



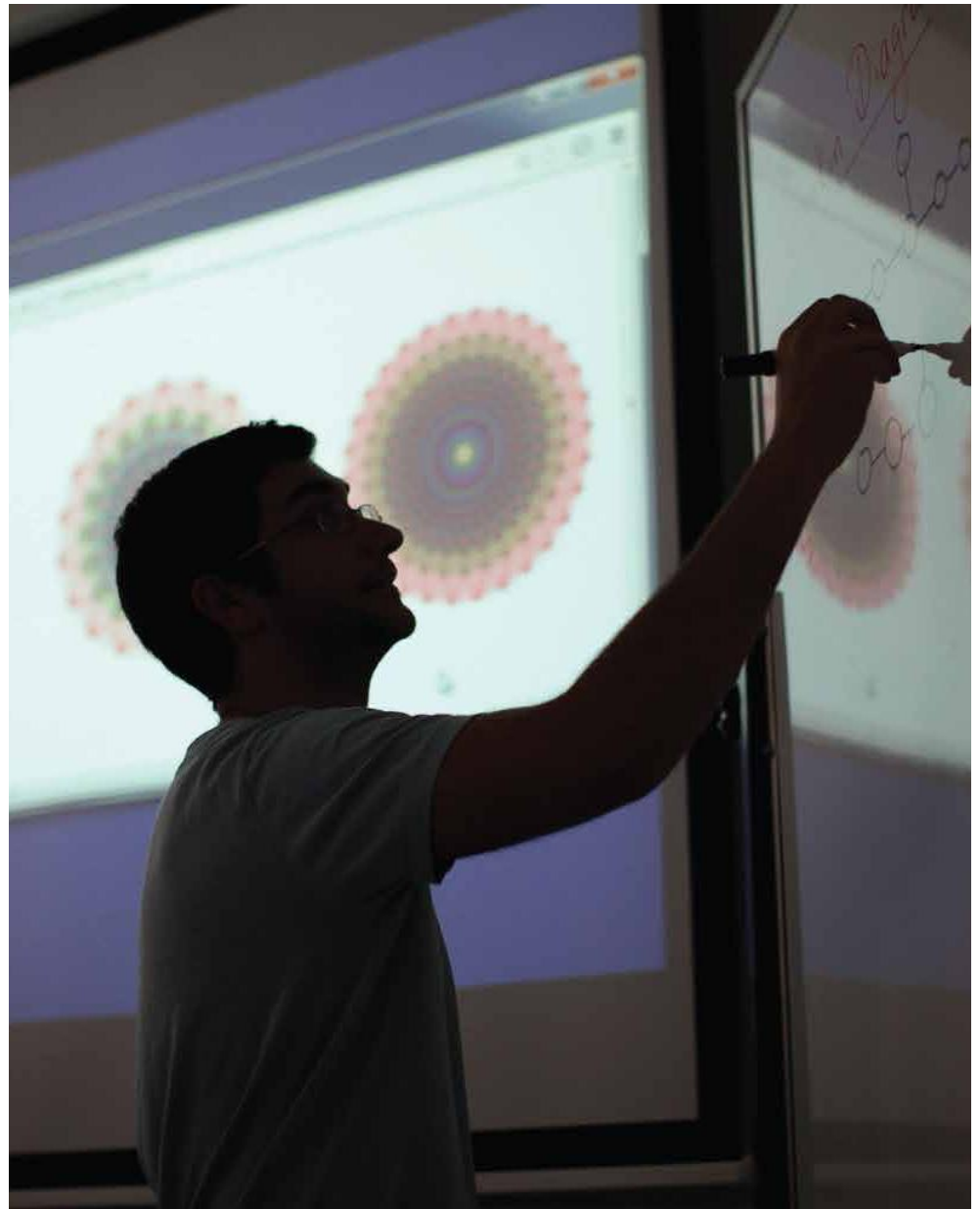
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# INNOVATION: Important & Interesting

**Professor Anne Huff**  
**Tor Vergata**  
**29 April 2016**

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# Other important early places for innovation?

