Knowledge circulation and the valorisation of technologies

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2 central attributes of knowledge

- The valorisation of technologies as ‘the creation of economic and social value from knowledge and scientific capabilities’
- Two specific attributes of knowledge
  1- It is never fully codified:
  the need for ‘organising’ the capacity of users to absorb the new knowledge produced.
  2- It is less and less stand-alone:
  most products integrate multiple ‘individual pieces of knowledge’ making it difficult to ‘value’ each piece.

Two Consequences

- ‘The take-up of knowledge is an activity in itself’: strong professionalisation movement during the last 30 years
- The circulation of knowledge requires ‘proximity’ between knowledge producers and users.
- Boschma’s 4 types of proximity: geographical, social, cognitive and organisational
- Using France as a reference (see appendices for further information)

Geographical Proximity

- The focus: needs by existing SME surrounding the university
- Answer 1 (focusing on individual SME difficulties to express their needs and find adequate resources): Technology Resource Centres
  (e.g. French CRITT, around 180 presently under 3 different formats, see appendix)
- Answer 2 (focusing on sector-based specialisation and collective answers): from Marshall's industrial districts to clusters and poles
  (e.g. French *pôles de compétitivité* – 3 types, 70 altogether)

Social Proximity

- The focus: ‘embodied knowledge’ to overcome tacit dimensions of knowledge in the making.
- The channel privileged: PhD students
  - cf. recent work on science and engineering doctorates of Manchester: 60% away from academia at end of PhD
  - cf. the shaping of PhD studies in this direction
  (e.g. the trilateral CIFRE contract between one firm, one lab and one candidate, the latter being employed by the firm. Flat rate support by government – around 25% of cost. 1200 new PhD candidates per year).

Cognitive Proximity

- The focus: ‘co-research’ with industry partners sharing ‘similar capabilities’
- The observation: the over-dominant role of large firms (e.g. France: over 85% of total financial flow come from very large firms, i.e. more than 5000 employees)
- A central trend toward longer-term relationships, ‘framework agreements’ and ‘joint teams’
- A lasting issue: IPR and co-patenting (for university reporting purposes)

Organisational Proximity

- The focus: university initiatives to bridge perceived gaps
- The objective of the conference to account for these.
- 4 main trends identifiable through the conference presentations
  1- Subsidiaries to run science and/or technology parks, with incubation facilities and other services → 2 cases presented
  2- University TTO and their professionalisation → 3 cases presented
  3- Government support programmes to transfer activities (e.g. French Carnot Institutes) → 1 case presented
  4- Country-level initiatives supporting the creation of new firms (e.g. French competition with 1800 projects supported & 1200 firms created in 10 years) → 2 case presented

To conclude

- Insuring the circulation and take-up of knowledge produced in the PSR requires mediating & transformative activities.
- This has driven to a proliferation of initiatives. One way to grasp their complementarity is to consider the type of proximity they address and the corresponding focus.
- This conference will help us grasp the variety of solutions developed for addressing the organisational proximity.
- And I have very high expectations about it.

Appendix

Basic information on

- French support to university-industry collaborations (3)

-French support to start-up firms (1)

-French ‘pôles de compétitivité’ (3)

French university-industry policy instruments (1)

- Carnot Institutes (managed by ANR)
  - Def: thematic or geographical grouping of research labs which engage into deepening relations with industry
  - 33 labelled in 2006/07 (24 relabelled in 2011 plus 10 new ones) representing 20000 researchers, 1.3MM budget & 215 M€ contracts with industry (+30% in 3 years, share of SME: 11%)
  - gathered in a national association of Carnot Institutes
  - public support = % of new contracts raised for 'renewing the knowledge base' (outside from contracts). 60M€/year since 2007.
- CIFRE (created in 1981)
  - Triangular contract between firm, lab & PhD candidate / PhD candidate employed by firm / support for firm (17k€/year)
  - In 2009, 1200 CIFRE (600 in 2001, 1/3rd women). 750 firms (50% contracts by large firms & 40% by SME) & 800 labs.
  - 50% in engineering & ITC; 20% materials & chemistry; 17% life sciences & 18% SS&H.
  - Cost: 50M€/year since 2005.

French university-industry policy instruments (2)

- Incubator Policy (1999 innovation law)
  - Label given to 30 incubators (mostly regional)
  - Support granted based on projects incubated: in 10 years 2600 projects for 66m€ of national support
  - overall 70% effective creation (out of which 30% with external funds: 10% business angels, 7% seed capital, 7% venture capital, 6% banks)
  - 600 projects under incubation in 2009: 32% by entrepreneurs coming from public sector research / only 11% women / 70% industry & 30% services / age distribution (35% for 36-45, 30% for 26-35; 20% for 46-55 and the rest equally shared on both ends)
- Civil servants involved into start-up creation
  - 1999 innovation law enables involvement of civil servants in creation
  - need authorisation (over 800 were granted it in 10 years)
  - 3 possibilities: long term consultancy (74%), initial involvement (21%), taking shares (5%)

French university-industry policy instruments (3)

- Regional centres for Technology Transfer (CRITT)

  - 3 types:

  * technology resource centres (CRT): offer technical services

  * Technology diffusion centres (CDT): information & diagnostic services

  * Technology platforms (PFT): network of professional teaching *lycées* and institutes (IUT)

  - since 2007 need to be obtain official label to get public support: 83 CRT (+30 agronomic & agro-industry technical institutes), 43 CDT & 30 platforms in 2009

  - average CRT: turnover 1.55M€ (with 0.58M public support), 12 staff

  - average CDT: turnover 0,67M€ (with 0.54M public support), 5 staff

  - estimated public support in 2009: 70M€ (14M by central government, 55M by regional governments)

