



Curso de Verano de Benicàssim

"La Universidad Europea y la formation del capital humano para la quarta revolution industrial"

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"Acceleration" of historic time and University mission

- from transmission of knowledge
 - to education
 - to education and research
 - to (almost) "everything"
- from elites to (almost) everyone



(almost) “everything”:

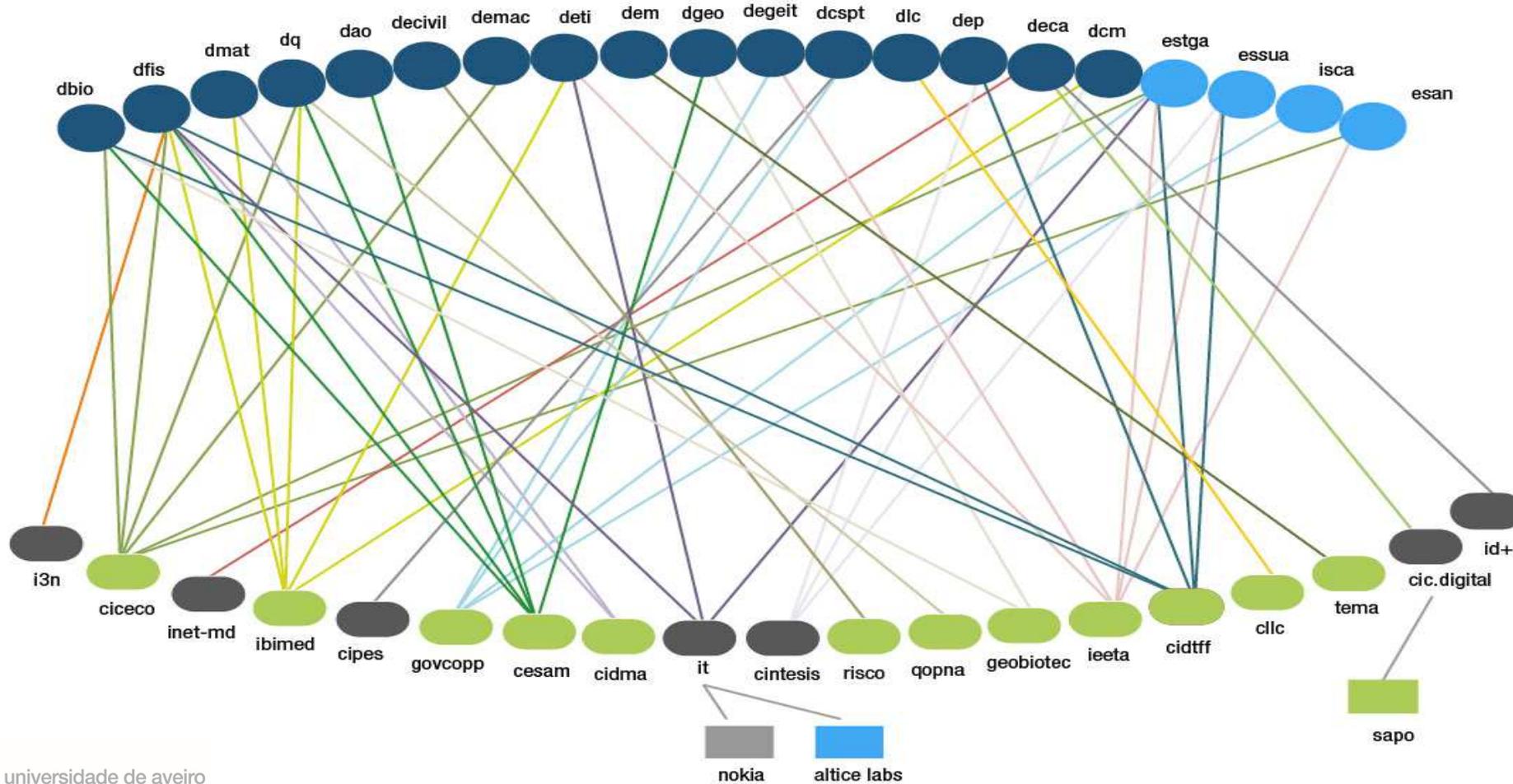
- sources of innovation for companies
- triggers for regional development
- contributors to changes in services and public administration (proximity, transparency, easiness...)
- promoters of more qualified public policies



