

Death of the university? Knowledge Production and Distribution in the Disintermediation Era.

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1. Introduction. Opening Education. More an academic necessity than an intellectual game.

"If students could take courses from anywhere, a marketplace of instruction would emerge that should lead the best to rise: the aggregated university." (Jarvis, 2009: 215)

In the 21st Century, an increasing number of citizens have access to Higher Education¹⁵⁷. However, the imbalance between free contents on Internet and expensive enrolment fees, particularly in the Anglo-Saxon universities, could cause long term problems for the Higher Education system. If the on-line experience is reasonably similar in activities and quality to the teaching provided in the classroom; why not think in a disintermediation of Higher Education, just as happened in other business models like in the culture industry. What would happen if citizens and governments rejected university degrees that certify these institutions as a unique source of learning and professional legitimation?

As it is well known, there is an active debate in the European Union about recognition and validation of informal learning (Council of the European Union, 2009)¹⁵⁸. The aim of this debate is to design new accreditation methods beyond the constraints imposed by formal education institutions. In this context the analysis and reflection on disintermediation practices in Higher Education is more an academic necessity than an intellectual game. All the communication and cultural industries have already passed through this debate: Why should Higher Education avoid the discussion on disintermediation?

This article will explore questions such as: To what extent is this phenomenon reshaping the traditional role of the university? Will it cause a crisis in the educational institutions?

157 Formal education was, at the beginning of the 20 Century, a privilege of the upper class families. In 1910, Secondary students rate in USA was less to 30%, even in the richest states. 30 years later, secondary schooling was between 70% and 90% (Carr, 2008). Higher education rate was even lower, but in the last 30 years it has change from an elite to the massive university.

158 The European Commission, particularly in the division 'Education and Training' an active debate has been developed since the design of the Lisbon Agenda (2000) that now has evolved towards the importance to validate non-formal and informal learning within the formal education. Initiatives such as: European Qualifications Framework (EQF) or the European Centre for the Development of Vocational Training (CEDEFOP) are just a few examples of this concern. More information here: http://ec.europa.eu/education/lifelong-learning-policy/doc52_en.htm

Will this disintermediation of education evolve towards the disappearance of institutions like schools and universities? In the following pages we will reflect on these topics and propose new categories for understanding them..

2. Defining Disintermediation

2.1 Disintermediation

In a few words, *disintermediation* could be defined as ‘cutting out the middleman’ in the production / distribution / consumption chain. The main objective of disintermediation is to drop the final cost of the product and to accelerate the whole economic process. Even if it was introduced in the 1960s in the banking industry, the concept of *disintermediation* only became widely popularized in the 1990s, after the spread of the World Wide Web. During the mid ’90s the expansion of the WWW brought up discussions about new possible intermediations in fields such as: recorded music, cars, computers, books, music, video rental, construction trade sector, hotel reservations or capital markets.. In 1995 the *Journal of Computer-Mediated Communication* published a Special Issue on *Electronic Commerce*¹⁵⁹. At that time the potential of the World Wide Web as a distribution channel and a medium for marketing communications was out of discussion. Considered as a distribution channel, the web potentially offered providers participation in a market in which distribution costs or cost-of-sales shrink to zero, especially in certain sectors like publishing, information services or digital product categories. The introduction of the appropriate information technology in the industry value allowed the manufacturer to leap over all intermediaries and to reduce the cost of the whole process (Hoffman, Novak, and Chatterjee, 1995; Wigand and Benjamin 1995). Between the benefits for the producers Michalski (1995) mentioned that ‘digital products can be delivered immediately, hence such businesses may encounter massive disintermediation or even the eventual elimination of middleman’ (1995). According to Sarkar, Butler and Steinfield (1995) the main arguments for the elimination of intermediaries were the reduction of costs and the internalization of activities. In the Web buyers and sellers could access and contact each other directly, potentially eliminating some of the marketing cost and constraints imposed by such interactions in the real world (Hoffman, Novak, and Chatterjee, 1995).