<http://www.timemaps.com/history>

<http://www.ancienthistorylists.com/ancient-civilizations/10-oldest-ancient-civilizations-ever-existed/>

**Oldest? Mesopotamian Civilization 3300 BC – 750 BC.**

**[agriculture, animal domestication, wheel, irrigation, sail boat, plow, maps, mathematics, city, 1<sup>st</sup> writing...]**

Later example with more detail – <http://www.aztec-history.com/aztec-inventions.html>

# Italian Innovations?

**Long list:** <http://www.ranker.com/list/list-of-italian-inventions/wayne-szalinski>

**Top ten?** <http://www.lexiophiles.com/english/ten-italian-inventions-that-changed-the-world>

**Telephone:** invented by Manzetti (1844) and Meucci (1871)

**Plastic:** yes, the one we use every day in many shapes and colours, it was created by Natta in the 60's and sold as Moplen

**Piano:** musical instrument (in its modern form) invented by Cristofali in 1698

**Battery:** Volta was the father of this invention (1799).

**Glasses:** ...born during the 14th century

**Bank:** a system created in Northern Italy in 1462, during the Renaissance

**Radio:** invented by Marconi and the Spanish Cervera in 1895

**Highway:** the first proper motorway was the one connecting Milan and Laghi, built in 1923

**Microchip:** Faggin created this...important component of every electronic device during the 60's

**Helicopter:** invented in 1930 by d'Ascanio

# Agenda 28-29 April

- ✓ **Most important innovations?**
  - Different typologies, a few events/goods stand out
- ✓ **Innovation is interesting & important for you**
  - Student, citizen, consumer, employee, entrepreneur
- **Communication seminar**
  - Both sending & receiving are important life skills
- **Definitions: invention ⇔ innovation**

**May: What environments promote innovation?**

**Where are we now? Frontiers?**

# Communication

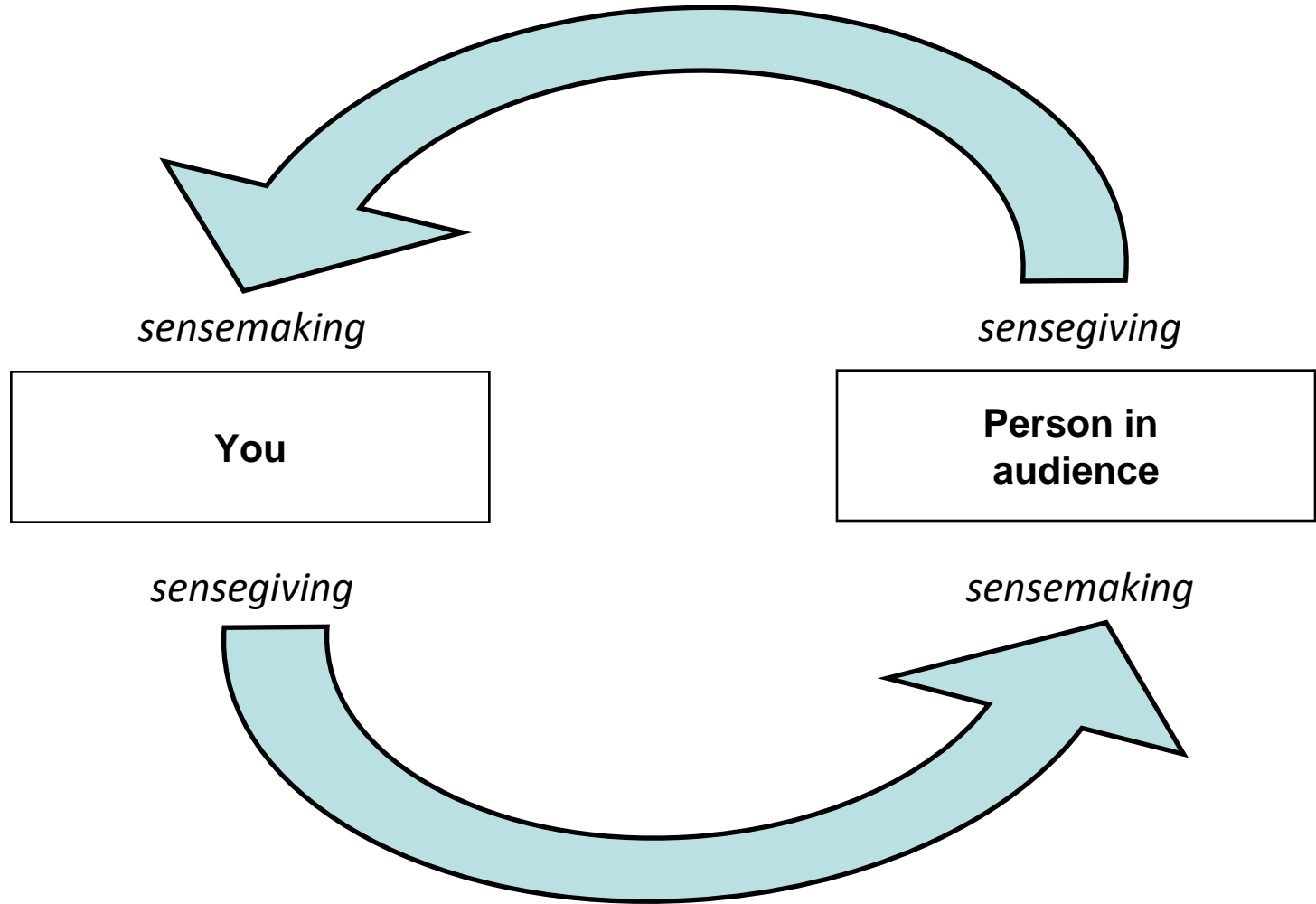
Two-way process of reaching mutual understanding, in which participants not only exchange (encode-decode) information, news, ideas and feelings but also create and share meaning.

