Dalla torre d'avorio al public engagement

Il rapporto scienza/società negli ultimi 30 anni

Andrea De Bortoli

Direttore Centro Interuniversitario Agorà Scienza

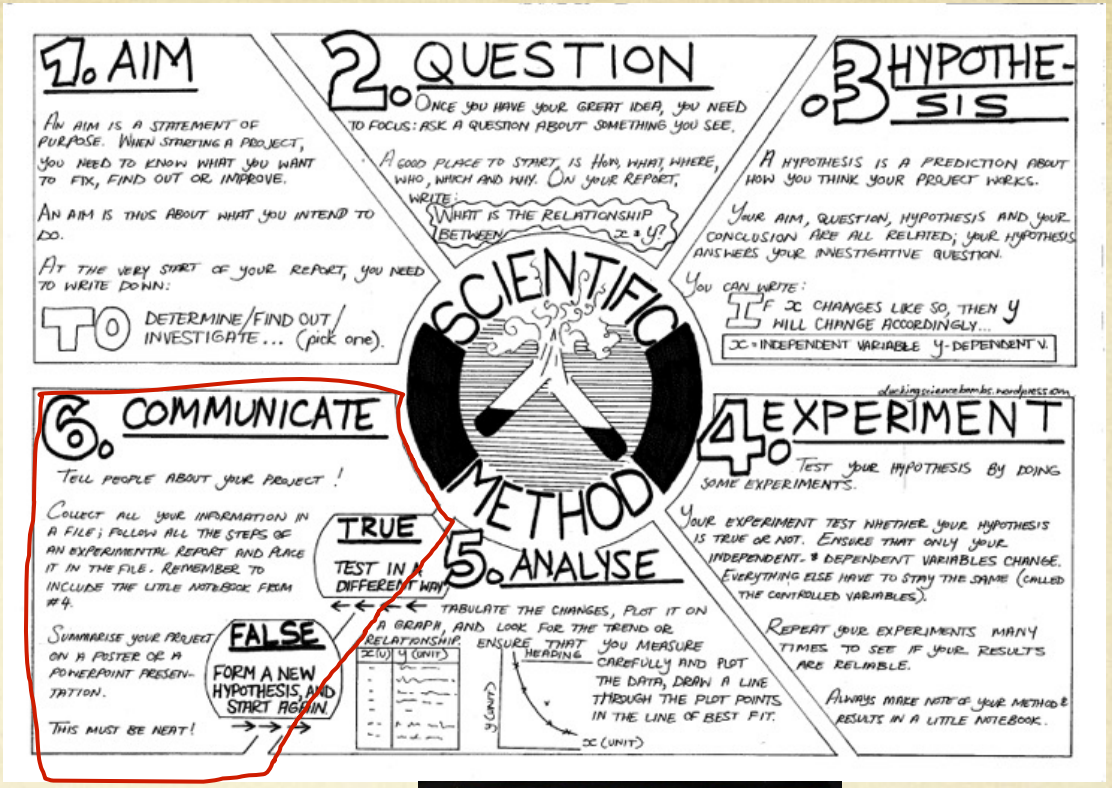
Ferrara – 8 giugno 2016

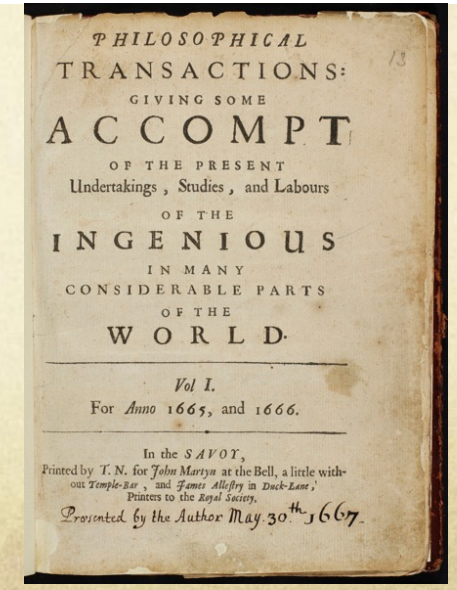
UN PO' DI STORIA

SCIENZA E SOCIETA'

La torre d'avorio

Nascita della scienza moderna (1600)





PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
WORLD.

Vol I.
For *Anno* 1665, and 1666.

In the *SAVOY*,
Printed by *T. N.* for *John Martyn* at the Bell, a little without *Temple-Bar*, and *James Allestry* in *Duck-Lane*,
Printers to the *Royal Society*.
Presented by the Author May 30th 1667.

I risultati della ricerca sono di pubblica proprietà e devono essere accessibili a tutti. I risultati devono essere pubblicati il più presto possibile perché i colleghi li possano utilizzare rapidamente.

ROBERT K. MERTON (1942)

Humphry Davy (1800)

I primi contatti con la società

Torino, Filippo De Filippi (1864)

La teoria di Darwin raccontata per la prima volta in Italia

L' ILLUMINAZIONE ELETTRICA NEL RECINTO DELL' ESPOSIZIONE (da uno schizzo del signor Chessa).

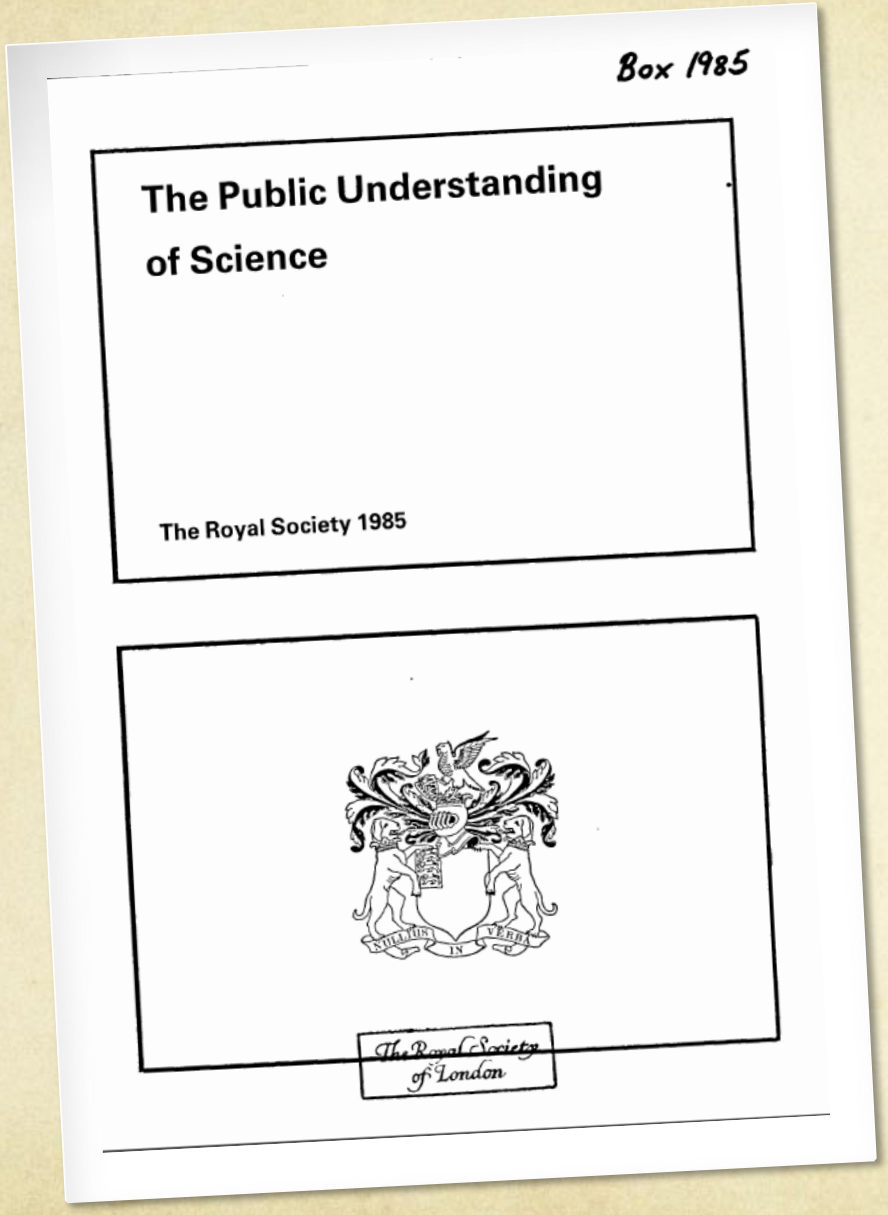
Esposizione nazionale Torino (1884)

La scienza entra nella società

II GUERRA MONDIALE

Exploratorium (1969)

Frank Oppenheimer (fratello di Robert)



PUS (1985)

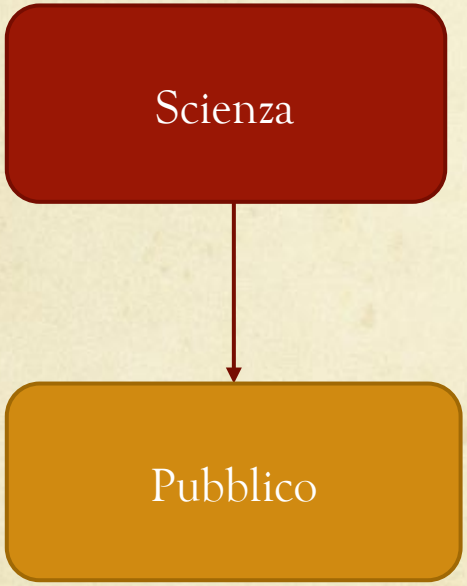
Public Understanding of Science

Più conosciuto come Rapporto Bodmer

Public Understanding of Science

<< ... una migliore comprensione della scienza può rappresentare un fattore significativo di promozione del benessere della nazione, elevando la qualità delle decisioni pubbliche e private e arricchendo la vita dell'individuo ... >>

Scienza/Società
Deficit model



- Top-down
- Unidirezionale
- Deficit di conoscenza
- + conoscenza = + sostegno

Comunicazione della scienza

Modello tradizionale

La concezione tradizionale della comunicazione pubblica della scienza

VIDEO

IL BOSONE DI CHI

Critiche al *deficit model*:

- Concezione unitaria della scienza
- Concezione unitaria del pubblico
- La maggiore conoscenza non porta necessariamente al consenso

Dal PUS al PEST

From PUS to PEST

Scientists in the United Kingdom have decided that the term "public understanding of science" has outlived its usefulness. In addition to making an unfortunate acronym, they say, the phrase has a condescending ring to it. So they've cooked up a more inclusive-sounding replacement: public engagement in science and technology (PEST).

Science minister David Sainsbury recently told the crowd at a science festival in Leicester that it is no longer enough for science communicators "simply to educate the public," according to *The London Financial Times*. Instead, they must get down in the trenches and interact with them—or, as Fiona Fox, director of the Science Media Centre, put it: "put their heads above the parapet on controversial issues" such as genetically modified foods.

