

Innovation and Entrepreneurship

The Roles of Schools – Companies – Individuals – Education

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What I Will Be Talking About

- Is creativity in decline?
- R&D and Innovation
- Life value chain
- Defining words
- The role of
 - Schools
 - Companies
 - Individuals
 - Education
- Summary
- Food for thought

Is Creativity in Decline?

- Considering that

$$\lim_{x \rightarrow 8} \frac{1}{x - 8} = \infty$$

- Calculate

$$\lim_{x \rightarrow 5} \frac{1}{x - 5}$$

Courtesy Tony Dávila, IESE and Stanford University, CEO-CF Forum, March 2010

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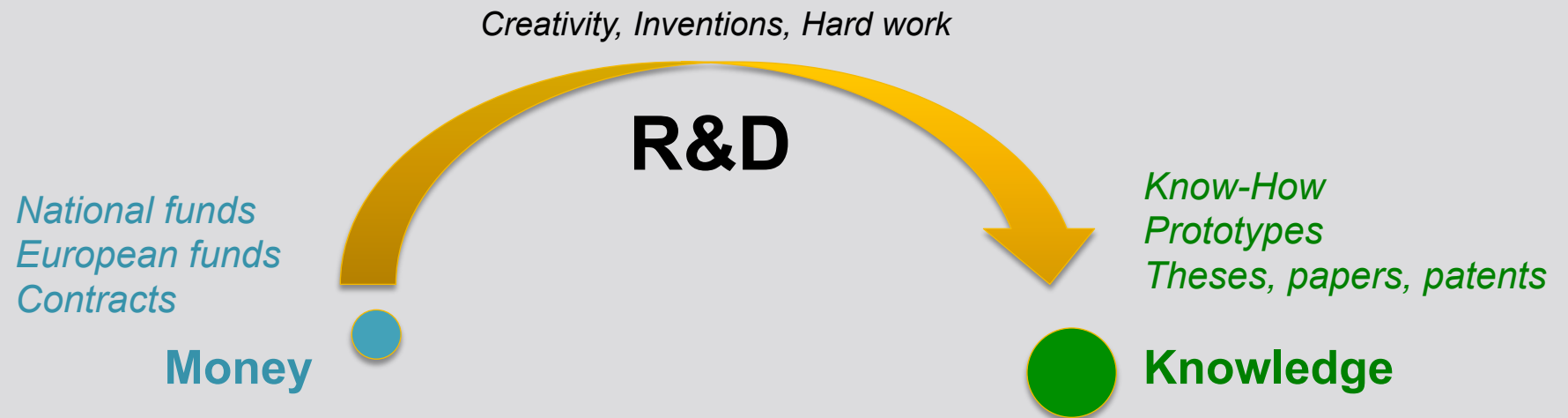
$$\frac{1}{n} \sin x$$