In general, communication is a means of connecting people or places. In business, it is a key function of management--an organization cannot operate without communication between levels, departments and employees.

Read more:

<http://www.businessdictionary.com/definition/communication.html#ixzz478wm4AVC>

Every one is both a sender and a receiver



# Notes on Innovation

## Notes on Communication

Use pattern to reinforce message

*reject*

*reject*

*reject*

*reject*

# Oil Drilling

Oil drilling: Taghiyev, Palmieri

Internal combustion engine: Giuseppe

Assembly line: Morini

Combine harvester: Bartolo

NOTE: I am sorry we do not have time to have everyone speak in these two days – I have to miss many interesting reports



# Notes on Communication

1. First impression counts – a lot
2. Most readers ‘skim’ first – we have to
  - We use existing interpretive frameworks to help sort information
  - How can author help? [also adding to good first impression]
    - clear headings [ideally connecting subject with information]
    - lists [if they are important to message]
    - graphics [a picture is worth # words – but do not plagiarize]
    - message in topic sentences (at beginning of sentence)
  - Most of all, make sure the quick reader knows your key points  
[You are not writing a murder mystery – no important clues  
or dead bodies in the middle of paragraphs, memos, reports]
3. Attentive readers expect to be rewarded
  - deliver well-organized detail; no facts/figures without explanation



# Advice?

## 1. First impression counts - a lot

- Advice to innovators: Beware bias, especially for innovation. Early ideas are not yet 'cooked'
  - Advice to communicators: Stop investigating early. Spend around 40% of your time on communication. Many rejections happen before content is give serious consideration.
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# Notes on Communication

How to make and sustain a good impression?

<http://www.forbes.com/sites/dailymuse/2014/03/04/5-ways-to-make-a-lasting-impression/2/#63c7724f1734>

1. Be yourself – Oscar Wilde: “everyone else is taken”
2. End on a positive [if selling fire works—throw in sparklers]
3. Get comfortable with pressure
4. “Be Bright. Be Brief. Be gone.”  
[AH: forget trying to please or fool the teacher with many words and references!]
5. Work with diverse groups, at all levels  
[AH: also seek diverse knowledge sources. You cannot collect the detailed knowledge serious communicators want in your own brain alone – a big point in May session]

# Innovations with high current impact

Internet: Azizi

Nuclear Fission: Castrucci, de Matteo

Green Revolution: Iamele, Cutrone

Plant Breeding: Franceschina

# Notes on Communication

## 1. Connect with your reader(s)

Your interest and energy can increase reader interest [Why rock stars take drugs]

Quotes can add authority, or say something you may not have authority to say

Definitions may be necessary, should be clearly marked

Examples are needed to make the abstract real  
[you want readers to be 'close to your subject']

# Notes on Communication

## 2. Deliver content

Organize facts, and relevant opinions

- a. do it the way it's done in your organization
- b. unless there is a good reason to change
  - takes more reader effort
  - may show that you are an outsider

Include subjective [what people feel] when relevant

A major blind spot – think about Trump's success

Consider negatives as well as positives

Adding complexity to previous discussion of ending on positive

- a. Decide on your conclusion/primary message
- b. Show you have considered, really considered
  - opposing evidence and why it does not tip balance
- c. Reinforce your message in conclusion

# Advice giving exercise--content & communication

You work for an organization divided into teams writing reports on innovation.

All teams asked to give advice another **team** about improving their reports.