From PUS to PEST
(October 4, 2002)
Science **298** (5591), 49b. [doi: 10.1126/science.298.5591.49b]

CHAPTER 5: ENGAGING THE PUBLIC

A new mood for dialogue

[...] Today's public expects not merely to know what is going on, but to be consulted; science is beginning to see the wisdom of this, and to move "out of the laboratory and into the community" to engage in dialogue aimed at mutual understanding. 5.3 The new mood for dialogue can be expressed in numerous different activities: Consultations at national level, Consultations at local level, Deliberative polling, Standing consultative panels, Focus groups, Citizens' juries, Consensus conferences, Stakeholder dialogues, Internet dialogues, The Government's Foresight programme

House of Lords Select Committee on Science and Technology report, Science and Society, 2000

Royal Society
Science in Society Programme (2000)

The Royal Society engages members of the public and other stakeholders in informed dialogue and debate on developments in science, engineering and technology, and supports the science community, policy-makers, industry and others to embed the principles of dialogue and to take account of the social and ethical aspects of science.

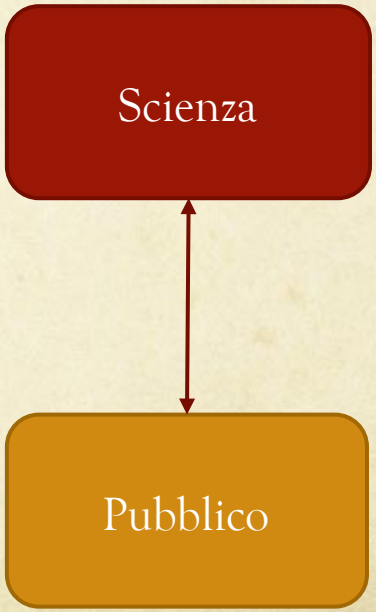
Science and Society

Science in Society

Science with and for Society

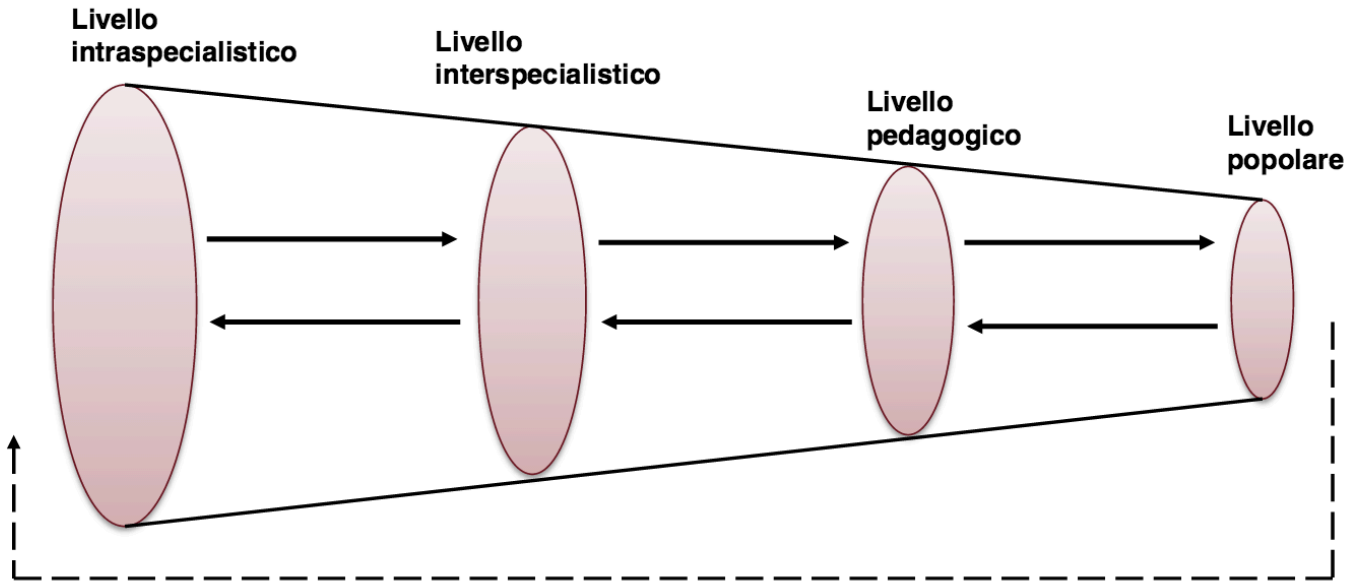
Scienza/Società
PEST
Public Engagement with Science and Technology

- Bidirezionale
- Coinvolgimento
- Opinione pubblica ha un peso e può contribuire alla produzione di nuova conoscenza



Comunicazione della scienza

Modello del continuum



Modello della comunicazione della scienza come *continuum* (Shinn e Whitley, 1985; Hilgartner, 1990)

Carta europea dei ricercatori (2005)

Public engagement

Researchers should ensure that their research activities are made known to society at large in such a way that they can be understood by non-specialists, thereby improving the public's understanding of science. Direct engagement with the public will help researchers to better understand public interest in priorities for science and technology and also the public's concerns.

Responsible Research and Innovation

The Directorate-General for Research and Innovation of the European Commission is determined to bridge the gap between the scientific community and society at large. In 2001, the «Science and Society» Action Plan was launched to set out a common strategy to make a better connection between science and European citizens. In 2007, under the 7th Framework Programme for Research and Technological Development (FP7), «Science and Society» became «Science in Society (SiS)» with the main objective to foster public engagement and a sustained two-way dialogue between science and civil society.

Since 2010 the focus of SiS has been to develop a concept responding to the aspirations and ambitions of European citizens: a framework for Responsible Research and Innovation (RRI). The grand societal challenges that lie before us will have a far better chance of being tackled if all societal actors are fully engaged in the co-construction of innovative solutions, products and services.

Responsible Research and Innovation means that societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes, with the values, needs and expectations of European society. RRI is an ambitious challenge for the creation of a Research and Innovation policy driven by the needs of society and engaging all societal actors via inclusive participatory approaches.

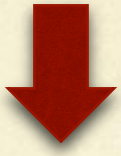
The Responsible Research and Innovation framework consists of 6 keys:

RRI
2011

Public Engagement, Gender Equality, Science Education, Ethics, Open Access, Governance

IN SINTESI

PUS (1985)
Public Understanding of Science



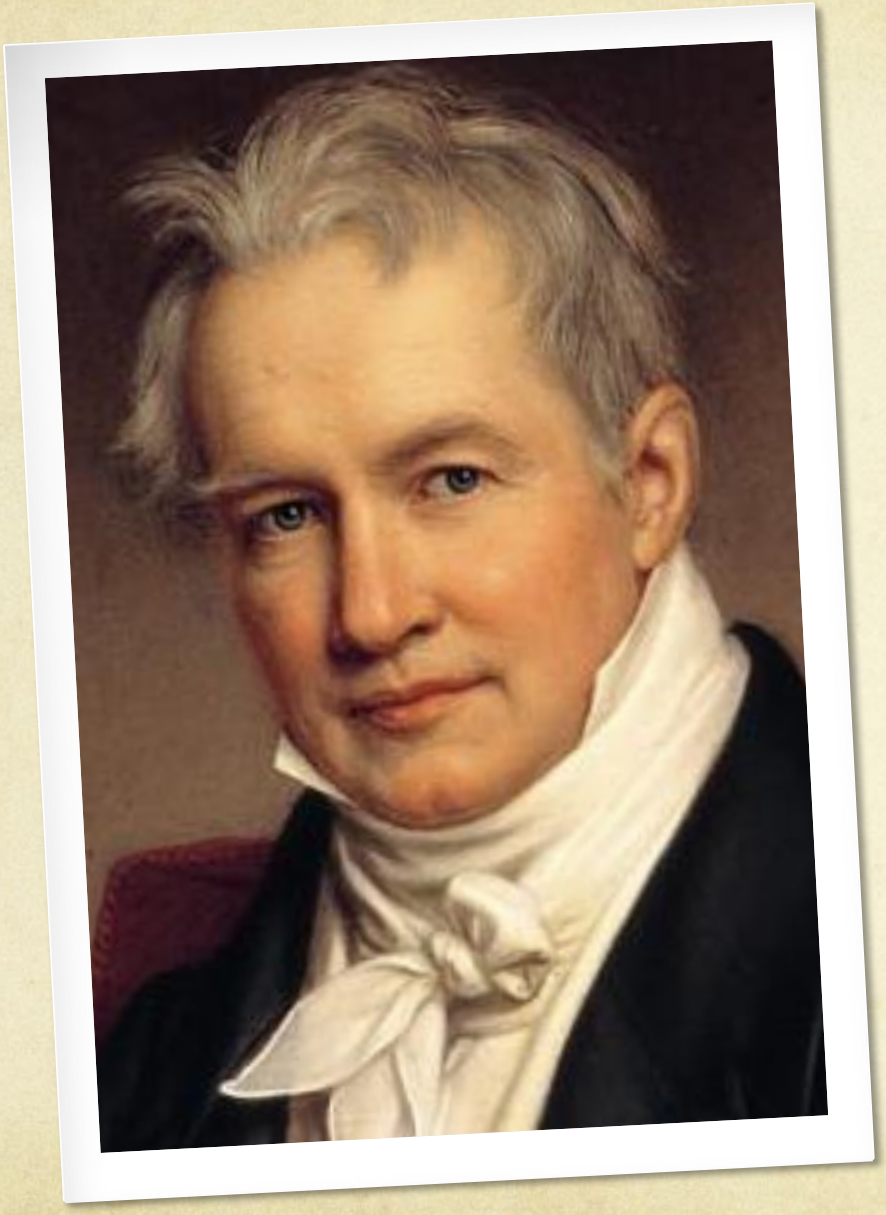
PEST (2002)
Public Engagement with Science and Technology

