“In all affairs it's a healthy thing now and then to hang a question mark on the things you have long taken for granted.”

Bertrand Russell (1872-1970)

dober dan!
Languages and math/sciences as vectors for civic education: preparing our children to live in a globalized world

Eurydice Slovenia Conference on science and mathematic education
Kongresni Center Brdo, Slovenija, 11-12.12.12

Bruno della Chiesa
Harvard Graduate School of Education
Understanding is seeing patterns...

• The ‘eureka!’ experience: learning is extremely pleasurable...
  ...even at school!

• Pattern recognition makes you feel secure...

...but ‘seeing patterns’ can be misleading

• Matching with previously known patterns can lead to problems
Categorical perception (from Gärdenfors, 2007)
Categorical perception (from Gärdenfors, 2006)
“For us, we are all very different; our languages are very different, and our societies are very different. But if we could extract ourselves from our point of view and sort of look down at human life the way a biologist looks at other organisms, I think we could see it a different way. Imagine an extra-human observer looking at us. Such an extra-human observer would be struck precisely by the uniformity of human languages, by the very slight variation from one language to another, and by the remarkable respects in which all languages are the same.”

Noam Chomsky (born 1928)
IN SEARCH OF TESSERACTS IN THE BRAIN

"We do not know our own language."  
"Die Grenzen meines Sprachgebietes bedeuten die Grenzen meiner Welt."  
"The limits of my language mean the limits of my world.

L. Wittgenstein  
Tractatus Logico-Philosophicus, 1921
From Bourdieu’s kitchen, crucial notion of...

...‘DOXA’:

...or ‘culture’ considered ‘nature’...
Do we really want to...

- **Promote equity** (in education systems, to begin with)?

- **Fight against ‘failure’ in our schools**?

Do we *really* want this?
Do we really want our kids to...

• ...‘think out of the box’?
• ...develop empathy and tolerance?
• ...display high ethical standards?

Do we really want this?
What about ethics?

• How to we form ethical judgments?
• How do we make ethical decisions?

• We are not far from stunning discoveries on...

Ethics in the brain
TWO KIDS: ETHICS IN THE BRAIN, NATURE, NURTURE, OR BOTH?
TWO INDIVIDUALS AT THE EXTREMES OF AN ETHICAL SCALE

Mohandas Karamchand Gandhi
(1869 –1948)

Heinrich Luitpold Himmler
(1900 –1945)
• Are human beings *born unequal* when it comes to ethics?

• Or are ethical standards *acquired*?

• Or both: nature *and* nurture? (genetics vs. socialization?)
Biological mechanisms of ethics soon discovered in the brain?!

- if yes, it might (will?) dramatically modify:
  - our philosophical and political views
  - our conceptions of education
  - ...and even the ways we perceive ourselves as a species

- there is no such thing as a “neutral” science (or technology)
  - perceptions, representations, values, prejudices, ideologies...
  (remember Trofim Lysenko; cf. della Chiesa, 1989).
Where do differences come from?

3 options:

1. It is “nature” (genetics: we are pre-programmed by our genes);
2. It is “nurture” (acquired: through environment, particularly education); or
3. It is a combination of both (probable majority for this on experts’ side; cf. Dynamic Skill Theory’s bio-psycho-social model of human development - Fischer & Bidell, 2006)

• 3rd explanation probably not to please the media: too complex/complicated (Scylla or Charybdis…)

• 2 first ones simple (univocal), easy to understand and to convey

• Mass media not equipped to deal with complexity (scientific or not)...

The hardest challenge for our (democratic) societies in the 21st century?
After one look at this planet any visitor from outer space would say: “I want to see the manager!”

William S. Burroughs (1914-1997)
I shouldn't wish people dogmatically to believe any philosophy, not even mine.

Bertrand Russell (1872-1970)
HVALA LEPA!

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LET'S BRAIN-STORM!