Social responsibility of universities

- public understanding of science (choices – individual, collective; citizenship)
- social economy initiatives
- answer to societal challenges (climatic change, environmental sustainability, wealth distribution, inclusion-education, opportunities-, health and public health))
- anticipate the future (4th industrial revolution)

Interdisciplinarity



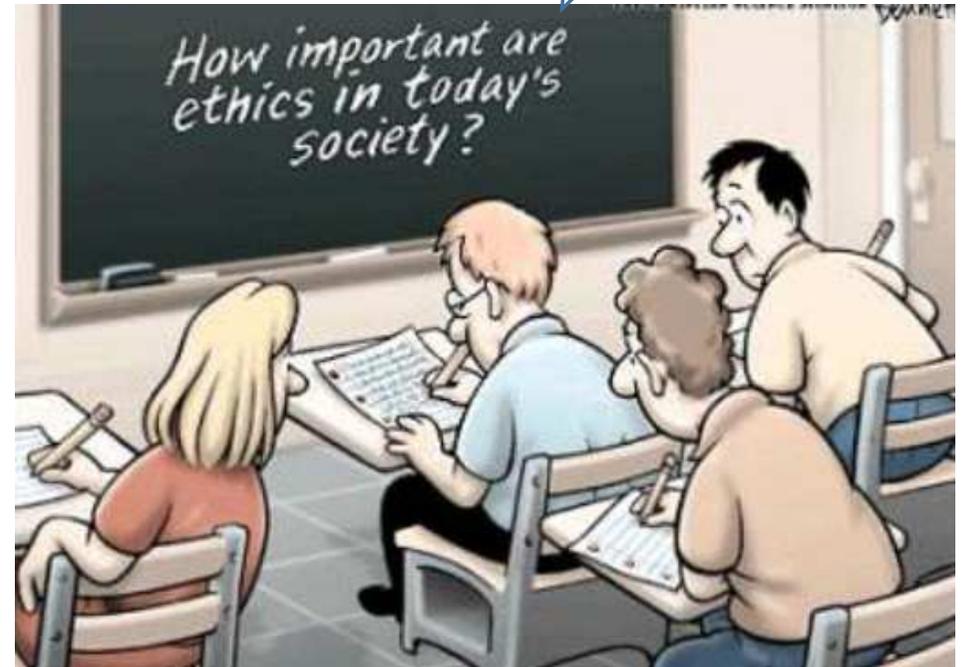
Ethics

It does not matter that you never got caught!

THERE IS
NO RIGHT WAY
TO DO
A WRONG THING.



How important are ethics in today's society?



How is the future shaping up? Further challenges! 4th IR

Industrial revolution is the name given the movement in which machines changed people's way of life as well as their methods of manufacture.

- 1st IR: water and steam power to mechanize production and transport goods.
- 2nd IR: electricity to create mass production.
- 3rd IR: Electronic and information technology to automate production.
- 4th: A digital revolution, a fusion of technologies, a customer differentiated production.

1st revolution

Water/Steam



2nd revolution

Electricity



3rd revolution

Automation



4th revolution

Cyberphysical systems



universidade de aveiro
theoria poiesis praxis

Future

Replacement of equipment

Percent of installed base



All of them where accompanied by serious societal challenges with massive alteration in the job market. Jobs being lost and needs for new skills.

Speed of change is now much higher!



Blurring the lines between physical, digital and biological spheres – Artificial Intelligence is no longer science fiction.





The first principle is that you must not fool yourself – and you are the easiest person to fool.



Decided to come back!



The future has arrived!

- Docs & Pos-Docs make the Human Capital needed to tackle challenge and make the most of it
- Transform the 4th IR from a threat into an opportunity
- How can we do that?