RRI (2011)
Responsible Research and
Innovation

Scienza e Società

VIDEO

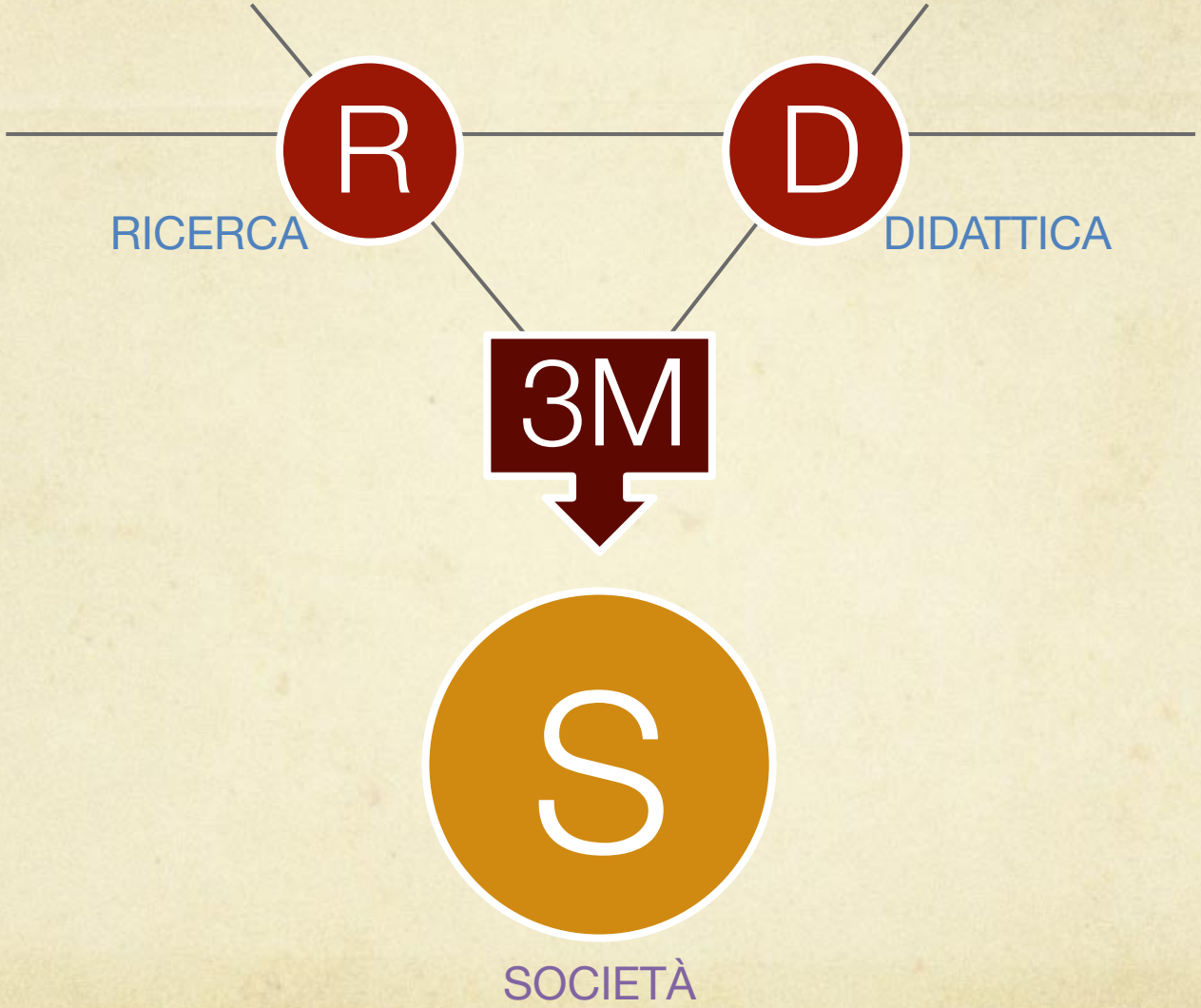
PUBLIC ENGAGEMENT



Università humboldtiana

Ricerca e didattica (Berlino 1810)

La Terza Missione



Breve storia della Terza Missione

SE
1996

«Co-operate with the community and provide information on their activities»

Higher Education Act

«The university shall collaborate with society and contribute to the development of international collaboration […] the university shall exchange knowledge and competencies with society and encourage its employees to take part in the public debate.»

University Act

DK
2003

Breve storia della Terza Missione

«Create a culture within UK Higher Education where PE is formalised and embedded as a valued and recognised activity for staff at all levels, and for students»
Higher Education Funding Council for England (HEFCE)

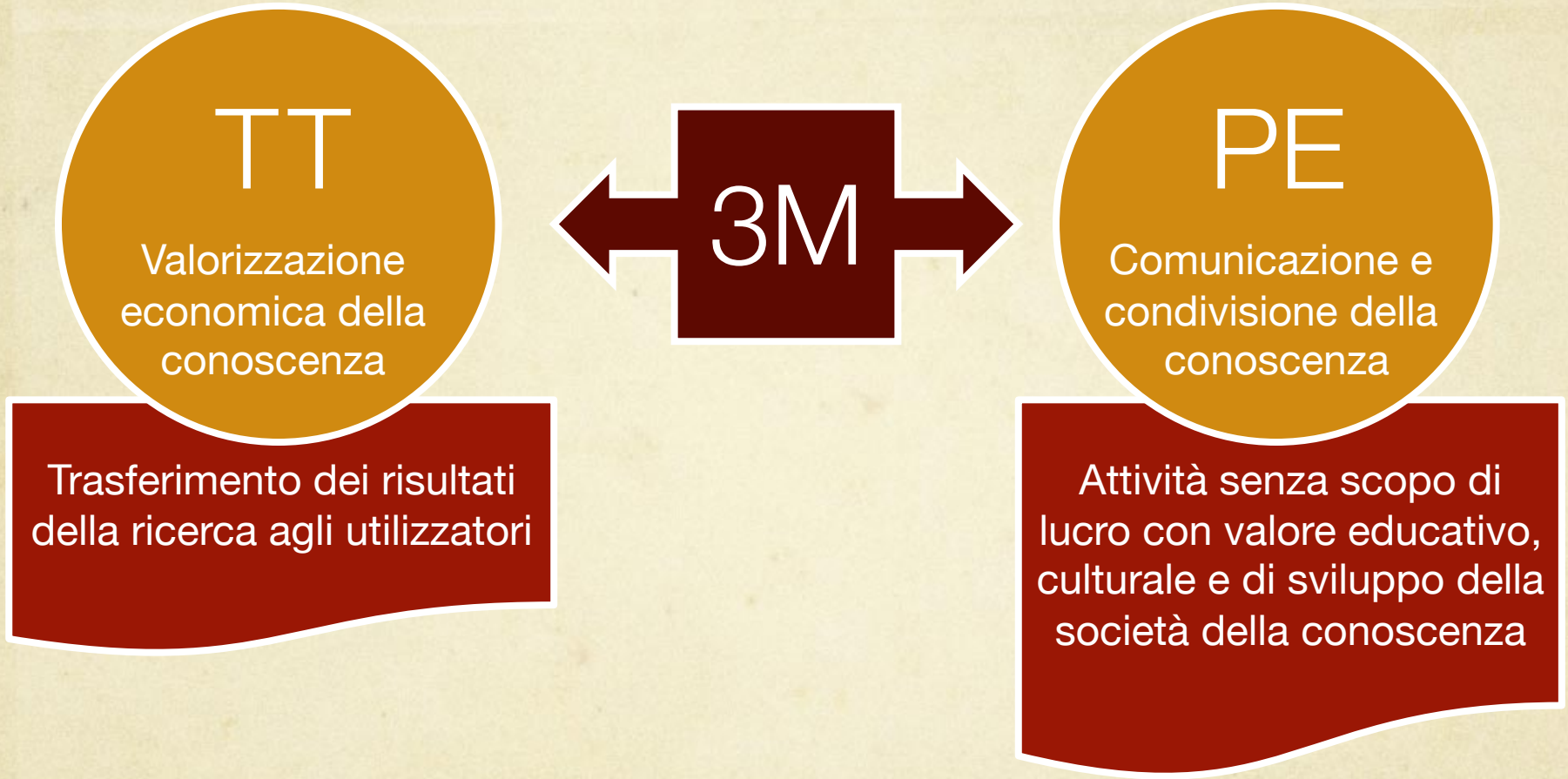
UK 2007

IT 2011

«Nell'ambito della VQR si tiene conto anche della propensione delle strutture all'apertura verso il contesto socio-economico, esercitata attraverso la valorizzazione e il trasferimento delle conoscenze.»

ANVUR, VQR 2004-2010

Le due anime della 3M



Una definizione di Public Engagement

Ogni individuo ha diritto di prendere parte liberamente alla vita culturale della comunità, di godere delle arti e di partecipare al progresso scientifico ed ai suoi benefici.

Dichiarazione Universale dei Diritti Umani

Art. 27
1948

NCCPE
2013

L'insieme dei modi in cui l'attività e i benefici di formazione e ricerca possono essere condivisi con il pubblico. Il Public Engagement è, per definizione, un processo a due vie, che prevede ascolto e interazione, con l'obiettivo di generare vantaggio reciproco.

National Co-ordinating Center for PE (UK)

Caratteristiche comuni attività di PE

- Coinvolgimento, inclusione → cittadinanza scientifica
- Comunicazione bi-direzionale
- Legami con territorio e stakeholder
- Partecipazione diretta dei ricercatori
- Molti destinatari differenti, non un unico pubblico

IAP2 SPECTRUM FOR PUBLIC ENGAGEMENT

Retrieved from:
http://c.ymcdn.com/sites/www.iap2.org/resource/resmgr/imported/IAP2%20Spectrum_vertical.pdf

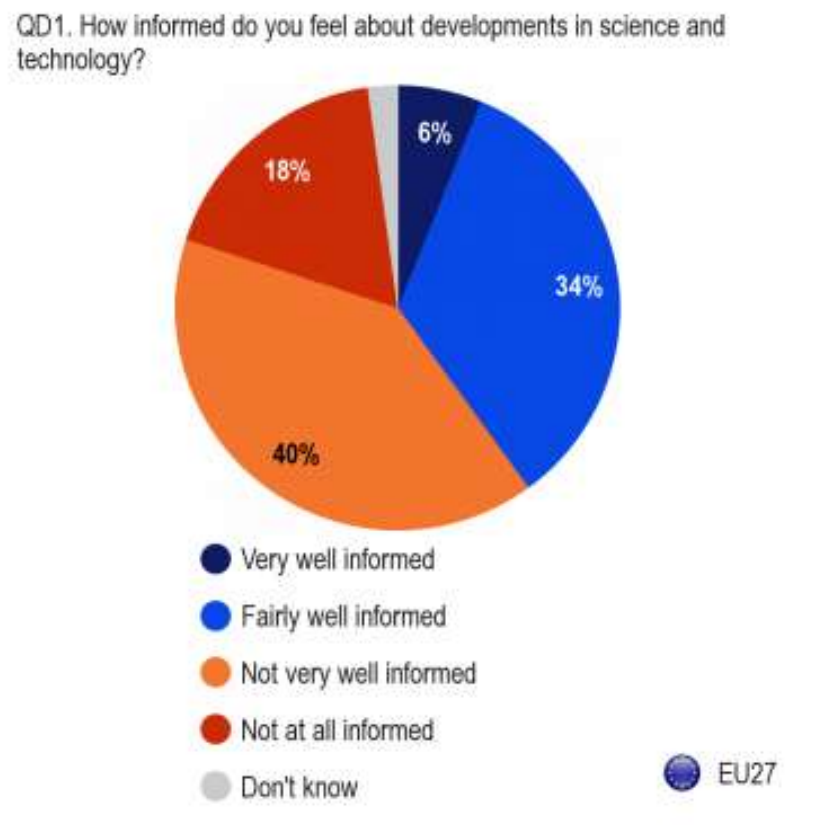
	Inform	Consult	Involve	Collaborate	Empower
Public Participation Goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
Promise to the public	"We will keep you informed"	"We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision."	"We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision"	"We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible."	"We will implement what you decide."
Example Techniques	• Fact sheets • Web sites • Open Houses	• Public comment • Focus groups • Surveys • Public meetings	• Workshops • Deliberative polling	• Citizen advisory committees • Consensus-building • Participatory decision-making	• Citizen juries • Ballots • Delegated decision

