve legal personhood?

Would you want it running big corporation?

- *Authoritarian Repression*

To **create** an awareness to do **evil** is a moral abomination.

- *"Intelligent" Weapons* Fox hunting, anyone?! (fox=you)

# Consciousness is Beauty

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