$$\frac{1}{n} \sin x = \sin x = 6$$

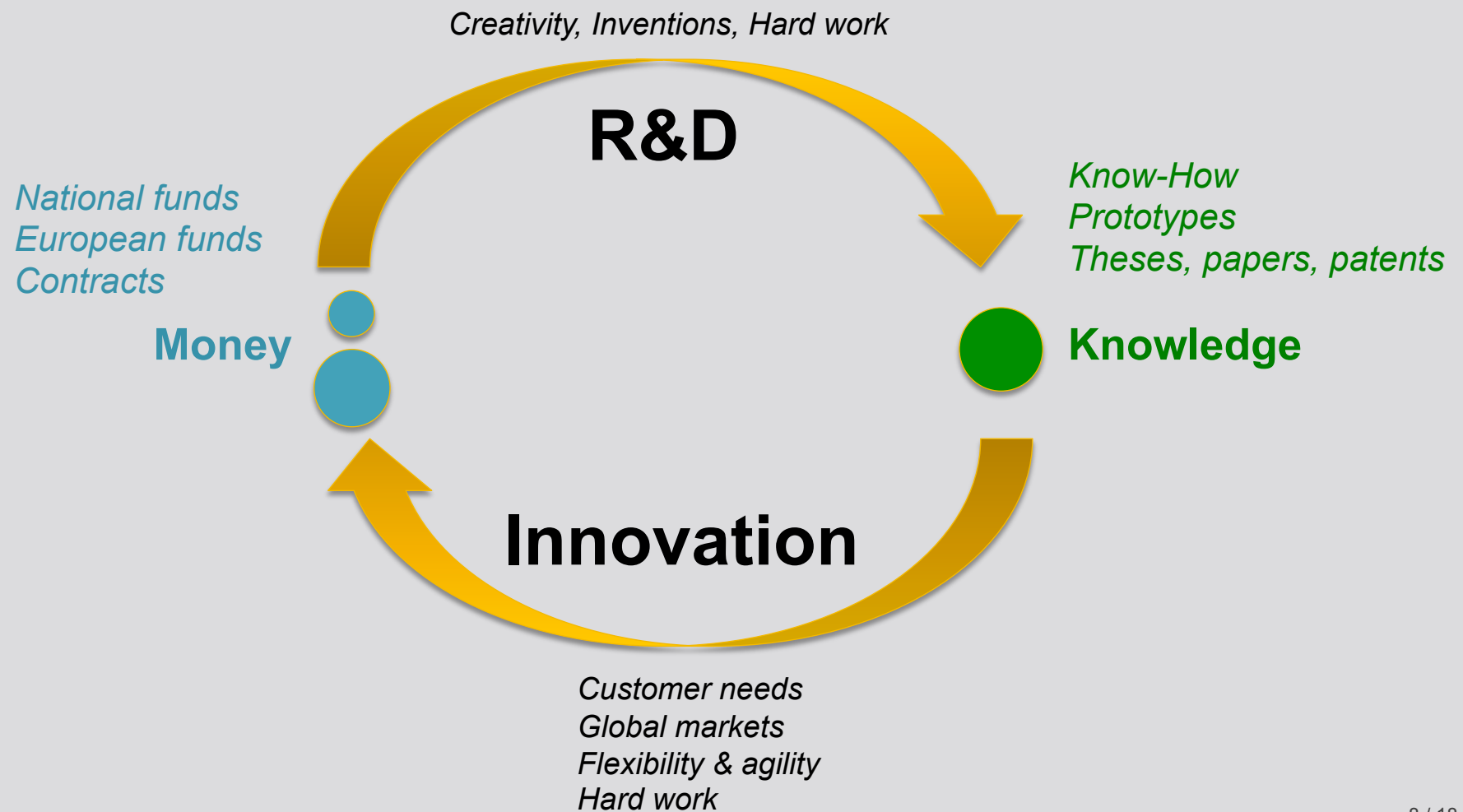
Creativity is fine!