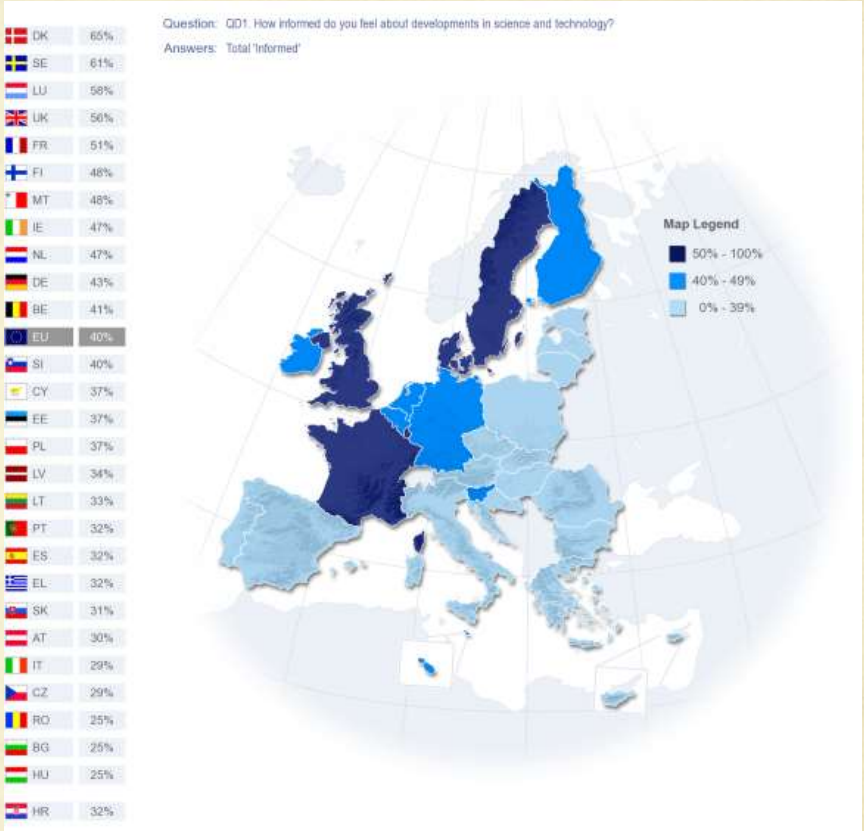
Il rapporto scienza/società in numeri

Il punto di vista dei cittadini

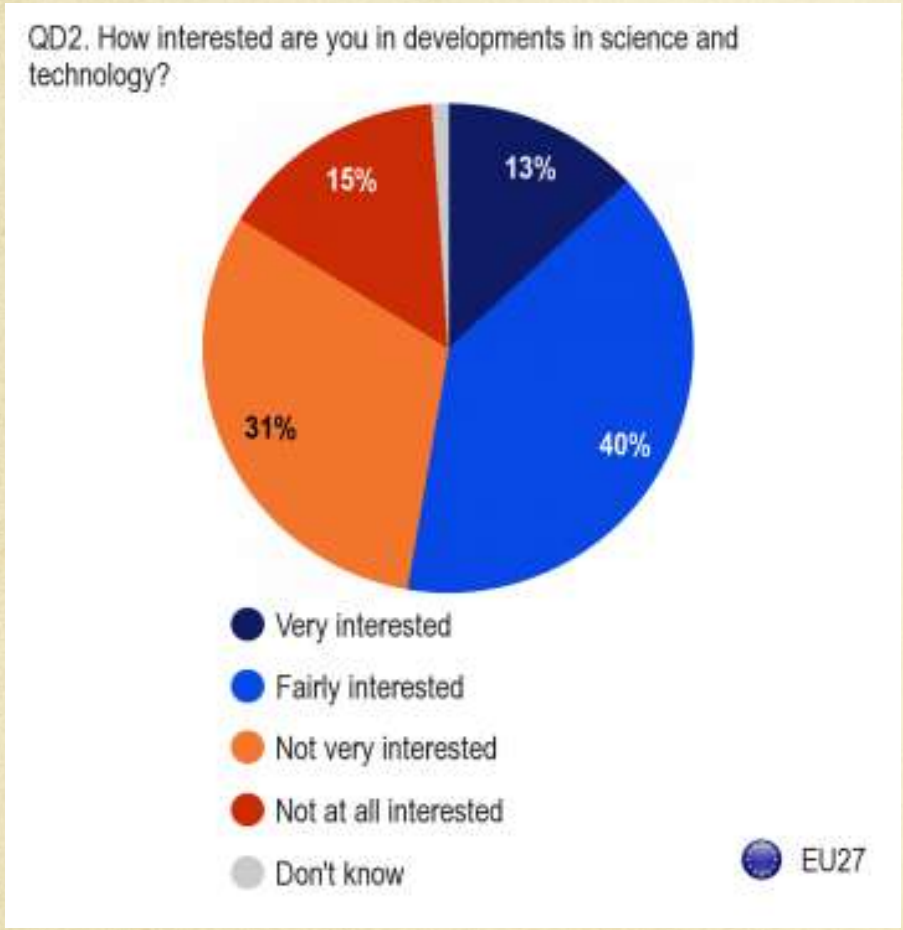
Fonte: Special Eurobarometer 401, Responsible Research and Innovation, Science and Technology – Progetto Alfieri, Centro Agorà Scienza