## **RECIPE – based on studies of communication**

1. Show you have read the reports
2. Point to at least one, preferably more, positives at team level [some individual examples o.k.]
3. Make a limited number of suggested improvements for team effort, if possible building on positives
4. End on a positive note

# Question

**Why don't you give us more direction on what is a 'good report' ?**

**A: That would happen in many organizations, and can be more efficient in the short term.**

**I choose a leadership style that better fits my objectives:**

- 1. to produce reports that will interest people like you**
- 2. to increase the skill & commitment of those who want to work for me**



# DEFINITIONS

# Invention\*

....

2. U.S. Patent Law : a new, useful process, machine, improvement, etc., that did not exist previously and that is recognized as the product of some unique intuition or genius, as distinguished from ordinary mechanical skill or craftsmanship.

....

5. an act or instance of creating or producing by exercise of the imagination...

\*invention. (n.d.). *Dictionary.com Unabridged*. Retrieved October 09, 2011, from Dictionary.com website: <http://dictionary.reference.com/browse/invention>

**Inventions are large and small, long lasting and fads,  
positive and sometimes negative [OFTEN HARD TO TELL]**

<http://www.marketwired.com/press-release/foolish-inventions-from-people-with-good-intentions-643054.htm>

# Example of recent and important invention → Graphene

- [https://www.youtube.com/watch?v=Q\\_eTLPKdrHs](https://www.youtube.com/watch?v=Q_eTLPKdrHs)

Isolated at the University of Manchester – here's a report from 2015

<https://www.youtube.com/watch?v=-FZs-dWaJ7U>

For the science geek

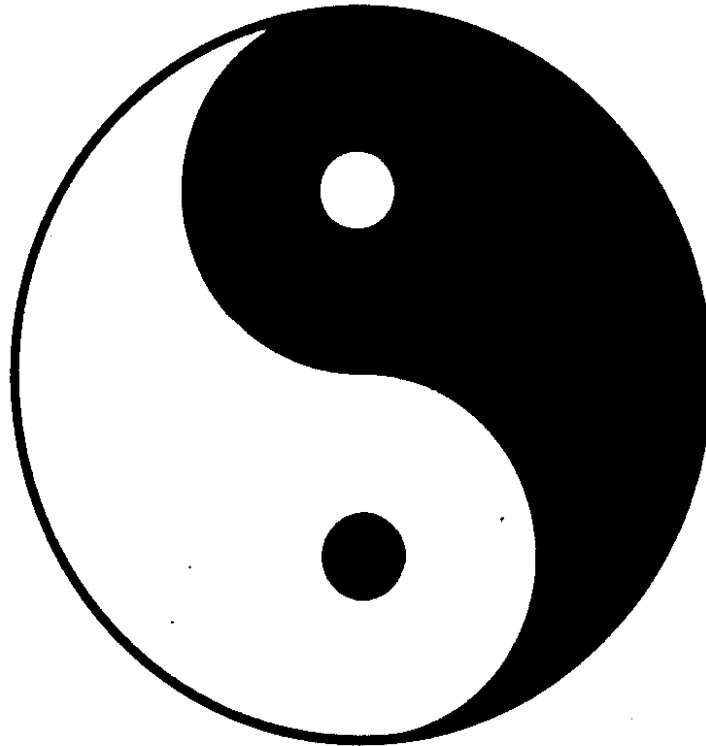
<https://www.youtube.com/watch?v=Mcg9 ML2mXY>

# Innovation\*

- The term **innovation** derives from the Latin... *innovare* [Renew|restore - <http://www.latin-dictionary.org/innovare>] “...the creation of better or more effective [products](#), [processes](#), [technologies](#), or [ideas](#) that are accepted by [markets](#), [governments](#), and [society](#).”
- <http://en.wikipedia.org/wiki/Innovation>, accessed Oct. 9, 2011

# **Invention/Inspiration & Innovation/Market Connection**

**both are needed but also in tension**





## Note

- Inventors can work alone [but always draw on knowledge from others as they leap]
- Innovators more clearly need other people because MANY skills are needed for successful market launch, including skills from the less inventive

**Thomas Edison  
(credited with long-lasting  
light bulb, phonograph,  
motion picture camera,  
etc. Note that others  
were critical contributors  
but rarely cited )**

