Collective Management of Intellectual Property Rights

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This paper proposes a common analysis for a large set of multilateral agreements that are used to manage collectively intellectual property:

- biotechnologies (PIPRA, SNP, Génoplante, ...)
- information technologies (open source software, source forge, science commons, ...)

It discusses how these multilateral agreements, which elaborate on existing intellectual property institutions, could encourage innovation:

- by enhancing the efficiency of the market for technologies
- by improving the governance of the innovation processes
introduction

Theoretically, this paper is based on the analyse of Intellectual property institutions that were developed to design a decentralized organization of R&D. Their efficiency can be explained by the following three arguments (Foray, 2004):

* First, they provide individual incentives to invest in R&D (exclusivity on the use of the innovation).
* Second, they create a market for technologies by giving the right to sign licensing contracts with other parties.
* Finally, they also open the possibility for cooperation in R&D, because they allow, ex ante, a clear definition of appropriable outputs of the R&D process.

Our key entries in this paper are based on the two last points.
Collective initiatives to shape markets for technology

- Generally, the markets for technology are not the only ones plagued with transaction costs. Traditional solutions typically involve bilateral negotiations:
  - Vertical integration can be useful to solve multiple marginalization problems
  - Cross-licensing agreements are used to limit legal costs of enforcement.

- In the context of markets for technology, markets try to improve the allocation of technology inputs:
  - They are designed for a specific technological area (i.e. Software, agbiotech,…)
  - They are designed for a given market structure (limited to public actors, to private actors, to a combination of public and private actors,…),
  - What is the perimeter of the markets?

- Each of these collective initiatives provides some responses to the following three impediments to well-functioning markets for technologies:
  - the difficulty of access to information,
  - the high level of negotiation costs,
  - the uncoordinated pricing policies for access to (and use of) innovations, in particular via royalty pricing
Collective initiatives to shape markets for technology (2)

1. To limit the difficulties of access to information

"PIPRA" is a collective initiative in the ag-biotech industry to develop innovation for developing countries

"SourceForge" is an internet initiative for the management of open source software modules to highlight different philosophies.

- In both CHMs, the first objective is to centralize and manage information about technology inputs characteristics.
  - Creation of databases
  - Definition of different levels of access to the databases.
  - Value of information and the perimeter of the market (network externality).

- A second type of information concerns the accessibility of the technologies.
  - the type of license which covers the technology (exclusive or not exclusive license)
  - the type of license which covers the element according to the type of software open source (General Public license, Mozilla Public License, …).

  This information reduces the risk of incompatibility between two modules protected by different licenses or the risk of by-passing elements which are covered by exclusive licenses (situation of hold-up linked for example to a patent thicket situation).

The access to these two types of information

* makes it possible to identify complementarities or lacks in technology inputs: for example, PIPRA is exploring the possibility of identifying technology packages.
* limits the transaction costs.
Collective initiatives to shape markets for technology (3)

2. To lower negotiation costs

- by means of standardization of the licence agreements and implementation of guidelines.
  - In PIPRA, there is a will to standardize the access rules inside the network, even if each university remains the owner of its innovation. The standardization occurs at the level of licences on technological packages.
  - An other initiative, Science Commons proposes to harmonize the licences and the clauses inside the licence contracts.

This standardization is all the more necessary as biotechnological research is confronted with more and more intellectual property whereas it needs to use more and more technology inputs.

The harmonization of licence agreements, particularly of the Material transfer agreements (MTA), has reduced the costs related to the negotiation and the duration of negotiation. The harmonisation of the licence agreements has limited the effect of the tragedy of anti-commons of Heller and Eisenberg, to limit the present effect of past patents.

- In the Open Source world, license type proliferation is a real problem that generates legal uncertainty on the compatibility of software modules.
  - Several organizations intervene as legal standardization bodies to promote the voluntary adoption of some particular types of license by open source software developers.
  - The purpose of the Open Source Initiative (OSI) is to recommend safe license.
Collective initiatives to shape markets for technology (4)

3. To manage access and use prices

- **To facilitate access to technology inputs owned by members**
  - Networks built to smooth the functioning of the market for technology inputs (like CHMs) do not solve the multiple marginalization problem.
    - In the case of golden rice
    - In the cases like MPEG or DVD formats,
  These problems were handled by the creation of a patent pool and by the implementation of a licence on a patent pool.

- **To facilitate bargaining with third parties**
  - There are at least two cases in which bargaining with a third party is necessary.
    - A member may need a technology input possessed by that third party not in the perimeter of the market of technology;
    - a member may need the third party’s expertise to commercialize its innovation (to limit the exclusivity clauses).
Collective management of innovative projects

Efficient markets for technologies enable the identification, selection and aggregation of technology inputs that can be used for given projects.

* Such projects may be undertaken by a single agent.
* Such projects could involve several participants,
  - from benefiting of network effects through the creation of an industry standard,
  - to sharing and eventually reducing the cost of developing a technology that is needed by all.
1. Aggregating intellectual property rights

- three types of inputs protected by intellectual property rights, namely
  - existing inputs that have no substitutes,
  - existing inputs that must be picked among a set of substitutes
  - forthcoming technology inputs

- In that case, antitrust law authorizes the creation of patent pools only for essential patents – that is those that do not have any substitute.
  - to eliminate the multiple marginalization problem.
  - The patent pool backing the Golden Rice consortium for instance includes ex post essentiality. There was indeed a choice ex ante for the selection of patented promoters, while patents on gene sequences and insertion technologies were essential since the beginning.
  - Open source projects similarly consist in aggregating copyrighted pieces of source code that are highly substitutable ex ante, but become essential once embedded into a software program.
2. Organizing innovation through aggregation

- planning collectively and delegating the R&D effort. The principal can then delegate the innovation effort to one or several agents in order to achieve the most efficient investments. (biotechnologies)

- aggregating technology inputs progressively, as they come up. This more flexible organization relies more heavily on intellectual property right and on ex post forms of governance. (open source software)
Collective management of innovative projects (4)

3. Defining rules for access

- SNP consortia intend for instance to grant a free access to their production to any outside user in order to promote research. The extent to which industry standards are accessible to outside users principally depends on whether their creators intend to diffuse the standard by attracting new users (Lerner & Tirole, 2005)

- the access to an attractive collective technology can be used to obtain commitments from the users, which is a way to control the evolution of the collective technology over time. This is especially illustrated by Open Source Software licenses that require users not to make profits with the software or, in some cases, to give back any improvement of the code to the community.
Conclusion

- We argued that multilateral agreements are designed for two distinct purposes.
  - First, they help smoothing the functioning of the market for licensing agreements (to facilitate the access to information, to harmonize licence contracts and to pay non excessive prices).
  - Second, they facilitate the management of R&D projects that involve an important number of actors in industries (to define precisely cost, task and development sharing, and to limit the risk of appropriation by free riders behaviour).

- Actually, there might be two different types of concerns.
  - First, consumers may be harmed by a collective management of intellectual property rights if it restricts competition by innovations.
  - Second, other innovators may be harmed by the excessive bargaining power of members of the collective institution. These institutions might be used to evict potential entrants or competitors on the final market.

- These concerns certainly deserve much attention by competition authorities.