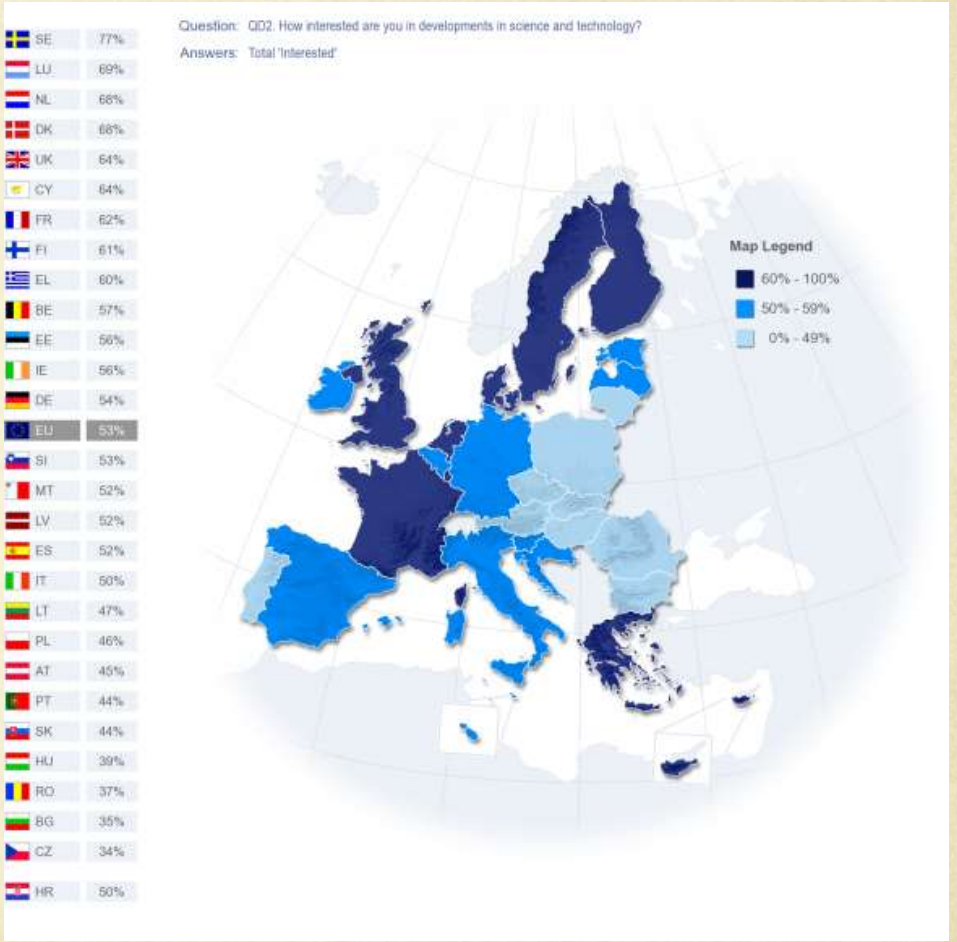
Livello di informazione





Livello di interesse





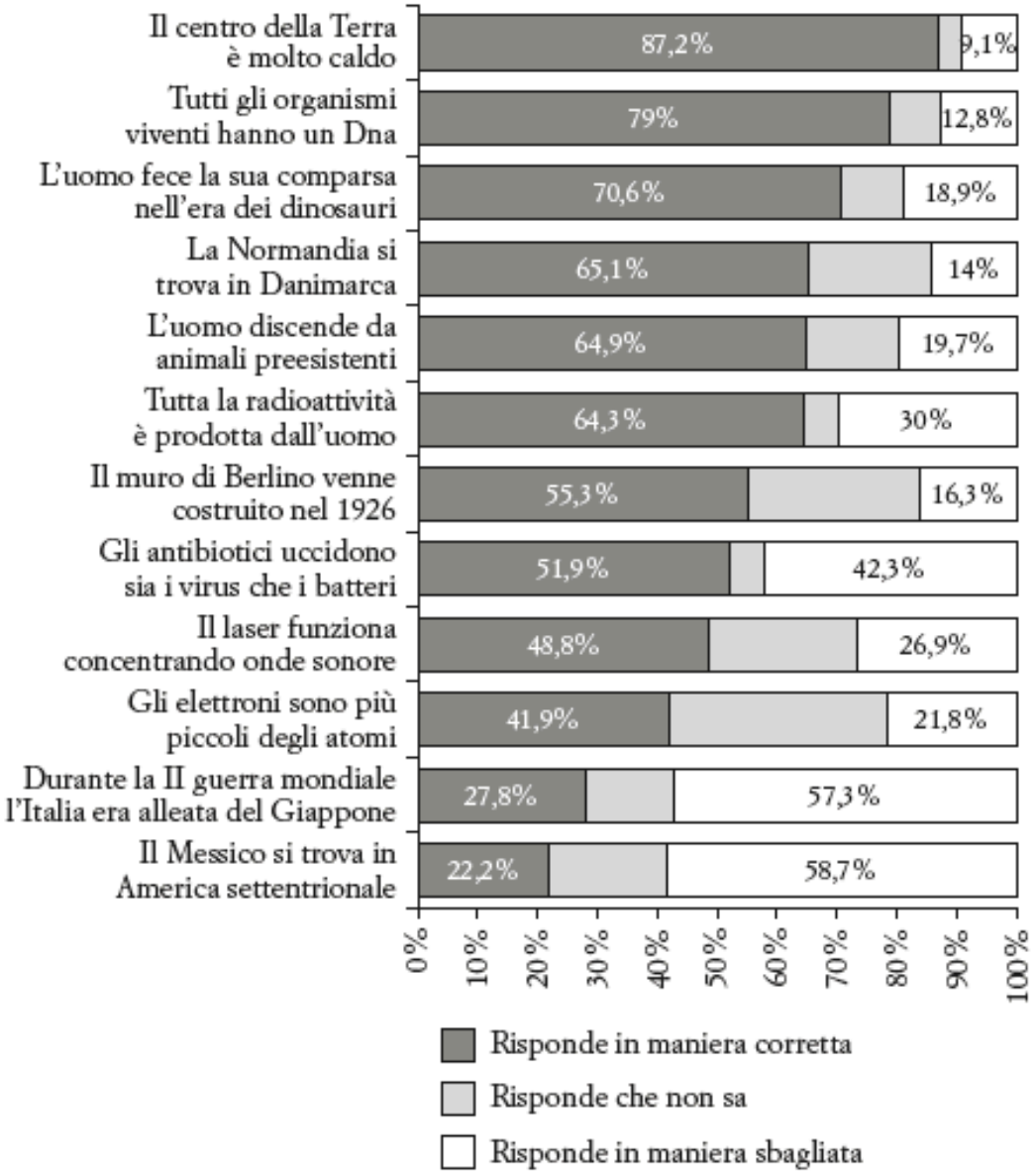


FIG. 10. D18 – Ora le presento un breve quiz. Per ciascuna affermazione può dirmi se è vera o se è falsa (% risposte giuste, sbagliate, non sa).

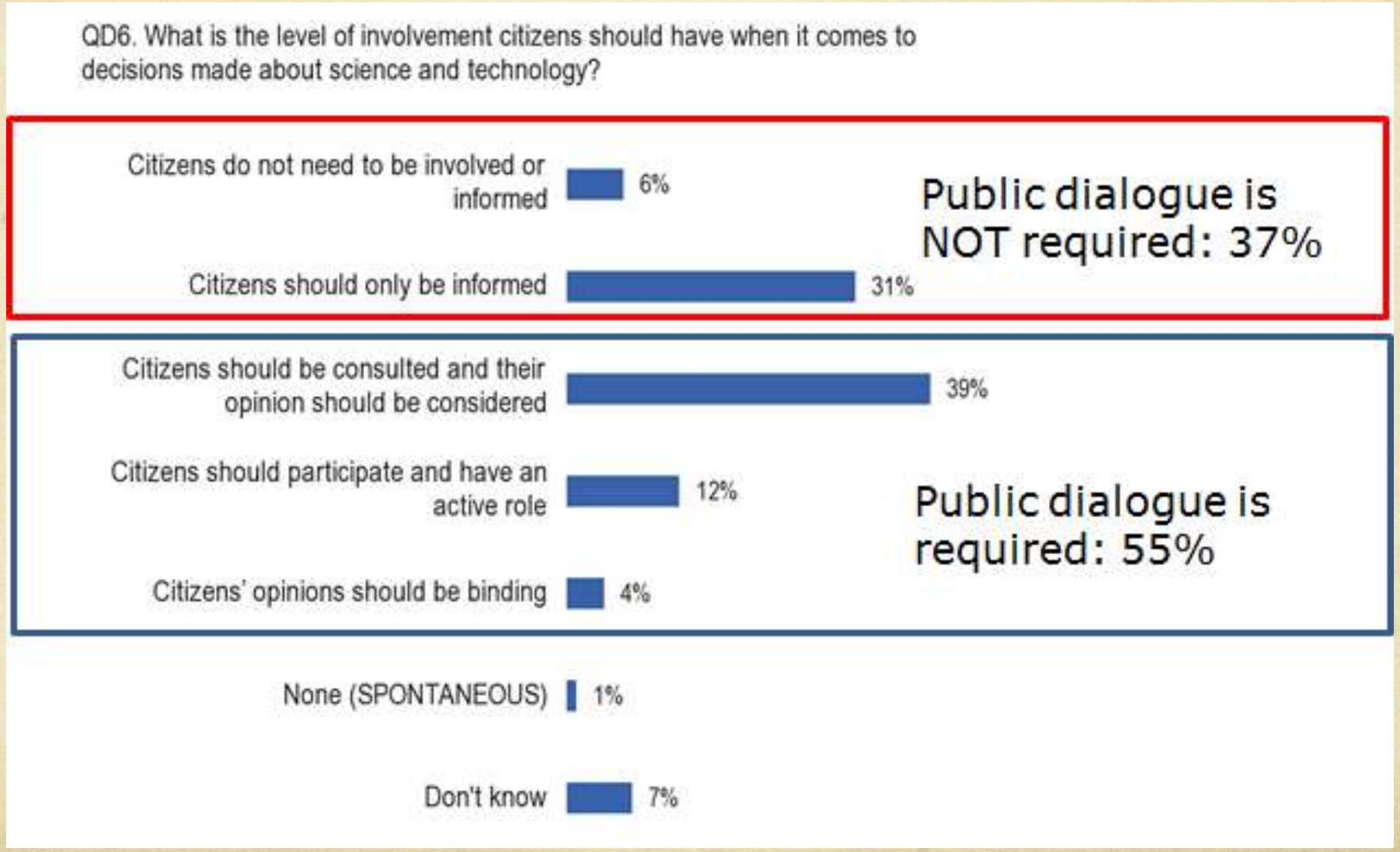
Alfabetizzazione scientifica

Confronto Italia – EU - USA

TAB. 2. *D18 – Ora le presento un breve quiz. Per ciascuna affermazione può dirmi se è vera o se è falsa?*

		Vero	Falso	Non so	Vero Ue 25 (2005)	Falso Ue 25 (2005)	Non so Ue 25 (2005)	Vero Usa (2006)	Falso Usa (2006)	Non so Usa (2006)
1	Il centro della Terra è molto caldo (V)	*87,2%*	*9,1%*	*3,8%*	86%	7%	7%	80%	d.m.	d.m.
2	Tutta la radioattività è prodotta dall'uomo (F)	*30,0%*	*64,3%*	*5,7%*	27%	59%	14%	d.m.	70%	d.m.
3	Gli elettroni sono più piccoli degli atomi (V)	*41,9%*	*21,8%*	*36,3%*	46%	29%	25%	53%	d.m.	d.m.
4	L'uomo fece la sua comparsa nell'era dei dinosauri (F)	*18,9%*	*70,6%*	*10,5%*	23%	66%	11%	–	–	–
5	Gli antibiotici uccidono sia i virus che i batteri (F)	*42,3%*	*51,9%*	*5,8%*	43%	46%	11%	d.m.	56%	d.m.
6	Il laser funziona concentrando onde sonore (F)	*26,9%*	*48,8%*	*24,3%*	26%	47%	28%	d.m.	45%	d.m.
7	La Normandia si trova in Danimarca (F)	*14,0%*	*65,1%*	*20,9%*	–	–	–	–	–	–
8	Il muro di Berlino venne costruito nel 1926 (F)	*16,3%*	*55,3%*	*28,4%*	–	–	–	–	–	–