French start-up policy instruments

- JEI (young innovating firms) (created in 2004)
  - def: SME, less than 8 years, independent, R&D intensive
  - support: social costs incurred on RD personnel by company deducted
  - from 1200 to 2300 firms in 6 years; from 6000 to 12000 staff concerned
  - from 62M€ in 2004 to 121M€ in 2009
- Fonds Communs de placement pour l'industrie (funds that offer tax credits for individuals investing into them; need to spend 60% on 'labelled' innovative SME): OSEO delivers some 300 labels per year
- Competition for the creation of new firms (created in 1999)
  - yearly competition for projects / 2 stages emerging – development
  - 1840 projects supported (990 emerging, 1230 development with 380 the 2 stages) / de facto 1180 companies created / 952 still in life end of 2009
  - 290 M€ of support in 11 years (20M€ in 2009, managed by OSEO)
- OSEO 'seed participation loans' (up to 150k€ per project): 20m€ in 2009 (and over 150 companies supported)

Pôles de compétitivité (1)

- The emergence of ‘poles’ as a combination of:
  - decentralisation & the take-up by regions of research and innovation as a means toward economic development
  - a longstanding practice within the French administration (DATAR) of quasi ‘Italian industrial districts’ approaches
  - the success of Porter’s approach to clusters
  - the proximity of success cases in France (Grenoble) and in Spain (the Basque country)
- Crystallisation by a new député, C. Blanc with its dual background as the high civil servant having solved the Caledonian problem and as a high flying industrialist (having taken Air France in quasi-bankruptcy and having brought it to the most profitable world airline) → His report drives to a policy change within weeks!

Pôles de compétitivité (2)

- The 2005 competition is so successful that the Government doubles it engagement (from 1.5 to 3B€ over 5 years) for:
  - 6 world-level poles
  - 9 potential world-level poles (‘the nursery’)
  - 42 ‘national poles’
- A second 3-year support (2009-11): The evaluation shows important achievements, though uneven, and drives to continuous support, with marginal evolution of the list of poles (71).
- Public support over 5 years:
  - through mobilisation of existing funds: ANR collaborative projects (950M€), AII/ISI funds (570M€) & OSEO funds (340M€)
  - through a new fund (FUI) now managed by OSEO (950M€)


Pôles mondiaux (ou à "vocation mondiale")
Autres pôles
Volet thématique adossé à un pôle existant
Aquimer
Boulogne-sur-Mer
MAUD (Matériaux et applications pour une utilisation durable)
Arques
Industries du commerce
Nutrition Santé Longévité
UP-TEX (Textiles techniques)
Lille
i-Trans
Valenciennes
Novalog
Le Havre
Mov'eo
Rouen
Industries et Agro-ressources
Laon
TES (Transactions électroniques sécurisées)
Caen
Images et réseaux
Lannion
Filière équine
Mondeville
Pôle mer Bretagne
Brest
Finance innovation
Cap Digital Paris Région
System@tic Paris Région
Medicen Paris Région
Logiciels libres
Materalia
Metz
Alsace Biovalley
Strasbourg
Valorial (L'aliment de demain)
Rennes
Cosmétic Valley
Chartres
Advancity
Astech (Aéronautique / espace)
Paris
Fibres
Epinal
Elastopole (industries du caoutchouc)
Orléans
iDforCAR
EMC2
Génie civil Écoconstruction
Atlantic Biothérapies
Nantes
Végépolys
Angers
Pôle Enfant
Cholet
S2E2 (Sciences et systèmes de l'énergie électrique)
Tours
Vitagora (Goût et nutrition)
Dijon
Véhicule du futur
Montbéliard
Microtechniques
Besançon
Chalon-sur-Saône
Pôle nucléaire Bourgogne
Plastipolis
Oyonnax
MTA (Mobilité et transports avancés)
Poitiers
Imaginove
Lyon Urban Truck&Bus 2015
Techtera (Textiles techniques)
Céréales vallée
Chappes
InnoViandes
Clermont-Ferrand
Lyonbiopôle (Santé)
Axelera (Chimie et environnement)
Lyon
(1)
Arve-Industries (Décolletage)
Annecy
Minalogic (Nanotechnologies et logiciel embarqué)
Tenerrdis (Energies renouvelables)
Grenoble
Elopsys (Micro-ondes)
Céramique
Limoges
Xylofutur
Prod'Innov
Route des lasers
Bordeaux
Sporaltec (Sport et loisirs)
Viameca (Mécanique générale)
St-Étienne
Pôle européen d'innovation fruits et légumes
Avignon
Trimatec (Tricastin Marcoule technologies)
Pont-Saint-Esprit
Capenergies
(2)
St-Paul-lez-Durance
Solutions Communicantes Sécurisées
Sophia Antipolis-Rousset
Aerospace Valley (Aéronautique, espace et systèmes embarqués)
Cancer-Bio-Santé
Agrimip Innovation (Agroalimentaire)
Toulouse
Q@limed (Agroalimentaire)
Montpellier
Risques
Aix-en-Provence
Pass (Parfums, arômes, senteurs, saveurs)
Grasse
Optitec (Optique photonique)
Eurobiomed
Pegase (Aéronautique / espace)
Marseille
Pôle mer Paca
Toulon
DERBI (Développement des énergies renouvelables bâtiment-industrie)
Perpignan
(1) Santé tropicale (Lyonbiopôle) Guyane
(2) Technologies écoefficientes (Capenergies) Guadeloupe
Qualitropic (Agronutrition en milieu tropical)
St-Denis de la Réunion
Source : DGCIS/DIACT juillet 2009