Disintermediation soon reached popular cybercultural discourses (Silver, 2000; Scolari, 2008, 2009). In 1997 Nicholas Negroponte wrote in his classic column in *Wired* magazine (1997)¹⁶⁰ that ‘the new story of disintermediation is an old bits-and-atoms classic. The complex process of “things” has created a food chain of middlemen and wholesalers who import, export, warehouse, and redistribute physical items.

Disintermediation and other concepts like *end-user empowerment*, *outsourcing*, and *reintermediation* had become the buzzwords of the late 1990’s (Fourie, 1999). *End-user empowerment* refers to end-users having access to information and having the necessary skills to retrieve

159 In 1995 the *Journal of Computer-Mediated Communication* published a Special Issue on Electronic Commerce edited by Charles Steinfield. <http://jcmc.indiana.edu/vol1/issue3/vol1no3.html>

160 <http://web.media.mit.edu/~nicholas/Wired/WIRED5-09.html>

their own information according to their own needs; in other words, they can do it on their own. With *empowerment* users should be less dependent on information specialists, which does not necessarily mean that the information specialist as intermediary will become obsolete: not all end-users will have the time or the interest to do their own searches. Disintermediation was one of the basic (and utopian) components of the cybercultural discourse in the mid 1990s. Managers included disintermediation in their digital wishlist, scholars transformed this process in one of their favourite research objects and journalists fed the discursive machine with utopian visions of a new economy.

In the following section we will reflect on *reintermediation*, a basic concept for understanding the contemporary transformation of Higher Education systems.

2.2 To re-intermediate (cyberintermediation)

Are intermediaries doomed to extinction species? How can intermediaries survive in the new digital system? Negroponte recommended that in case of threat the intermediary should 're-intermediate by adding a new dimension of value. Typically, this is a service with some flavour of added personalization' (1997). As early as 1995, in the middle of the debate about disintermediation, some scholars alerted about the limits of these processes. For example Sarkar, Butler and Steinfield (1995) disagreed that the radical restructuring of the manufacturer-consumer relationship would cause intermediaries to disappear. These researchers proposed to expand our view of intermediary functions, including the search and product evaluation services (quality control, consumer reports, etc.), helping customers determine their needs, reduce consumer uncertainty, improving product communication, informing consumers about the existence and characteristics of products, enhancing the packaging and distribution of goods, and influencing consumers' purchasing behaviour and provisioning information about them. According to their analysis – based on the nature of consumer needs, particularly in a computer-mediated environment- they suggested that there was still a role for both traditional and new types of intermediaries. They even introduced a new figure: the *cyberintermediator*.

In this new context the *cyberintermediator* was a new network-based intermediary in place of former direct linkages. These actors apply the technology to reduce the producer-intermediary or intermediary-consumer transaction costs. The existence of cybermediaries was considered consistent with traditional marketing theory, which views intermediaries as organizations that support exchanges between producers and consumers, increasing the efficiency of the exchange process by aggregating transactions to create economies of scale and scope. Cybermediaries were just intermediaries which take advantage of the technology to create these economies of scale and scope.

Distribution service firms such as Federal Express were considered a prime example of how information technology had begun to make it economical to provide services independently that historically have been provided by integrated retail intermediaries. In a scale economy the digital technology allows the creation of transaction services provided by intermediaries at a very low cost. The expansion of the e-commerce also triggered a *reintermediation* process under the form of huge portals like Amazon and eBay. The traditional middle man was substituted by a buying-selling interface based on algorithms, data-bases, fulfilment centres around the world and, last but not least, the information provided by millions of user interactions. In this context the original disintermediation proposal -based on a killer car dealer logic- derived into a mixed clicks-and-bricks economy.

2.3 Disintermediation beyond economy

The discussion about disintermediation went beyond the economy field and soon reached media and education. Both institutions should be considered the most important social reproduction devices of industrial societies. Traditionally the school has taught a combination of knowledge, ideology and discipline (Althusser, 1970); in the second half of 20th century the media system joined the school in the social reproduction functions. Disintermediation is now challenging both institutions.

