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## **Universities and territorial development**

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### **Introduction**

Universities have long performed their role in higher education and basic research without explicit involvement into the social and economic environment surrounding them. Notwithstanding this, the local impact of universities has always been relevant, in terms of students, staff flows, urban architecture, and of their contribution to the local economy and its knowledge base. The consensual vision of the university as ivory tower has not permitted to highlight adequately this aspect and its potentialities. More recently Universities have been called upon playing a new role, where explicit and “planned” interconnections with firms and public institutions is considered vital for the overall system development (Holland, 1999; World Bank, 2007). We can argue this shift from the triple helix model, which proposes to ground economic development on this triple system of ties (Etzkowicz and Leydesdorff, 1997). The triple helix approach has generated the concept of entrepreneurial university (Bercovitz and Feldmann, 2006), as opposed to the ivory tower. Entrepreneurship at the University level is conceived in the different contributions as dependent on the participation to the system of ties with industry and public institutions and typically refers to domain of scientific knowledge. Moreover, the entrepreneurial university paradigm involves commitment in promoting technology transfer and IP (intellectual property) management, together with academic spin offs.

This contribution proposes a model where a more complex role of universities is highlighted, where the “entrepreneurial and technological” paradigm is complemented by a more comprehensive role, which portrays universities as catalyser of local development also in humanistic and social sciences. Moreover, universities characterise — in some cases distinctively — the urban environment and landscape, thus activating tourists flows, generate a local “culture” not only in terms of goods but

also of events and activities, of people and buzz and contribute to connect the local system to the global ones.

## 1. Universities and local/urban milieu

Universities have their roots in Medieval Europe and the first ones established have long characterised (in some cases up to modern days) the urban environment, the social structure and the openness of the local system to the influences of a highly interconnected European academic culture, which had a common language (Latin) and frequent personal exchanges among different universities. “Counter to the politically fragmented nature of medieval society the university developed as a cosmopolitan, ‘super-national’ institution” (Geuna, 1996, p. 23). This consideration is particularly relevant — as I shall argue later on — in view of the growing trends to embed universities in local and national systems of ties, as models like the triple helix seem to suggest. The Medieval Universities were largely vocational schools and the role as research institution was not yet developed. From the foundation stage of Universities, in the XII century more than 800 years have passed and according to Geuna (1996) these institutions have passed through deep transformations which maybe be described in different stages of development. After the birth and early development, universities went later on into a decline phase and have known a new wave of transformation in the XIX century, following the influence of the German model. Wittrock (1993) subdivides the *recovery and German transformation* into two sub-phases: the resurrection of the university (1800–1850) and the rise of the research oriented university (1850–1939). The early modern universities had in fact not been able to cope with the external changes and were relegated to a marginal role, while with the growth of scientific studies the latter tended to develop primarily in other institutions (for example, the Academy model). A deep transformation arose from this misalignment of universities with deep changes in scientific knowledge. This transformation benefited of the contribution of Von Humboldt, though not all his ideas were applied. At the end of this process of transformation European universities provided a much wider set of higher education curricula, better aligned to the economic and social changes which had occurred, and an organisation of research activities, mostly basic research, in terms of more and more specialised disciplines. Universities became institutions of national interest, they lost a unifying language and a cosmopolitan status but were not yet linked to the local development issue. The modern University phase determined three major consequences: the surge of different specialised disciplines, the related emergence of a crucial role in advancing research in the different fields and third the increasing connection between the two roles played by universities and the national development and competitiveness.