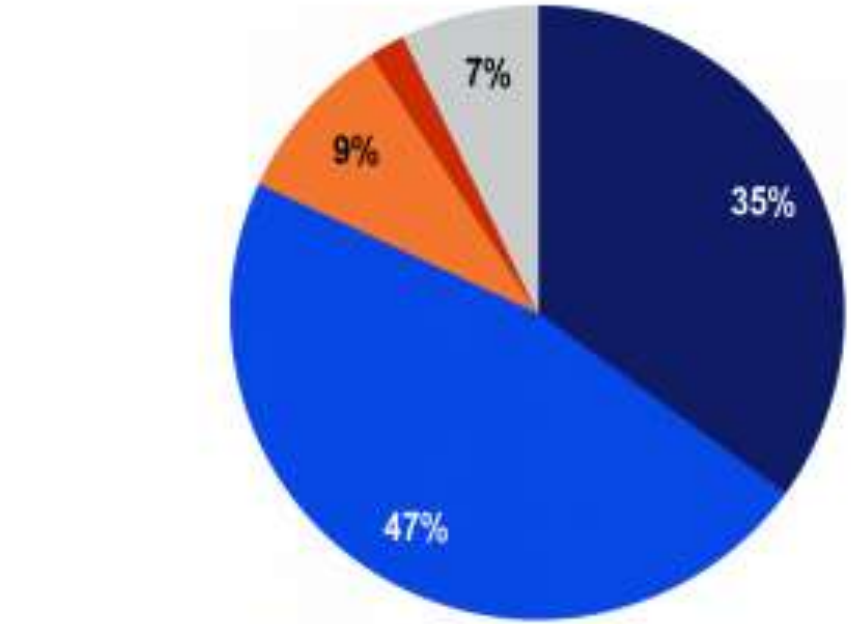
Coinvolgimento



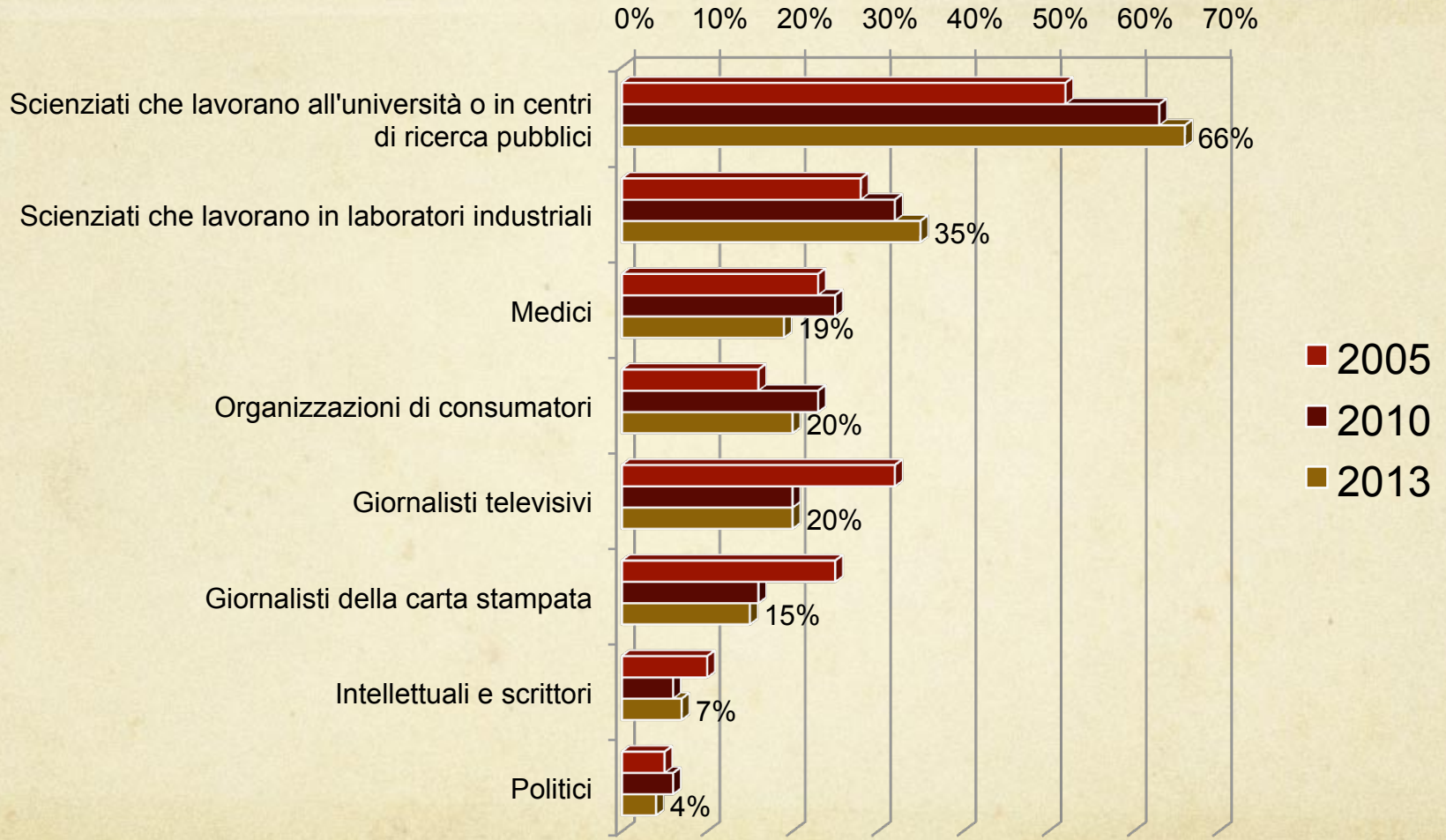
Responsabilità degli scienziati

QD8.1. For each of the following categories of people and organisations working in (OUR COUNTRY), do you think that they try to behave responsibly towards society by paying attention to the impact of their science and technology related activities?

Scientists working at a university or government laboratories



Quali tra queste categorie è la più qualificata a presentare alla società l'impatto dello sviluppo scientifico e tecnologico?



Fonte: Eurobarometer Science and Technology (2005, 2010, 2013)

Fiducia nelle istituzioni

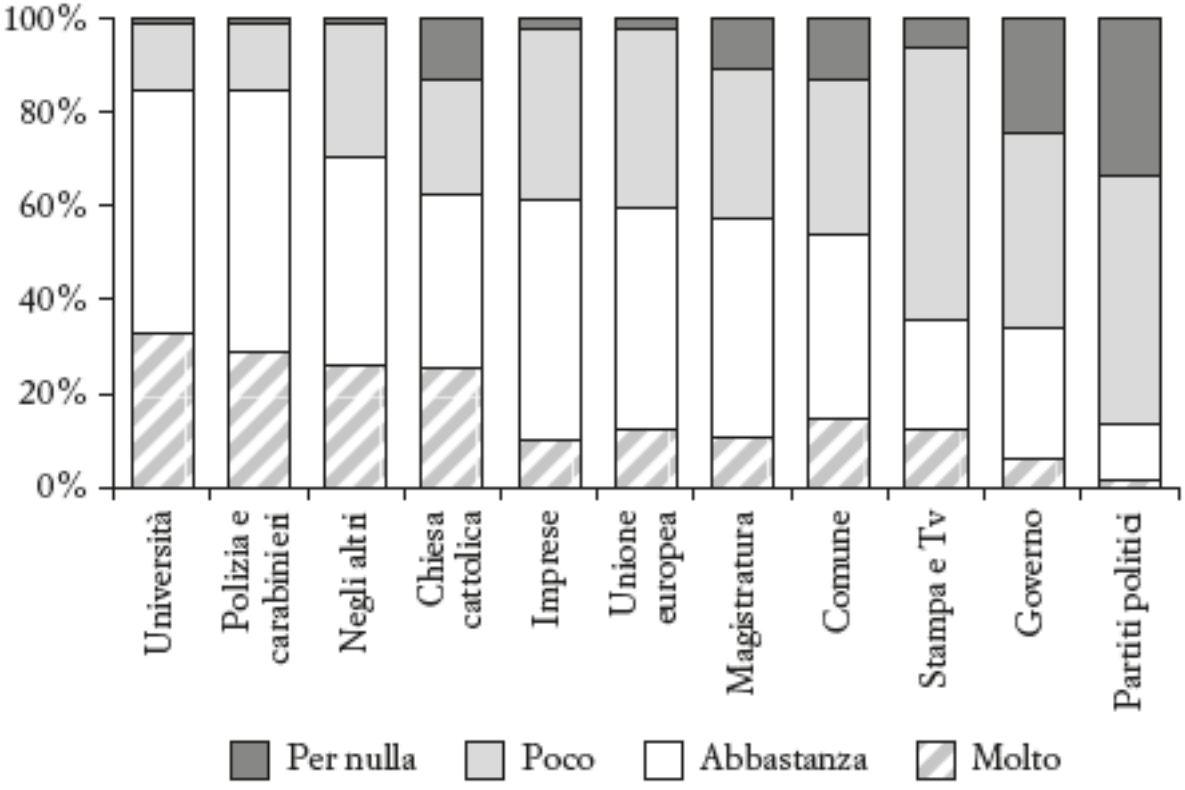


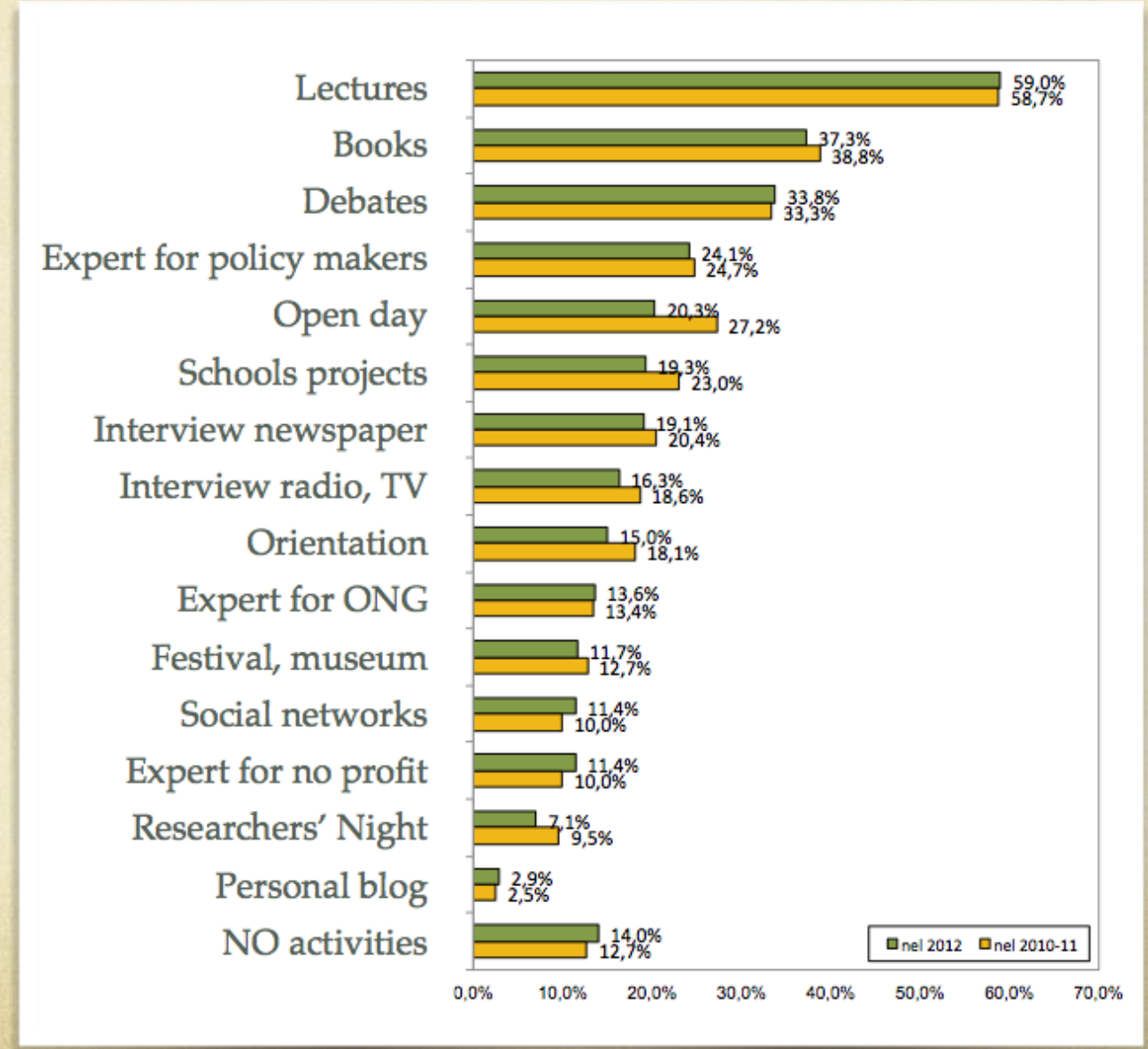
FIG. 4. Fiducia nelle istituzioni della società italiana e negli altri.