In the media the discussion about the possible disintermediation of information processes arrived with the spread of blogging in the beginning of the 2000s. The arrival of the collaborative web (O'Reilly, 2005; Cobo & Pardo Kuklinski, 2007) and the expansion of social networking brought new questions on the table (Pardo Kuklinski, 2010): If information is produced and distributed in collaborative environments, are information professionals still relevant? Is there any future for professional journalists in the land of social networks? The debate about citizen journalism (Gilmour, 2004; Scott, 2007) is a relevant example of this kind of discussions about disintermediation in media field. According to Gilmour 'tomorrow's news reporting and production will be more of a conversation, or a seminar. The lines will blur between producers and consumers, changing the role of both in ways we're only beginning to grasp now'. In this context the communication network itself 'will be a medium for everyone's voice, not just the few who can afford to buy multimillion-dollar printing presses' (2004: XIII)

According to Shirky (2008) the organizational forms perfected for industrial production have to be replaced with structures optimized for digital data. The core problem that school and media solved -the transmission of knowledge, ideology and discipline to millions of citizens- seem to stop being a problem. At this point of this initial reflection we can ask if the educational institutions -an organizational form that, like journalism, was 'designed' for the industrial mass society- have to be replaced with new structures and processes adapted to digital knowledge generation and distribution.

As early as 1996 researchers like Homan (1996) introduced the concept of disintermediation into the educational discourse. For him disintermediation should be interpreted as 'becoming more proactive in identifying information needs; managing the end-user; new retrieval methods, sources and dissemination techniques; improving efficiency and cost-effectiveness; and adding value' (1996: 589). The questions have been always the same: Will educational intermediaries be disintermediated? Will this mean an enhancement to their role? How can the profession continue to add value in an age of information access for all?

3. Disintermediation and Higher Education: New visions and models

The university as an institution in the Western world has been in existence for more than eight centuries. According to Readings: "The modern University has had three ideas: the Kantian concept of reason, the Humboldtian idea of culture, and now the techno-bureaucratic notion of excellence." (Readings; 1996: 14). Despite the recent data of the digital era, it is becoming a driving force for transformations that affect the role of institutions that traditionally has been acknowledged as organizations that provide legitimate knowledge.

The current state can be described as the 'expanded role of the university'. From our perspective the transformations of two relevant dimensions (*generation* and *distribution* of knowledge) have affected the traditional role of Higher Education. This phenomenon is analysed based on new mechanisms of *knowledge generation* (e-science, online education, distributed R&D, open innovation, peer-based production, online encyclopaedias, user generated content – UGC) and new models of *circulating and distributing knowledge* (digital print on demand, e-journals, open repositories, license as Creative Commons, academic podcasting initiative, etc.).

In connection with these new mechanisms of generation and distribution of knowledge Benkler (2006) explains that a 'radical decentralization' is shaping the current network society. According to him the radical decentralization of intelligence in our communications network and the centrality of information, knowledge, culture, and ideas to advanced economic activity are 'leading to a new stage of the information economy-the networked information economy. In this new stage, we can harness many more of the diverse paths and mechanisms for cultural transmission that were muted by the economies of scale that led to the rise of the concentrated' (2006: 32). From an institutional perspective, particularly in the context of Higher Education, this 'radical decentralization' is articulated by new agents, actions and transactions.

Since ancient times educators and students have been intensively using information and knowledge as the raw material of their teaching and learning activities. Nevertheless, the rapid development of the information and communication technologies (ICT) is empowering unprecedented forms of generation, distribution and management of old and new knowledge.

Boyer (1990) developed a model to explain an 'expanded role of the university'. Despite that this theoretical model was elaborated before the expansion of the World Wide Web it still provides valuable ideas to discuss the position that the university has to play as a "knowledge broker" institution in the networked society. Boyer's model stated the four key functions of the university (scholarship) are: *discovery*, *teaching*, *application* and *integration of knowledge*. Johnston (1998) summarizes Boyer's model as follows:

- The *teaching* is not simply a matter of dissemination but of scholarship, transforming and extending knowledge by a process of classroom debate and a continual examination and challenging of both content and pedagogy. It fosters the active, critique and continuously updated process of learning.
- The *discovery*, or research, is a pervasive process of intellectual excitement rather than just a concern with outcomes in the form of new knowledge. It includes the generation of new knowledge through the resolution of problems.
- The scholarship of *application* was defined as professional activity in practice and service, which had to be subjected to the same rigour of evaluation and accountability as teaching and research. It facilitates the appliance of theoretical and practical knowledge.
- The scholarship of *integration*, making connections between knowledge and models from different disciplines and within the wider context. It promotes the combination of disciplines within and outside the academic environment.