The latter issue became more and more pronounced in the last decades, because the emergence of the knowledge economy, the global competition and the evolution of markets originated growing pressures on organisations to innovate continually. In

this frame, universities appeared to firms and policy makers as the ideal candidate for research and development partnerships aimed at technology transfer. The rise of bridging institutions such as science parks, technology transfer offices, technological poles, was conceived to make this transfer easier and more intense. Europe ceased to be the place where new models and roles of university institutions were developed and the benchmark models became the US ones. In particular the Silicon Valley case represents since at least three decades an example of virtuous inter-action among Californian Universities, firms and financial institutions. Following this model Oxford and Cambridge, soon followed by other European universities, started projects of technology transfer through science parks and business incubators, originating an high tech cluster, particularly in life sciences. In these recent trends the role of universities is clearly moving towards the promotion of local development, through academic spin offs, technological transfer and the provision of educated human capital to local firms. As a consequence, universities became more locally embedded, being constituents of a local (and not only national) enabling institutional environment, aimed at supporting innovation and economic growth through research and education. The innovative milieu (Aydalot, 1986; Camagni, 1991; Maillat et al., 1993) is a relatively recent construct in regional and innovation economics and derives from the growing attention to endogenous rather than exogenous growth drivers. The milieu approach mainly tries to analyse and explain how a good regional institutional endowment in terms of universities, research laboratories, public support institutions and firms, if combined with certain efficient means of inter-organisational interaction and co-ordination, can lead to highly positive regional outcomes, notably the emergence of large numbers of innovating enterprises.

Similarly, the literature on regional innovation systems proposed a “localised” approach to innovation and economic growth, based on relationships and learning processes. Though there has been an upsurge surrounding the study of national systems of innovation since the 1980s, it was not until 1992 that the term ‘regional innovation system’ came into use. The RIS is characterized by economic coordination emphasizing the importance of cultural factors, including trust, cooperation, and social network relationships.

Together with theoretical frameworks, also policies for development went through a regionalisation process in a number of countries, which also affected policies for universities. In this new frame, an increasing fragmentation of universities’ missions and strategy came out, parallel to the regionalisation/localisation wave, following an increasing number of universities in different locations.

## 2. Models of University

The evolutionary process of universities along the centuries has known a significant acceleration in the last decades. Leadership in higher education is challenged by new

technologies and new offers. Leadership in basic research is challenged by new research models such as the emerging open innovation model. Intellectual leadership is challenged by the growing regionalisation/localism, which may induce cognitive lock in.

Figure 1 shows along the two key dimensions of research versus teaching mission and local versus global orientation how different universities develop a differentiated positioning.

	Local	Global	Glocal
Teaching University			
Research University			
Both			

Figure 1. Different model of university with reference to their local responsiveness and core business.

Source: The Author.

The regionalisation process has generated a number of local universities mostly characterised by delivering higher education curricula, in the expectation that investment in human capital on a local basis could enhance local development. On the other hand research universities have been mostly characterised by a global orientation, because being at the research frontiers in different scientific domains usually involves developing and maintaining ties among leading researchers and research centres in the world. At the same time the growing mobility of students in the world (especially from Asia to US and Europe) has nurtured the model of the global teaching universities, which care about being in the top rankings for teaching, attract a high number of foreign students, offer predominantly courses in English and may have branches and subsidiaries in different countries. The globally oriented university may also pursue contemporarily leadership in teaching and research, in order to enhance further their reputation and attractiveness for talents, both students and professors. The locally oriented university follows a different path, aims at developing the local endowment of human capital and may also aim at developing excellence in research, mostly in areas of local economic and social interest.

The glocal university addresses contemporarily the needs and opportunities provided by the local environment together with those deriving from the global one. They develop a two tier system of ties, both local and global, thus enhancing the exposure of the local society and economy to the influence of external knowledge. In this model the university is a “bridging institution” in the sense that it connects the local knowledge base to the global one (as represented by multiple research and teaching partnerships across the world), thus contributing to the local systems cross fertilisation and preventing their lock-in. This glocal orientation may refer both to

higher education and research: developing locally oriented curricula does not prevent the possibility that they evolve into global excellences in their fields, by attracting the best lecturers and students also from outside the region. Similar considerations hold also for research.

