Research Structures and Institutions

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Purpose and Content

Drafting the various sides of the vast research world.

1. Evolution of the universities: an historical perspective.
2. Research organisations.
3. *Doing research*.
4. Evaluation of research.
5. Becoming a researcher/teacher.

Part 1: The universities

Draft the evolution of the universities in order to better understand the research world today.[1]

A 10 minutes historical overview (put the focus in France).

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[1] Most of the informations are taken from the books: Christine Musselin *La longue marche des universités françaises* 2001 PUF and *La grande course des Universités* 2017 Presses de SciencesPo

The birth

The emergence in the middle age:

- 1150 University is created in Paris (France)
- 1158 University is created in Bologna (Italy)

Two models: teaching-centric and teacher-centric.

After one century, universities opened in many other places including east and north Europe.
All the universities are placed under the control of the Pope (before, they were under local clerical authorities).
Why?

The birth

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Why?

The teaching targeted Theology and Rhetoric (for levering people to debate against the heretics).

The development

3 degrees: Déterminance (Baccalauréat)[2], Licence (undergraduate) and Master/Doctorate[3]

The fees and housing are expensive, creation of colleges (one very famous in Paris: Robert de Sorbon).

- XVIth century: In France, tentative to modernize the universities (to spread the ideas of the Italian Renaissance).
- XVIIth century: modernisation again after the civil religion wars.
- Notice that the french expansion of the *Lumières* was done out of the universities.
- French revolution and First Empire (Napoléon):
  Creation of thematic teaching units.
  Remove the existing universities (the elites are being questioned) and turn to professional education.
  Creation of 17 decentralized universities.

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[2]the vision here is common education, not high-level education
[3]needed to enter the *corporation des Maitres*

The modern era

End of the XIXth century:
Creation of the *free* universities with their own budget.
Creation by Pointcaré of the links between teaching and research.

Beginning of XXth century: thematic diversification.

Following the Baby-Boom around the 60ties, new campus (Grenoble).
After 1968, more power and creation of UFR.

- 1984:
  More democratic institutions, pluri-annual contracts with the State.
- 2000:
  Start of the competition between universities.
- Toward autonomy (hard fighting).
  Creation of PRES, gathering faculties (UGA in Grenoble).

Part 2. Organisation of research

There are strong links University/Research.

- Creation in 1939 of the national research agency CNRS.
- Creation of specialized agencies (like Inria, 1967[4]).
- CNRS thematic institutes (INS2I, INSMI, etc..)

Both have a centralized organisation.

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[4]Plan Calcul with the objective of innovation and industrial transfers

Part 3. Doing research

The key point is resource **funding**.
Most of the funding was managed by the national agencies and the Ministry.
This changed after 2000.

The main part are human resources.

- Creation of the national research agency ANR in 2005 (similar to the NSF in the US).
- European fundings.
- Private supports (comparison with other countries).

What is the best system?

Part 4. Evaluation of research

Need to evaluate the researchers and the research institutions.
Why?

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[5]first name was AERES

Part 4. Evaluation of research

Need to evaluate the researchers and the research institutions.
Why?

- To ajust the budget to the results?
- To give opportunity to the evaluated people to *think* on their past and future activities?
- To get objective advices for deciding to continue or not some programs?

Creation in 2006 of the national committee for the evaluation HCERES[5]

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[5]first name was AERES

Part 5. Becoming a researcher/teacher

Full time researchers or Faculty member?

The Conseil National des Universités (CNU).

A centralized concil whose role is to manage the faculty members:
Hiring
Promoting

The MSTIC department at UGA.
Structured into four axis:

- Math-Alp : from foundations et the applications
- Cyber Physical Systems
- Data Sciences
- Perception interactions usages

Brief overview of the local research labs.

eight labs dealing with Computer Science plus Inria and CEA.

Gipsa

350 people, including about 150 doctoral students, Gipsa-lab is a multidisciplinary research unit developing both basic and applied researches on complex signals and systems.

Three Research Departments:
Automatic control
Images-signal
Speech-cognition

http://www.gipsa-lab.grenoble-inp.fr/

Gscop

G-SCOP is a multidisciplinary laboratory which has been created to meet the scientific challenges imposed by the ongoing changes within the industrial world. The scope of the laboratory goes from the products conception to the production systems management and is based on strong skills in optimisation.

https://g-scop.grenoble-inp.fr/

This lab is located in Valence.

The activities are oriented toward embedded and communicating systems.
It covers:
specification, modelisation, design, communication, validation and diagnostic of
such systems.

https://lcis.grenoble-inp.fr/le-laboratoire

LIG

500 members (faculty, full-time researchers, PhD students, administrative and technical staff)

The mission of LIG is to contribute to the development of fundamental aspects of Computer Science (models, languages, methodologies, algorithms) and address conceptual, technological, and societal challenges.
Increasing diversity and dynamism of data, services, interaction devices, and use cases influence the evolution of software and systems so they need to guarantee the essential properties such as reliability, performance, autonomy, and adaptability.

https://www.liglab.fr/

LJK

The Jean Kuntzmann Laboratory is built upon two fields of study: computer sciences and applied maths.
Thanks to this pluridisciplinarity, the structure is rich in research thematics but also in human terms.

It is organised in three thematic dpts:
Geometry and Images
Algorithms Models, Analysis and Computations
Data and Stochastic: Theory and Applications

https://www-ljk.imag.fr/

TIMA

The research topics of TIMA cover the specification, design, verification, test, CAD tools and design methods for integrated systems, from analog and digital components on one end of the spectrum, to multiprocessor Systems-on-Chip together with their basic operating system on the other end.

http://tima.univ-grenoble-alpes.fr/

TIMC

TIMC-IMAG has more than 280 members in 12 research teams, including more than 160 permanent staff

It gathers scientists and clinicians towards the use of computer science and applied mathematics for understanding and controlling normal and pathological processes in biology and healthcare.
This multi-disciplinary activity both contributes to the basic knowledge of those domains and to the development of systems for computer-assisted diagnosis and therapy.

https://www-timc.imag.fr/

Verimag

Embedded systems are at the heart of a wide area of applications, including avionics/aeronautics, space, transport, automotive, telecommunications, smart cards, consumer electronics.
Embedded systems are composed of hardware and software components specifically designed for controlling a given application device.
Embedded systems are of strategic importance for those sectors of the economy where Europe has traditionally been strong.

Research at Verimag provides theoretical and technical means for developing embedded systems, contributing to scientific advancement and industrial progress.

https://www-verimag.imag.fr/