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A model of university activities to locate cooperation with industry

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Locating my intervention

- Look at university-industry collaborations from the viewpoint of universities
- Mobilise lessons from innovation studies to identify the variety of cooperation modes
- Show how these organise around 4 main configurations
- And propose a shift in the analysis of relations considering a model of university activities based on how the 3 missions articulate into 3 “functions”

Part 1
The portfolio of collaboration modes

Taking hold of lessons from Innovation studies

Lesson 1: the importance of tacit dimensions in new knowledge production

IMPLICATIONS

1. Importance of knowledge co-production
   --> the exponential growth of **joint research projects**, (mostly with large firm R&D capabilities)
2. Critical role of **training** in Knowledge circulation
   - masters and internships
   - PhD studies: why has the very successful model of French PhD triangular contract (CIFRE) not widely disseminated?

Lesson 2: Knowledge as an intangible asset - importance & limits

IMPLICATIONS

1. University **patenting**: a growing activity which requires strategic choices
   - seldom a net source of revenue
   - licences very concentrated (few patents, mostly life sciences)
   - more & more presented as a 'cultural' shift
2. Patents and **start-ups**
   - universities & incubators, science parks, seed capital…
   - warnings: more for 'bridging the knowledge gap' than for creating new majors! Long time lags before significant economic returns, beware of "decapitation"

Lesson 3: the “local buzz” needs to be engineered for trust to develop (‘industrial districts’ - ‘clusters’)

IMPLICATIONS

1. Trust central to cooperation --> need for developing a space for exchanges and discussion --> the central role of ‘**intermediaries**’ (CRITT, TRC…) … and the difficulty to measure their ‘direct’ effects
2. Two important vectors
   - **Consultancy** and exchanges through training
   - Testing **facilities** & ‘characterisation services’

Lesson 4: the central need of existing activities: Human Capital

IMPLICATIONS

1. Half of an age class through universities
   - the core of university students = undergraduates
   - main recruitment source is local
2. Serve mostly the local manpower needs
   - employability and shaping of adequate curricula
   - the difficulty of recognizing pedagogical innovations in the career of academic staff

Lesson 5: reconfiguring regional activities and breakthrough science/innovation

(see EU 2006 report on Constructing Regional Advantage)

IMPLICATIONS

1. Breakthrough Science is based on world level research groups (linked to critical mass and adequate facilities)
2. Public/Collective goods as a key driver of most breakthrough innovations (from transistor to internet, for biotech, but also GSM or Wind Energy)
3. Numerous examples: Grenoble and semi-conductor industry, but also Nantes and biotech firms
4. Long lead-times needed --> key role of anticipatory capabilities (selecting and nurturing ‘bets’)

Part 2
Four main configurations of university - industry collaborations

Lessons from the experience of the French University of Nantes

1- Serving Local Development

- Definition: mobilising the lab knowledge base to address a specific issue faced by one regional actor
- Quite frequent and unproblematic as long as it remains 'marginal' in lab activities
- When turning significant, major problems faced
  - by lab: diminishing institutional recognition
  - by academics: careers based on publications
  - by PhD students (unless recruited by firms)

2- The local as an input into a research process

- Definition: ‘using’ local actors and situations in a research process defined externally
- Again unproblematic when episodic. Though raised issue of returns ‘tailored’ to actors’ situations
- More and more institutionalised through partnerships, and numerous issues raised:
  - the space to prepare them: intermediaries, training…
  - not a joint project, but access to original problems & often technical facilities
  - which trade-off to build (e.g. who patents?)

3- the attention to the local in a global research process

- Definition: classical ‘academic’ research
- Observation: quite a few cases with strong indirect effects
  - visibility and effects on services (congresses), city image
  - local tests well thought of (e.g. observation of Mars and Nantes vineyards!)
- Observation 2: Facilities are a major vector for stabilising visibility
  - their growing role(not only in biotech and nanotech, see Nantes construction & civil engineering ones)
  - their multiple indirect effects (construction, maintenance & KIBS, incentive for teaching restructuring…)

4- The development of new activities

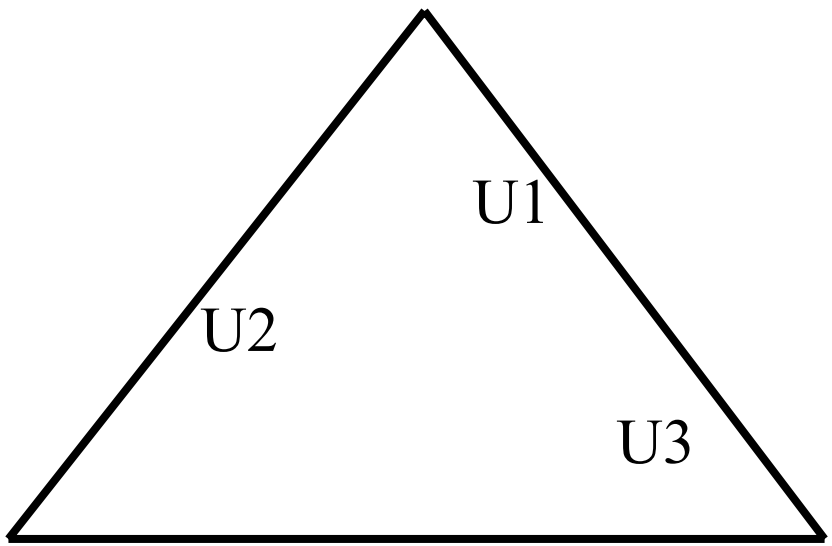
- Definition: creating new activities mobilising a knowledge base developed within university
- Observation: spin-off firms are clearly important but not exclusive (e.g. new environment measurement services, new line in a museum, new tourist attraction…)
- Well known lessons on support mechanisms (incubator, seed & venture capital, role of the non scientist co-creator..)
- One striking issue on Human capital: designers and highly skilled technicians

Conclusion:
how to order this complex scene
or
the limits of the concept of third mission

Toward shaping relations
by disentangling
the 3 “functions” of universities

From 3 ‘missions’ to 3 ‘functions’

Mass tertiary education, professional Bachelor & public proximity service



Professional specialised education & training

Academic training & research in world competition