Il rapporto scienza/società in numeri

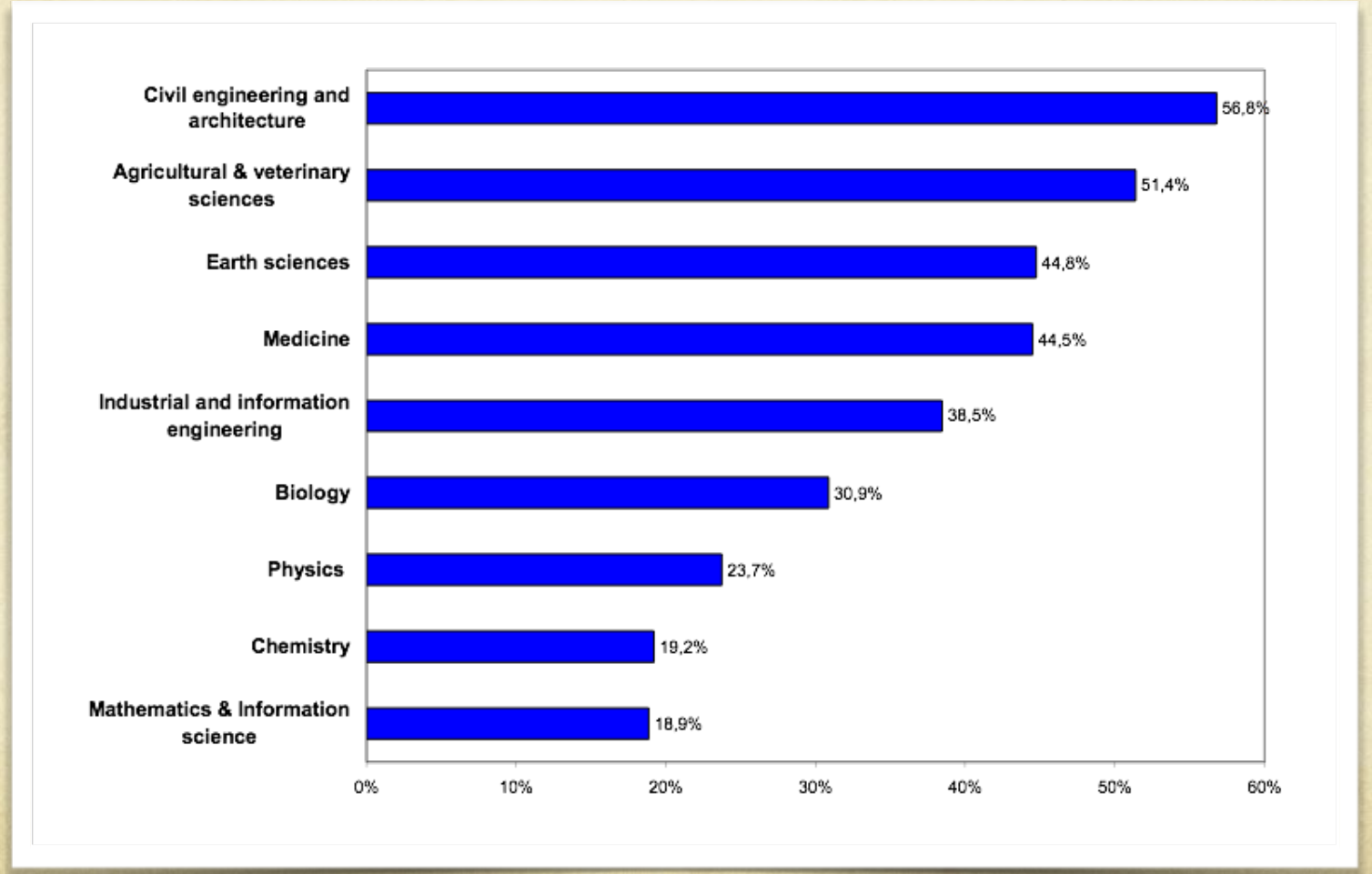
Il punto di vista dei ricercatori

Fonte: progetto di ricerca ISAAC – Centro Agorà Scienza

Quali attività?

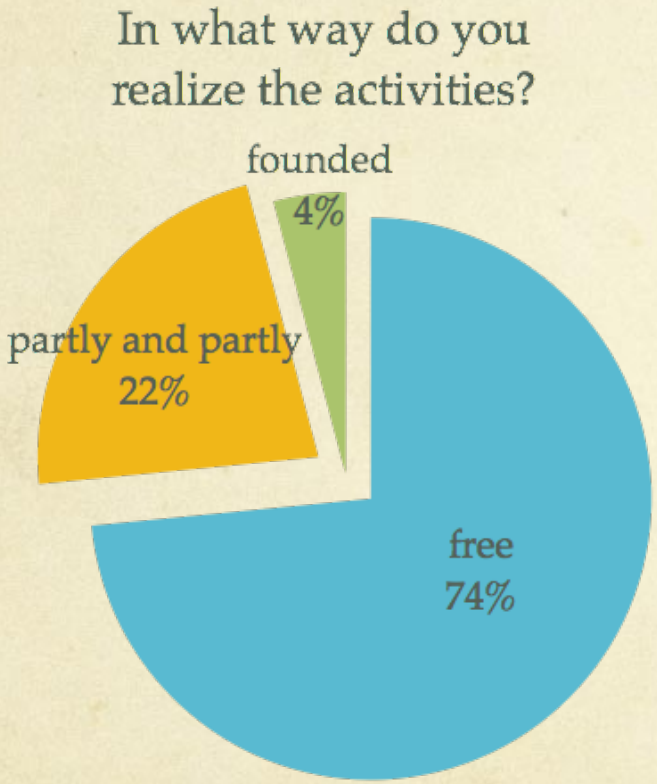


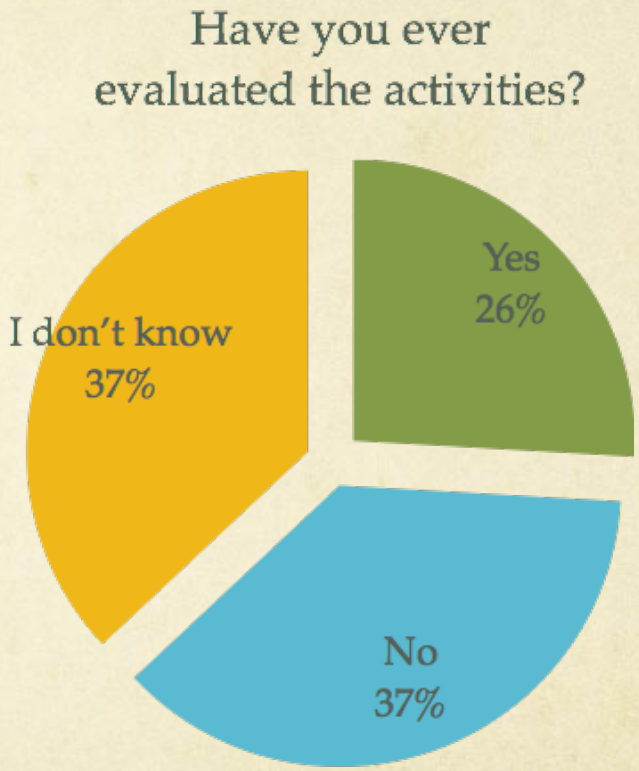
Differenza tra discipline



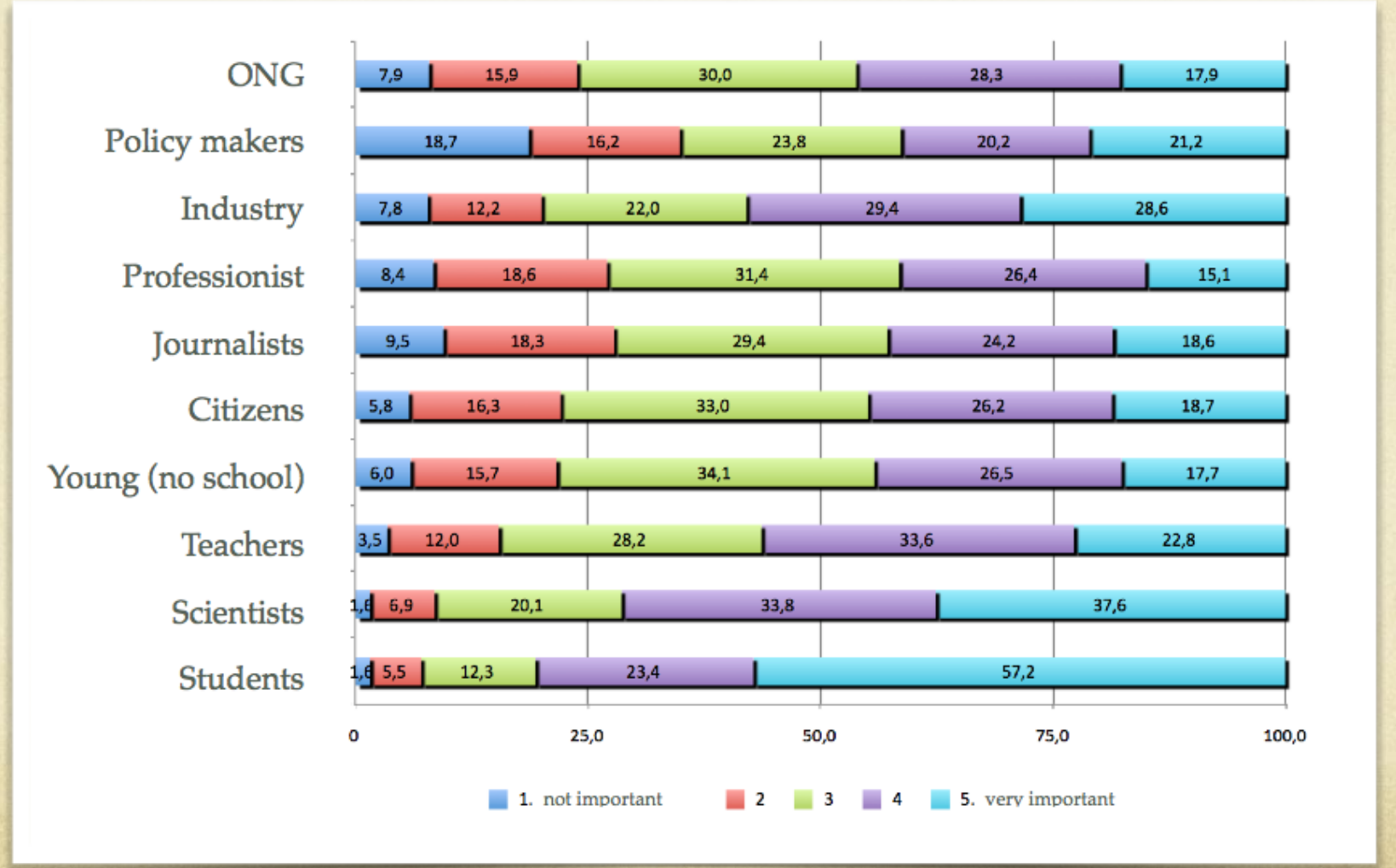
Attività svolte (1 volta in 3 anni)	**Hard (%)**		**Umane (%)**	
	MAX	**MIN**	**MAX**	**MIN**
Collaborare con insegnanti/scuole (escluso orientamento didattico)	Terra 46	Ing. Civ.-Arch. 18	Stor.-Fil.-Ped.-Psi. 49	Sc. Econom.-Stat. 17
Partecipare a un dibattito/evento pubblico	Ing. Civ.-Arch. 59	Chimica 26	Sc. Polit.-Soc. 80	Sc. Econom.-Stat. 52
Rilasciare interviste o partecipare a programmi radio/TV	Ing. Civ.-Arch. 32	Chimica 12	Sc. Polit.-Soc. 58	Sc. Giuridiche 26
Rilasciare interviste alla stampa	Terra 38	Mat.-Inf. 12	Sc. Polit.-Soc. 55	Sc. Giuridiche 27
Scrivere libri, articoli o altri prodotti editoriali destinati al pubblico	Ing. Civ.-Arch. 69	Mat.-Inf. 29	Stor.-Fil.-Ped.-Psi. 78	Sc. Econom.-Stat. 56
Intervenire in qualità di esperto presso istituzioni pubbliche o politiche	Ing. Civ.-Arch. 50	Chimica 13	Sc. Polit.-Soc. 55	Sc. Antich.-stor. art. 32
Intervenire in qualità di esperto presso imprese for profit	Ing. Ind.-Inf. 21	Mat.-Inf. 5	Sc. Polit.-Soc. 22	Sc. Antich.-stor. art. 5