The glocal model can represent a way to preserve the role of universities in modern societies and economies, leveraging on openness and pursuing excellence through openness. This issue is connected also to the emerging criticism surrounding policies which have invested massively on the development of local science parks and technological poles and districts, enforcing local ties between universities and companies. According to some Authors (Pisano and Verganti, 2008) firms have to shop for the best R&D opportunities and partnerships at the global scale as well as universities can contemporarily address both local needs and tap global opportunities for the best performing firms and institutions. Only in this way a local economy can evolve, adapt quickly to changes and prosper. The Silicon Valley case (Saxenian, 1990) is illuminating: the different activities performed in the local milieu (from biotech to ICT, to agri-food) have flourished parallel to the growth of global reputation of local universities in higher education and advanced research. The open innovation model has involved regional and international organisations, local and global partnerships have nurtured the development of the knowledge in a number of fields. The regional economy has largely benefited from this process, evolving progressively into a multi-polar (universities, leading companies, venture capitalists, research institutions and incubators...) innovative milieu.

### 3. The University of Pavia case study

The University of Pavia belongs the core of the first European Universities. According to the Rector, Prof. Angiolino Stella “Our institution is one of the oldest universities in Europe and the oldest one in Lombardy. Since its foundation in 1361 it has been a good place to study for both Italian and foreign students. Each year, thousands of students can appreciate the multidisciplinary vocation of our University and the hospitality of its campus, really unique in Italy for the possibility it offers of living and studying in a lively, intellectually challenging environment. Our aim is to encourage our students’ creativity, enhancing their capacity to engage with the great challenges of our society. We set out to obtain this goal by offering a wide academic curriculum, by increasing our international policy and through the outstanding quality of our research.” The University enrolls approximately 26000 students in the different curricula, in a town of 70000 inhabitants. This qualifies Pavia as a university town, where academic activities have a fundamental impact on the local and especially the urban social and economic system. The ancient university buildings — mostly occupied by humanistic and social sciences — and the colleges characterise the urban downtown land-

scape as well as the modern buildings in the outskirts of Pavia — mostly occupied by scientific faculties — characterise the surroundings.

The town has a weak industrial structure, characterised by a number of micro and small firms in traditional sectors. For this reason the economic system has showed so far a limited absorptive capacity (Cohen and Levinthal, 1990): the human capital educated by the university predominantly finds a job in the nearby area of Milan, where advanced manufacturing and knowledge intensive services are concentrated. Some students return to their original regions and countries or find a job somewhere else abroad. The research activities conducted in the University departments and labs have been developed mostly in international partnerships among researchers (for basic research) and in partnerships with large private and public organisations from outside the territory (for applied research). In the field of life sciences and medicine in particular, the presence of health care centres (hospitals) of international reputation is the main evidence of the local fertilisation between academic and social/economic excellence. In the last decades, following the above mentioned trends in favour of “local engagement” of universities, also Pavia has established an innovation and technology transfer office and has promoted cooperation with local institutions and firms. Given the above mentioned features of the local economic system, local firms have not benefited particularly of these efforts, since their limited absorptive capacity prevents them to fully recognise and understand the value of the new knowledge delivered through graduates and research products. Only the few larger firms have increased their collaborations with the university. On the other hand, the University international excellence in some domains has started attracting investments from abroad. For example a US multinational leading in microelectronics, has invested in a large plant close to the university premises, in order to develop better joint R&D projects and hiring a number graduates in engineering. Other joint research activities between university labs and large international firms are in place in the life science, ICT, and in a number of domains where the university has reached reputation and international recognition.

The case of Pavia is particularly interesting because not only in the scientific departments but also in the humanities and social sciences a growing local/global networking is occurring, with relevant consequences for an otherwise stagnant local economy. In some cases, new domains for R&D and knowledge transfer emerge from innovative collaborations between different disciplines, creating new areas of potential cooperation with local and international organisations. For example the CISRIC (research centre for cultural heritage) sees the collaboration on different research projects of researchers in territorial engineering and architecture, physics, chemistry, earth sciences and geology, territorial marketing, history and literature. The innovative interdisciplinary approach to the preservation and valorisation of cultural heritage has produced a number of important consequences: attraction of public and private funds for specific projects of local, national and international interest, the private financing of a Laboratory specialised in ancient paintings and musical

instruments in wood, which relies on the most advanced technologies, and finally the start up of a university spin-off. A significant part of these activities have consisted in knowledge transfer to the local system, thus contributing to a new approach to the cultural heritage policies and management.