Some Facts

- Many countries have implemented reforms to develop and support doctoral studies and postdoctoral research, stressing the crucial role of doctorate students and degree holders in terms of economic growth, innovation and scientific research.
- Increased funds for doctoral students and research projects enabled the recruitment of postdocs. Plus support for programmes to attract international talent.
- Both reforms have led to an increase on numbers of both PhDs and Post-Docs.



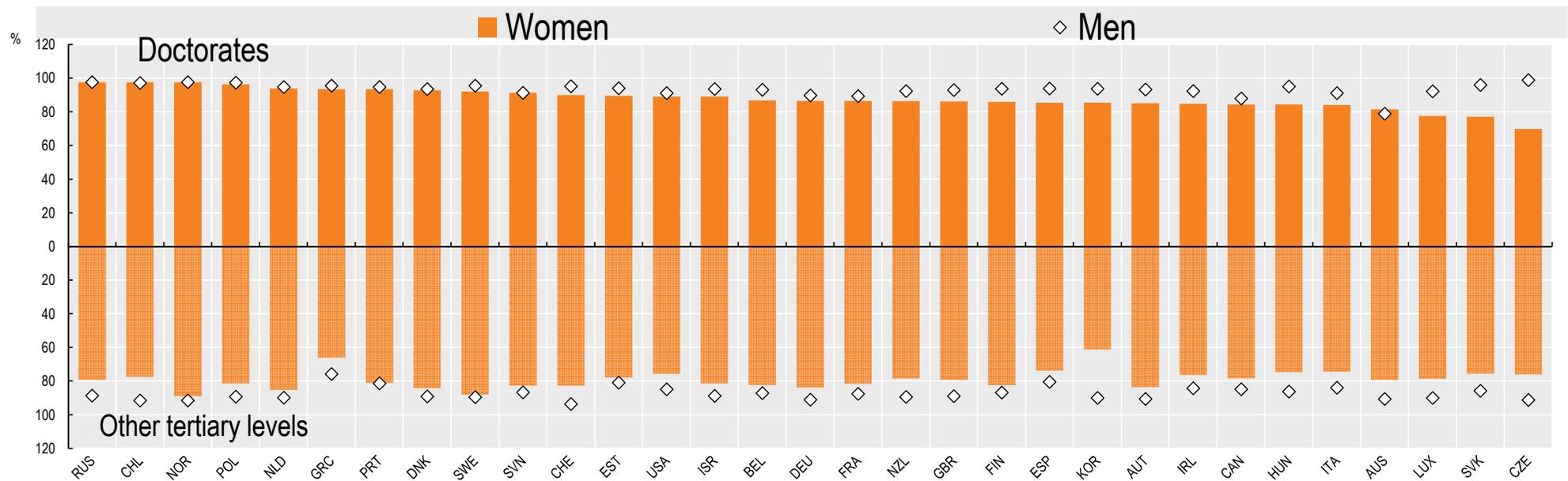
Doctoral graduate rates increased but does this consist a problem? Not (yet?)

OECD:

Despite reported concerns in the media about excessive graduation rates and claims that advanced skills are being underutilized, there is no evidence to suggest that the growth in the number of individuals at the highest level of qualification has resulted in some form of excess supply that the labor market struggles to accommodate. Most indicators point to a sustained, if not increasing premium on doctorate skills, which is consistent with rising demand for individuals with such skills.

Employment rate of doctorate holders and other tertiary graduates, 2012

As a percentage of working-age individuals in the relevant attainment group, by gender



Doctoral School



Learning



IT



Self management



Critical thinking



Communicating

Transferable Skills



Teamworking



Career management



Numeracy



Information handling

but:

- Difficulty to adapt to corporate timings and priorities.
- Difficulty in complying with corporate rules (ex safety);
- Difficulty to work in a production environment.



Training Supervisors: tricky but needed!



I'm coordinating five different R&D projects, but SURE, I can spare a minute.



“Mentorship is a one-on-one, mutual, committed relationship between a junior and a senior person designed to promote personal and professional development beyond any particular curricular or institutional goals.”