Courtesy Tony Dávila, IESE and Stanford University, CEO-CF Forum, March 2010

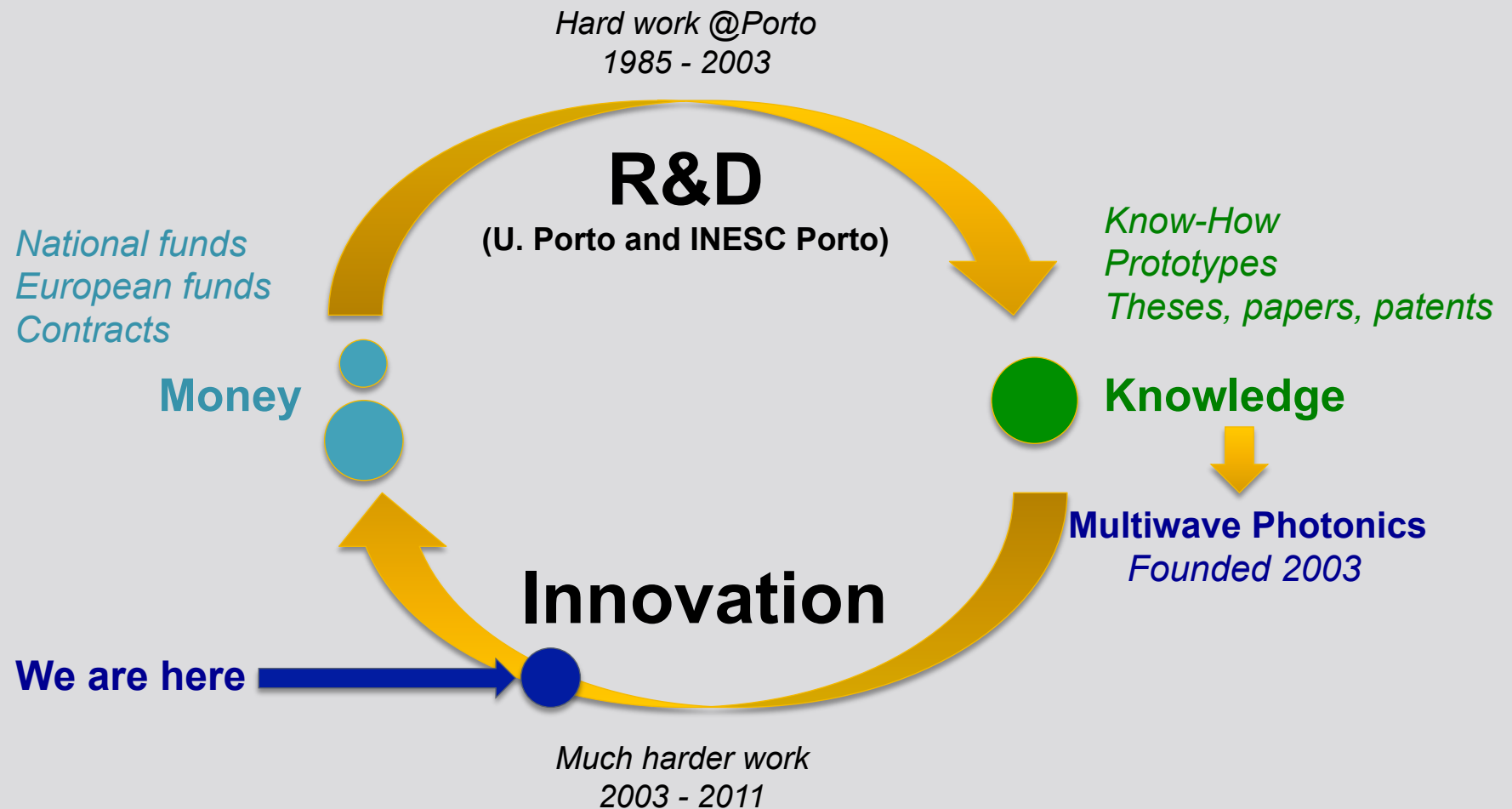
R&D and Innovation



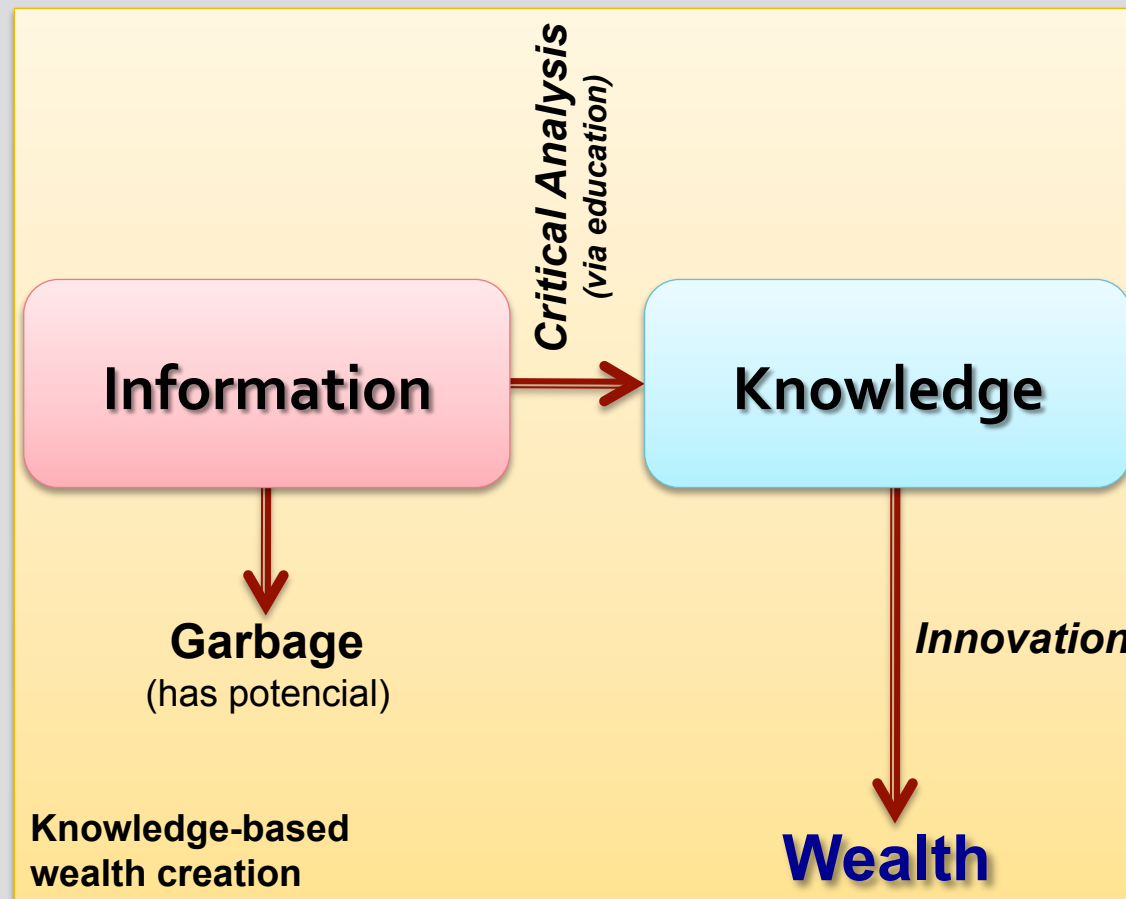
R&D and Innovation



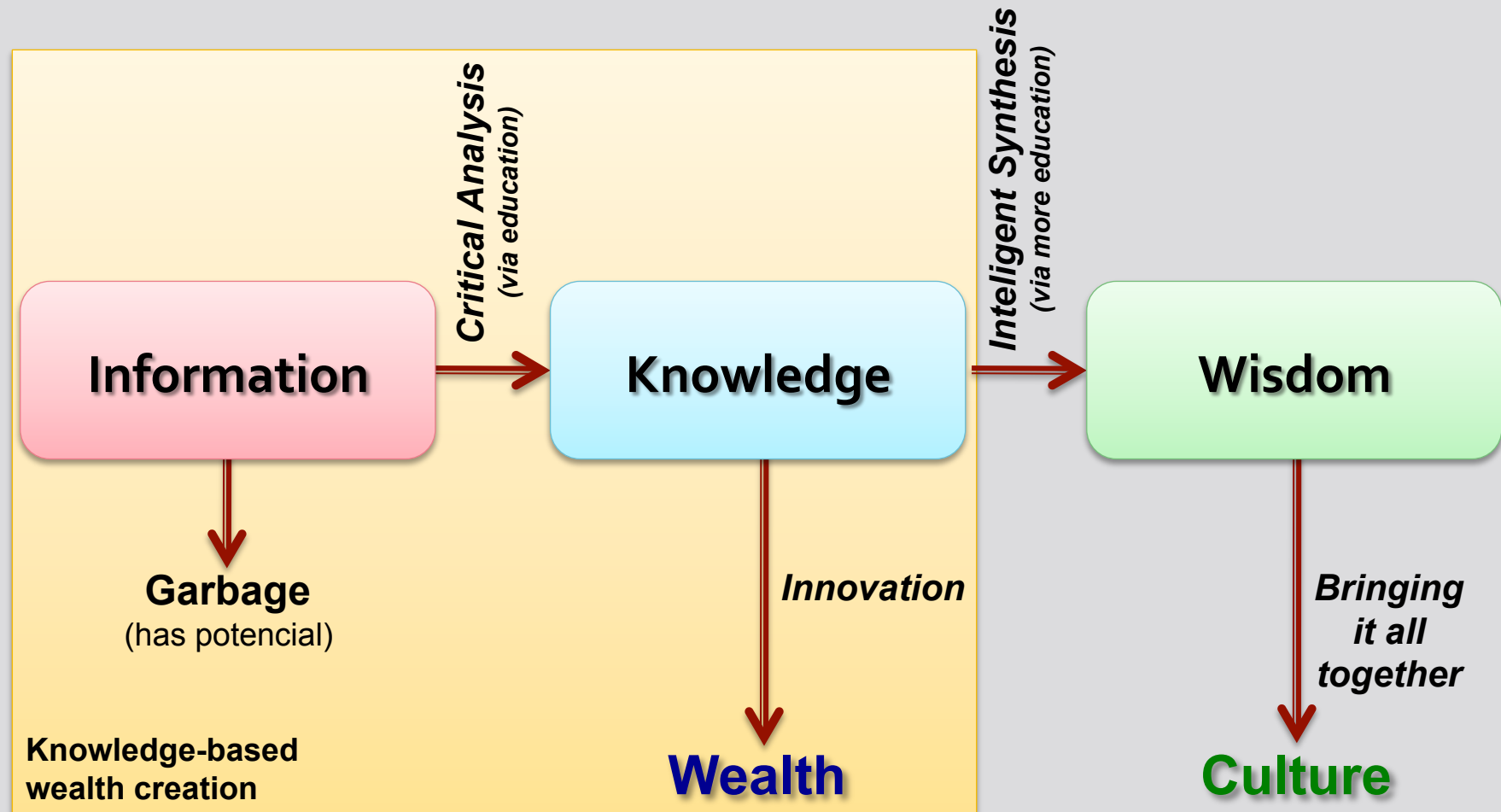
R&D, Innovation and Multiwave



Life Value Chain



Life Value Chain



Defining Words

- **Wealth**
 - What allows us to pay bills in a timely and sustained manner
- **Entrepreneur**
 - A person who call upon him/herself the responsibility and the actions of building the future that he/she wants to have
- **Innovation**
 - Creative process of economic exploitation of knowledge
 - Science and technology propitiate disruptive value creation opportunities
- **Knowledge** (it has economic value)
 - Information that has been digested and invested in actions. It requires education
- **Education**
 - Process by which human beings become free to carry on a happy and resilient life through the well-informed development and application of skills and attitudes
- **Information** (it does not have economic value)
 - Garbage. Like all garbage, it has potential

The Role of Schools

- Context: We are entering an age of unreason
 - News is mostly entertainment
 - Information that people receive is no longer data, but manipulated data
 - Critical thinking is more important than ever
- School's main objective: Produce *creative critical thinkers*
 - People who analyze information critically
 - People who act creatively subsequently
- The importance of science and technology education
 - The scientific method has systematic skepticism built-in