Finally, the University of Pavia offers an interesting example of an additional and often neglected role of universities for local development: we refer to the attraction of tourists flows. In fact the university has developed in the last years an integrated system of its museums, which span from history of medicine, to natural sciences and electricity. It also includes a botanical garden and a number of collections. With this offer the university targets to the education market segment (secondary schools) but also to a wider public represented by cultural tourism. The latter is also attracted by the medieval buildings, classes and libraries. This potential still needs to be exploited fully, also because it involves a dedicated organisation and marketing effort. It also involves an active participation of the local economy, providing adequate receptivity (hotels and B&B) and restaurants. The sale of local typical products and more generally the marketing of the territory would be enhanced by this role of the university. For example, Oxford and Cambridge are well known examples of cities where the urban landscape is shaped around the university buildings and colleges and attract every year hundreds of thousands tourists. Alcalá de Henares, a town close to Madrid with an ancient university, welcomes every year important tourist flows visiting the University buildings. Alcalá de Henares earned Unesco world heritage status in 1998 thanks to this university, which produced a handful of saints and generations of powerful Catholic bishops.

## Conclusions

Universities have known an evolutionary process, which in Europe developed along eight centuries. The changes have accelerated dramatically especially after the second world war and universities have been called upon playing new and differentiated roles. The shift in paradigm from the ivory tower to the entrepreneurial university has been dramatic and raises both consensus and criticism. This contribution aims at highlighting some key issues of this evolutionary process. First it does not entail the emergence of one model of university but of differentiated models along two strategic dimensions of geographic orientation (local, global, glocal) and core activity (teaching, research, both). Second, locally oriented universities should establish mechanisms to prevent the risks of cognitive lock-in and narrow and short-term focus. This is one the main limitations of models like the triple helix, which tends to embed the university in a system of local/national ties. Another limitation of this model and the related ones is the reliance on hard science, neglecting totally or largely the crucial contribution of humanities and social sciences and of interdisciplinary fertilisation. The university should become the field for experimenting inter-disciplinary cross fertilisation for facing complex needs of the local and global systems.

Third, the role of universities for local development is complex and goes beyond the traditional issues of providing human capital and transferring research outcomes. For instance, universities determine a relevant flow of people not only in relation to students and staff, but may also attract cultural tourism and open their premises to permit access to buildings, museums and collections, to experiments and special lectures.

Universities represent one of the source of institutional thickness, which is at the basis of local development, nurture the local knowledge base, culture and buzz, and can contribute to local development in a number of ways, some of which have not yet been exploited neither explored. Performing these roles depends primarily on their degree of international openness, more than on their local embeddedness.

## **Abstract**

This contribution aims at highlighting some key issues of the evolutionary process of universities, underlining in particular their role in promoting economic development and local communities. The recent shift in paradigm from the ivory tower to the entrepreneurial university has been dramatic and raises both consensus and criticism. This research proposes that this evolutionary process does not entail the emergence of one model of university, on the contrary, it entails the emergence of differentiated models. These possible models can be outlined along the two strategic dimensions of geographic orientation (local, global, glocal) and core activity (teaching, research, both). The glocal university addresses contemporarily the needs and opportunities provided by the local environment together with those deriving from the global one. They develop a two tier system of ties, both local and global, thus enhancing the exposure of the local society and economy to the influence of external knowledge.

This contribution proposes a model where a more complex role of universities is highlighted and the “entrepreneurial and technological” paradigm — as suggested by the triple helix model — is complemented by a more comprehensive role, which portrays universities as catalyser of local development also in human and social sciences. Moreover, universities characterise — in some cases distinctively — the urban environment and landscape, thus activating tourists flows, generate a local “culture” not only in terms of goods but also of events and activities, of people and buzz and contribute to connect the local system to the global ones.

## **Keywords**

University model of development, regional development, local development, University of Pavia, marketing orientation of the University.



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