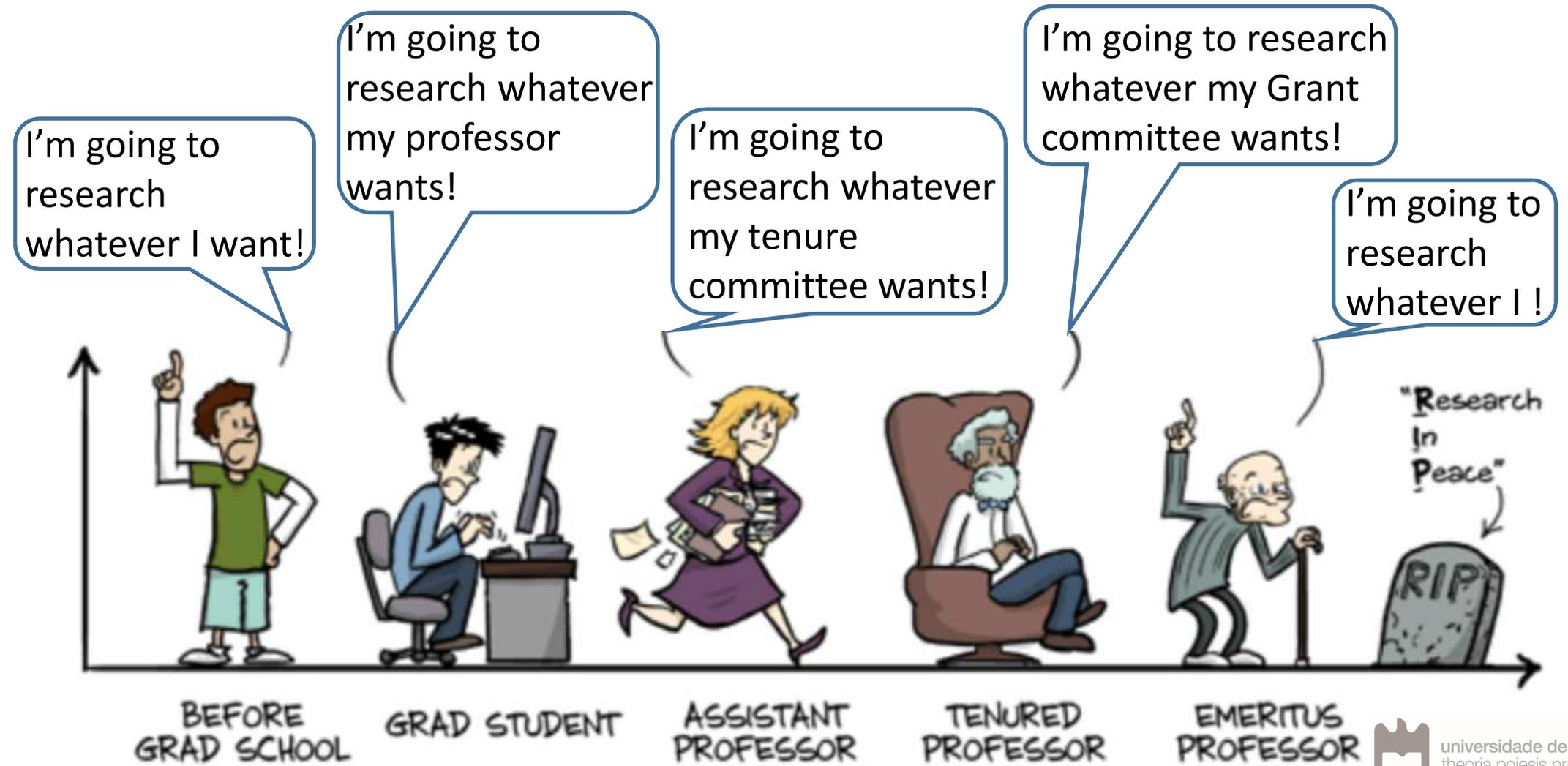
-Am J Health-Syst Pharm 2006;63:1597

Mentorship

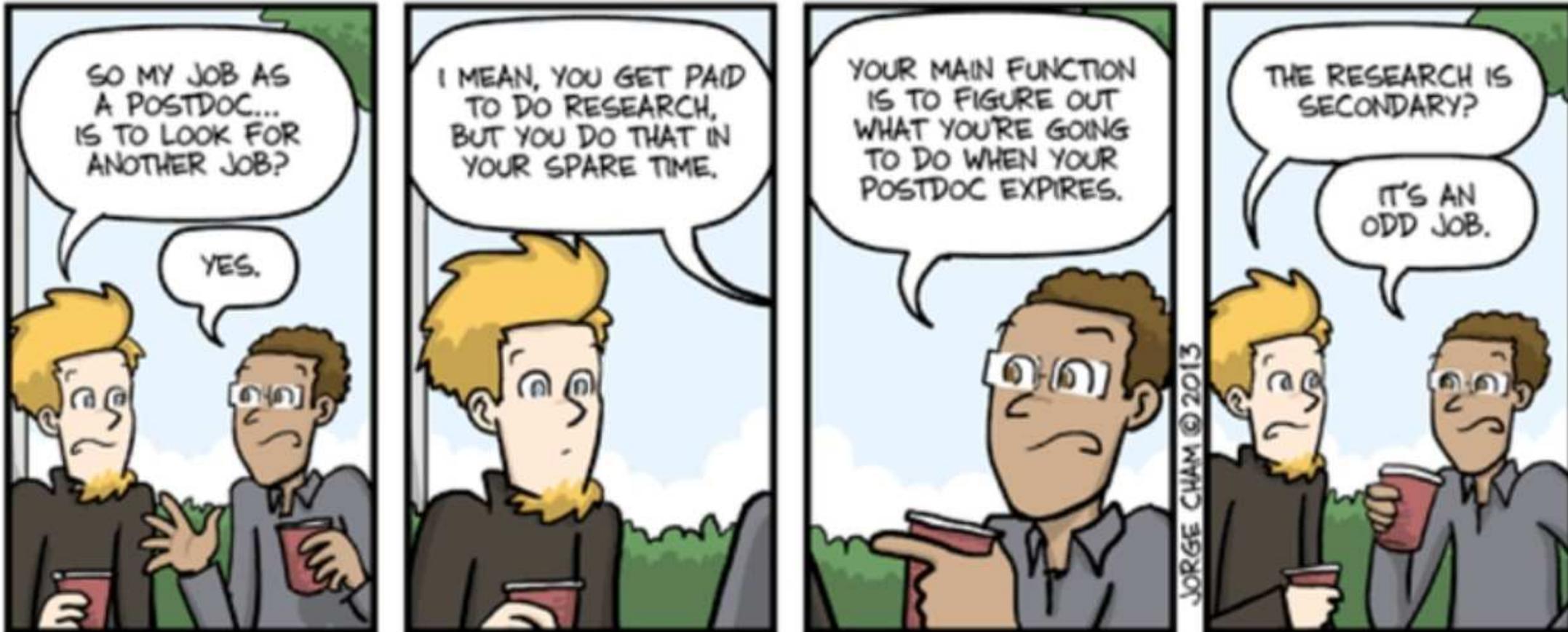
**Critical Friend:
Inter Faculty; Inter
University;
Involve industry;
Across the Border.**



Setting up priorities for funding & the evolution of research freedom



Tenure track position?



Factors influencing employability (ESF,EU)

- Networking;
- Staying Flexible;
- Experience beyond the bench;
- Career advice and support from within the University. Mentorship.



Being a woman is a terribly difficult task, since it consists principally in dealing with men.





A few more points need to be addressed at institutional level and involving the outside.

- Interdisciplinarity Mobility.
- Leadership.
- Use digital tools to address problems raised by the digital revolution (upskilling and reskilling).
- Broaden competences.
- Campaigning to show to Society the advantages of employing highly qualified people (Doc and Pos Docs).



Some importante steps

- From the European of Higher Education Area
- To the European Research Area
- plus Doctoral Schools
 - PhD in companies
 - PhD for companies



I have approximate answers and possible beliefs and different degrees of certainty about different things, but I am not absolutely sure about anything.

- Richard Feynman -



In Universities we trust!

- Assuming their social responsibility
- Being exemplary in its ways of doing
- Being civic institutions in osmosis with what is around them
- Strongly committed to more developed, more human, more equitable society