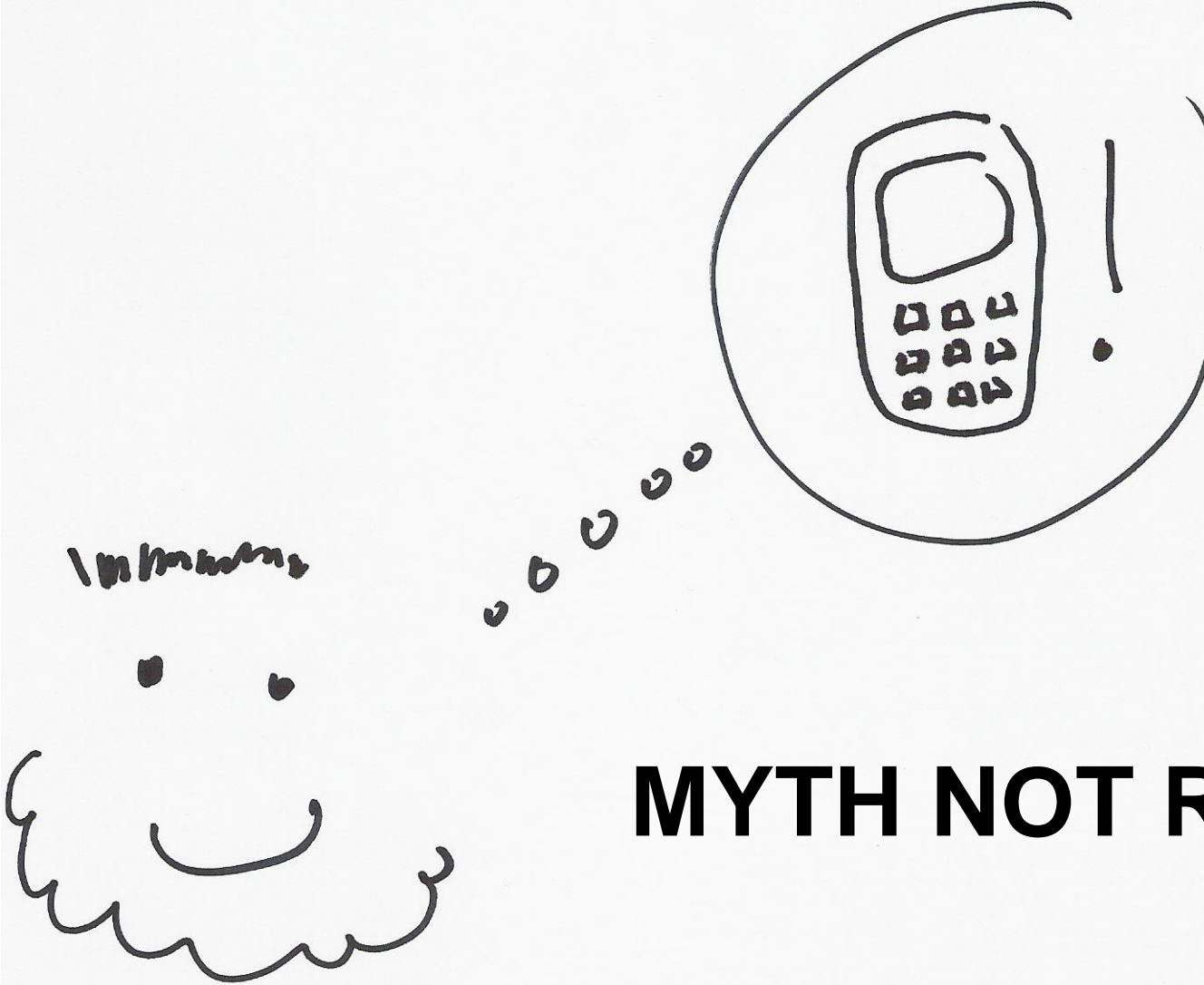
**"Genius is 1% inspiration, 99% perspiration"  
(IMPORTANT - innovators have faith in  
spite of negative evidence)**

# Post-it<sup>®</sup> Note Example

**12 years from lab test by Nate Silver produced a weak glue rather than a strong one to finding a market. Why so long?**

- 1. Time for Silver to recognize possibilities [illumination]**
  - 2. Presentations to colleagues & upper management did not fit 3-M focus on strong adhesives [constraint]**
  - 3. Experimentation with different forms, e.g. sticky bulletin board**
  - 4. Pick up by Art Fry, frustrated by keeping place in hymnal**
  - 5. Difficult to patent – was not seen as unique**
  - 6. Failed 1<sup>st</sup> market test**
  - 7. 2<sup>nd</sup> test in different city with different marketing. SUCCESS**
- LUCK AND TENANCITY – now a major source of 3M revenue**