In different degrees of intensity and based on distinct levels of development depending on the educational institution, it can be stated that these four key functions have been evolving significantly due to a more connected and interdependent knowledge society (Willke, 2007).

Based on this model Johnston (1998) states that the university lost its 'monopoly' over the production and distribution of knowledge. He explains that university today is no longer unique with regard to the scholarship of teaching, discovery, application and integration.

Gibbons et al. (1994: 6) add that these former monopolized functions increasingly shared with 'non-university institutes, research centres, government agencies, industrial laboratories, think-tanks (and) consultancies'. The authors (1994: 156) envisioned: "The university must enlarge its view of its role in knowledge production from that of being a monopoly supplier to becoming a partner in both national and international contexts". In a later work Gibbons et al. (2003) state the necessity to 'enlarge the role of the university' and proposed a new academic paradigm of knowledge generation (also called 'Mode 2') that is socially distributed, application-oriented, trans-disciplinary, and subject to multiple accountabilities.

However, Jacobson, et al. (2004) point out the inconsistency between the so called **Mode 1** (traditional, discipline-based) and the **Mode 2** (which is applied, problem-focused, trans-disciplinary, heterogeneous, demand-driven, entrepreneurial, embedded in networks). These authors explain the clear necessity to move toward new models for the academy. In general 'these new models describe organizational changes designed to harmonize incentives and expectations, improve access to user groups, and increase the resources available for knowledge-transfer activities'. Gibbons et al. (2003) and Jacobson et al. (2004) highlight the necessity of the 'enlarged' or 'extended' role of the university emphasizing aspects like: (1) communication between the producers of knowledge and the users of knowledge, (2) brokering and negotiation of knowledge translation arrangements, and (3) the delivery of knowledge.

Nowotny, Scott and Gibbons suggested the concept of a 'mode-2 society' in which scientific research would increasingly be socially embedded, giving way to a more "socially robust" forms of knowledge generation. For conceptualizing the hybrid forms of interaction between scientific and social actors, the authors present the notion of an 'agora' a public space for open and democratic forms of reasoning and decision making (Nowotny, Scott, and Gibbons 2001; see also the revisions in Nowotny, Scott, and Gibbons 2003).

Table 1. Gibbon's Mode 1 and Mode 2. Source: Based on Gibbons et al. (2003) and authors' contributions.

Mode 1	Mode 2
Closed - Isolated	Open - Interconnected
Objective	Socially robust
Descontextualized	Context dependant
Restricted to scientific communities	Not restricted to scientific communities
Disciplinar	Transdisciplinar

To conclude this section we present the following table as a way to summarize the above referred concepts and ideas. The table crosses the *knowledge generation* and *knowledge distribution* dimensions with Boyer's key functions. In addition this table includes two columns: 'traditional' and 'disintermediatory' mechanisms inspired by the seminal contributions

of Gibbons et al. (2003). Noteworthy that what has been denominated ‘disintermediary mechanism’ (right column) is proposed as a collection of trends that envision the adoption of more flexible mechanisms of knowledge translation. The elements included in this column are linked with the concept of Mode-2 that emphasizes the relevance of socially distributed, application-oriented and transdisciplinary of knowledge.