Finanziamenti e valutazione

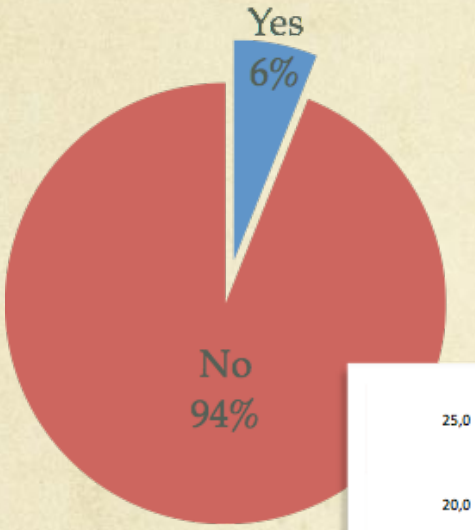




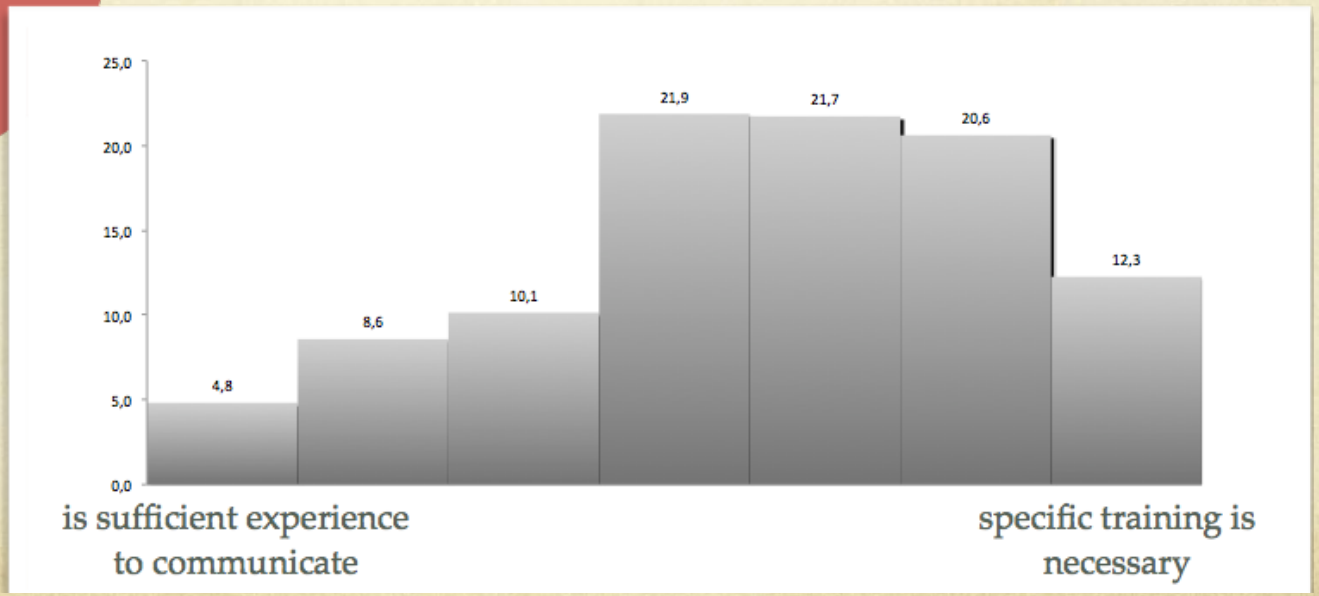
Destinatari



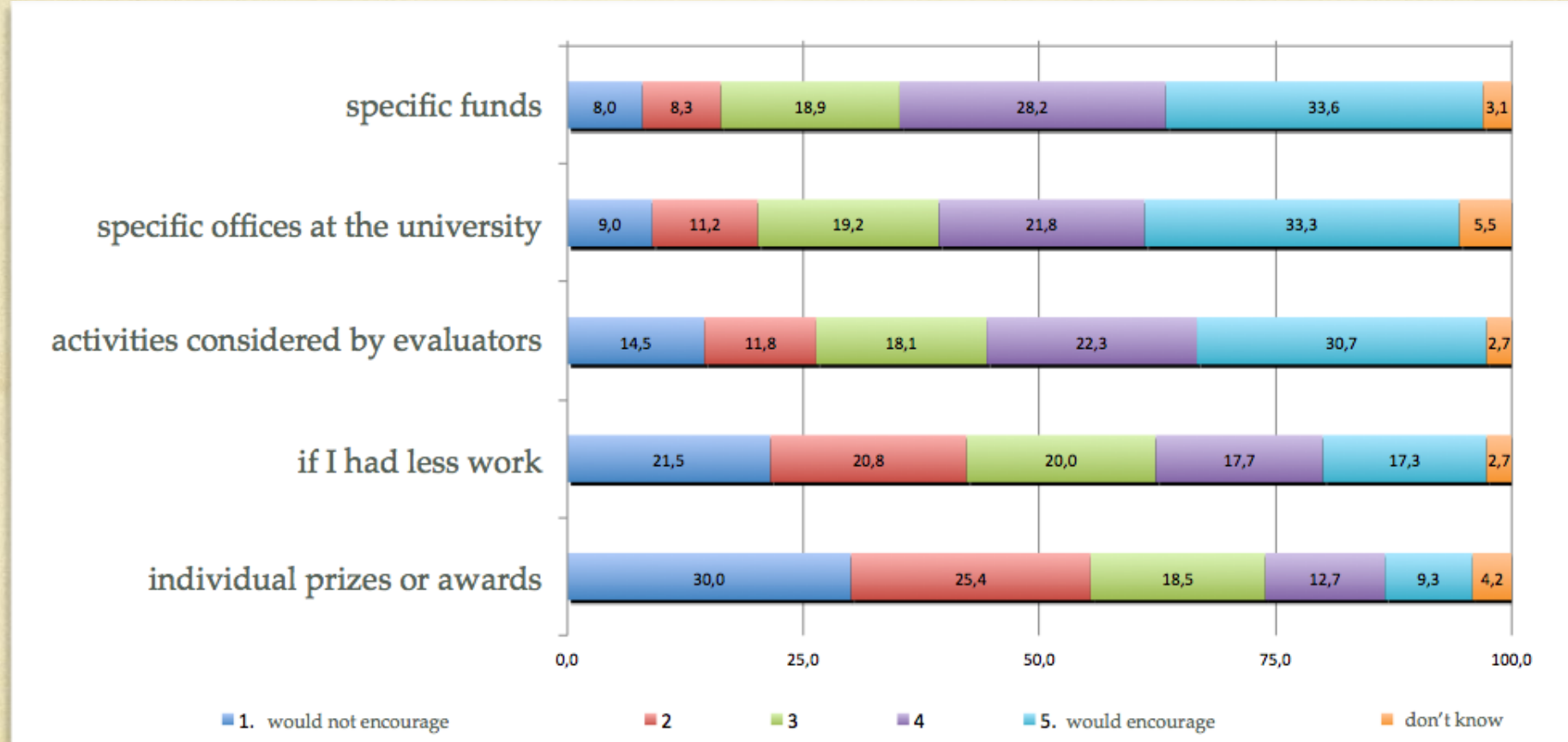
COMMUNICATION SKILLS



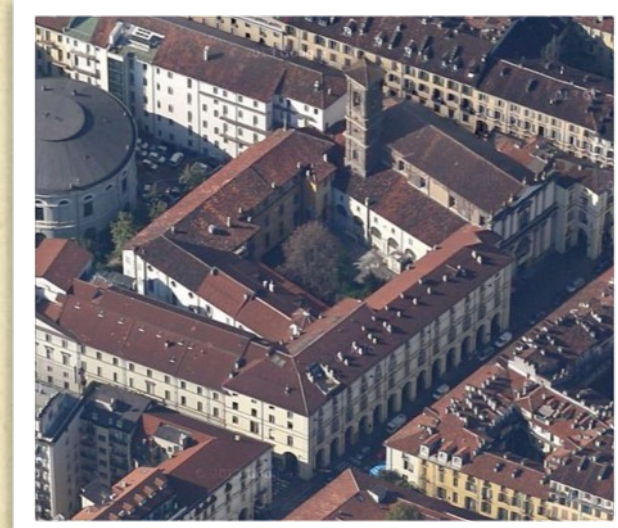
Have you ever attended a science communication training?



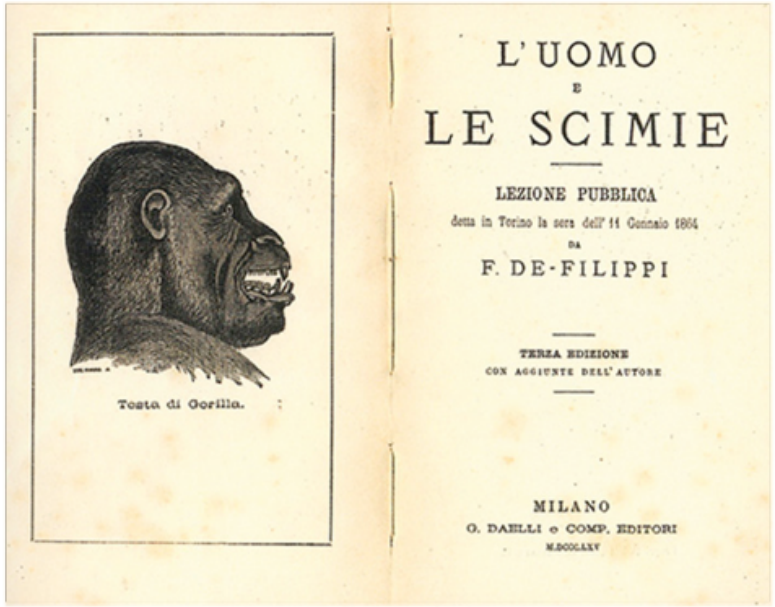
Incentivi


specific funds
8,0
8,3
18,9
28,2
33,6
3,1
specific offices at the university
9,0
11,2
19,2
21,8
33,3
5,5
activities considered by evaluators
14,5
11,8
18,1
22,3
30,7
2,7
if I had less work
21,5
20,8
20,0
17,7
17,3
2,7
individual prizes or awards
30,0
25,4
18,5
12,7
9,3
4,2
0,0
25,0
50,0
75,0
100,0
1. would not encourage
2
3
4
5. would encourage
don't know

AGORÀ SCIENZA
CENTRO INTERUNIVERSITARIO



Ascanio Sobrero (1847)



Filippo De Filippi (1864)

via Po, 18 Torino
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www.agorascienza.it

Grazie per l'attenzione