 - As minimum, digest information to build knowledge. Build wisdom is possible
 - Science and technology are ruled by agreement with observations
 - Base actions on facts, not beliefs
 - The best science requires and stimulates creativity and risk-taking
 - Value thinking and acting differently

The Role of Companies

- Create value for stakeholders
 - Focus on value creation for customers
- Look for disruptive opportunities
 - Science and technology are well positioned to propitiate them
- Build knowledge-based, lean, agile and creative organizations
 - Involve *creative critical thinkers* at all levels
 - Continuously challenge established values as they are likely outdated
 - Use geography as a tool, not an obstacle
 - For markets, skills, talents and capital

The Role of Individuals

- The future does not simply happen, it must be built
 - Build the future that you want to have
- Do not look for a job, but fight for a work opportunity
 - If you do not find it, create it
- Never take politicians at face value
 - Most likely, politicians are manipulating you and everyone else
 - Always be a *creative critical thinker*
 - Speak out – make them understand that there are limits

The Role of Education

- Science and technology must enable people to be participant citizen
 - Explain to society the relevance of what you do
 - Critically evaluate information and convey facts to society
 - Educate people to be free and resilient through the wise development and application of skills and attitudes
 - Never allow stupidity, superstition and manipulation to win
- Science and technology educated people must not be afraid to speak out
 - The price that you will pay for being afraid to speak out is immensely higher than the price that you will pay for being a participant citizen

Summary

- The future that really happens results from the future that each of us builds
 - Never look for a job, but look for a work opportunity. If you do not find it, create it
- Education must free people, both in terms of skills and attitudes
 - Education should produce *creative critical thinkers*
- Science and technology educated people are privileged
 - Must explain their relevance to society
 - Must contribute to society raising its professional and ethical standards
 - Must speak out, contributing to separate facts from fiction
- Science and technology educated people must be *creative critical thinkers who are participant citizen*

Food For Thought

- John Archibald Wheeler, 1990
 - *It from bit. Otherwise put, every 'it'—every particle, every field of force, even the space-time continuum itself—derives its function, its meaning, its very existence entirely—even if in some contexts indirectly—from the apparatus-elicited answers to yes-or-no questions, binary choices, bits.*
 - *'It from bit' symbolizes the idea that every item of the physical world has at bottom—a very deep bottom, in most instances—an immaterial source and explanation; that which we call reality arises in the last analysis from the posing of yes–no questions and the registering of equipment-evoked responses; in short, that all things physical are information-theoretic in origin and that this is a participatory universe.*