**MYTH NOT REALITY**

**MANY IDEAS/EFFORTS  
NEEDED + TIME**

ZEUS

# Summary – Part II

# Innovation

- Processes
  - Involve many people, varied skills
  - Response to MANY situations
  - Planned
    - Universities
    - Government programs, non-profits etc.
    - Companies
  - Also unplanned
    - Need
    - Fun, curiosity, etc.
- Content
  - Incredible range

# Innovation Questions

- When, why etc. do people innovate?
  - NEED – from self expression to emergency
    - Personal need, often no product available, or too expensive
    - Customer need look to users, especially extreme users
    - Improvement of old, example, make s.t. more efficient
    - Emergency
  - ENVIRONMENT
    - New technologies suggest new ideas
    - Law or regulation changes



# More interested in innovation now?

- 1) choose a category that interests you, sign up for Google alerts on that topic
- 2) Find a blog/website etc. that interests you and follow <http://www.improvides.com/2014/12/21/top-25-innovation-blogs-experts-2014-winners/>

# YOU can be an inventor/innovator

- Young
  - Energy and enthusiasm
  - Less influenced by the past
  - Today's and tomorrow's consumer
- University trained
  - Increasingly important cutoff for employment
  - ❖ In a good position to learn helpful frameworks and tools to address new situations
- You are in Italy – a setting with a long history of invention & innovation

# References


Osman, J. (2011) **100 ideas that Changed the World**. Random House

Techno idealism can and should be challenged

- <https://www.youtube.com/watch?v=Uk8x3V-sUgU>
- <http://www.evgenymorozov.com>
- Garud , R. , & Karnøe , P. (2001). ***Path dependence and creation*** . New York, NY : Psychology Press . [Good book and good source of [Post-it](#)<sup>®</sup> story]

# References – Innovation in Italy

## LISTS

 [http://www.corriere.it/tecnologia/cards/13-invenzioni-italiane-che-ci-hanno-cambiato-vita-o-faranno/anni-60-olivetti-programma-101-1964\\_principale.shtml](http://www.corriere.it/tecnologia/cards/13-invenzioni-italiane-che-ci-hanno-cambiato-vita-o-faranno/anni-60-olivetti-programma-101-1964_principale.shtml)

<http://www.thelocal.it/galleries/culture/10-things-the-italians-invented>

## NEMO's garden

- <http://www.smithsonianmag.com/innovation/off-coast-italy-two-divers-are-building-underwater-greenhouses-180955883/?no-ist>
- <https://www.youtube.com/watch?v=Pxlh05bgfm4>



# Upload – 28 April

## **Matthew Taylor on The Power to Create**

[www.youtube.com/watch?v=lZgipuFGb\\_8](http://www.youtube.com/watch?v=lZgipuFGb_8)

## **C. Villani – 7 ingredients of creativity**

<https://www.youtube.com/user/theRSAorg>

## **Top 10 inventions thought up by kids**

– <https://www.youtube.com/watch?v=aO8X40p2LMA>

## **Maya Penn – Ted Talks**

[https://www.ted.com/talks/maya\\_penn\\_meet\\_a\\_young\\_entrepreneur\\_cartoonist\\_designer\\_activist?language=en](https://www.ted.com/talks/maya_penn_meet_a_young_entrepreneur_cartoonist_designer_activist?language=en)

**Graphene** - [https://www.youtube.com/watch?v=Q\\_eTLPKdrHs](https://www.youtube.com/watch?v=Q_eTLPKdrHs)


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- <http://www.evgenymorozov.com>

– [https://www.youtube.com/watch?v=\\_9TlspgTbLM](https://www.youtube.com/watch?v=_9TlspgTbLM)

# Innovations by Italians

## LISTS

 [http://www.corriere.it/tecnologia/cards/13-invenzioni-italiane-che-ci-hanno-cambiato-vita-o-faranno/anni-60-olivetti-programma-101-1964\\_principale.shtml](http://www.corriere.it/tecnologia/cards/13-invenzioni-italiane-che-ci-hanno-cambiato-vita-o-faranno/anni-60-olivetti-programma-101-1964_principale.shtml)

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- <https://www.youtube.com/watch?v=Pxlh05bgfm4>

- Top 10 inventions thought up by kids
- <https://www.youtube.com/watch?v=aO8X40p2LMA>
- [http://www.ted.com/talks/hans rosling and the magic washing machine?language=en](http://www.ted.com/talks/hans_rosling_and_the_magic_washing_machine?language=en)