Table 2. Gibbon’s Modes and Boyer’s Models. Source: Based in Boyer (1990), Gibbon et al. (2003), and authors’ contributions

	Boyer’s model	Mode 1: Traditional intermediated mechanism	Mode 2: Disintermediary mechanism
Generation of knowledge	Teaching Examples: Academic Earth, iTunes U, OER Commons, Khan Academy, Open Learn.	Linear transferring of knowledge based on content accumulation and memorization (<i>banking education</i> : concept coined by Freire, 1970)	Interactive co-production and experimentation in changing contexts.
	Discovery Examples: Research Gate, Research Channel, How Stuff Works	Critical reading of scientific peer-reviewed publications / text writing for academic publications, thesis or similar. i.e. Knowledge generated within the laboratory of the academia.	Connecting, people, cultures and disciplines. Serendipity. Context-based learning. Hybrid approach (i.e. enterprise-university partnership). i.e. Knowledge generated in spaces of social interaction.
Circulation and distribution of knowledge	Application Example: Public Library of Science, Living Labs, iLab Project; Cramster.	Development of proficiency and quality in the adoption of knowledge (assessed by test). Assessment based learning.	Based on experiment , peer based learning, trial and error, exchange (assessment based on outcomes in-the-context), living labs, etc. Performance based learning.
	Integration Example: Wikipedia; YouTube Edu; SciVee. Directory of Open Access Journals.	Single discipline. Addition of new contents and bibliography to the academic curriculum.	Combining teaching and researching with professional (live) experience (spin off) and crowdsourcing. Transdisciplinarity.

The pace of change is now so rapid and interdependent that it should be considered as a constant, with no period of inactivity in between. In this context, Douglas and Seely Brown (2011: 17) ask: ‘What happens to learning when we move from the stable infrastructure of the twentieth century to the fluid infrastructure of the twenty-first century?’. Learning today

is undergoing a "radical decentralization" triggered by new ways to generate and distribute knowledge; i.e. new digital encyclopaedias; the virtualization of books; open access to educational contents; collective peer reviews and P2P universities. Above we mentioned that the information and knowledge has been used as the raw material of the 'generation of knowledge' as well as the 'circulation and distribution of knowledge'. In the following section we will explore questions that could contribute to the understanding of individuals/agents and mechanisms of this changing environment.

4. From disintermediation to knowledge broking

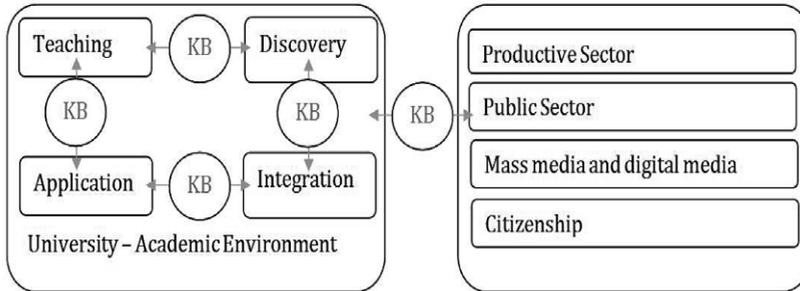
"[T]he economy of the future will be founded on the generation, transmission and exploitation of knowledge of many kinds, much of it dependent on the coming together of disciplines in innovative ways' (Crossick, 2010: 7)

If the discussion about the disintermediation in media field introduced new concepts like *citizen journalism* or *user-generated content*, for analysing the disintermediation in the educational realm we also need to construct a new dictionary of concepts and analytical categories. *Knowledge broking* (*knowledge broker*) is one of those concepts. The concept was introduced by Hargadon and Sutton (2000) and should be considered a natural evolution of the term *knowledge worker* coined by Drucker (1959). Through this section we will explore the significance of the knowledge broker profile in relation to the current challenge that the university face in an era of hyperconnectivity and 'radical decentralization' (Benkler, 2006). In other words: this section analyses why and how, educators and students as well as scientists and researchers should embrace some of the attributes envisioned in the profile of a knowledge broker. As it will be shown in the following pages, these agents play a key role in the production, distribution, translation and dissemination of knowledge.

4.1 What is a knowledge broker?

A *broker* is a person (but also can be identified in certain organizations) that arranges or negotiates (a settlement, deal, contacts, commodities or plan) with an intermediary. This is a profile that is represented by personnel whose skills are remarkably important in the context of the information society. From the perspective of the knowledge translation and dissemination the knowledge broker is an emerging human resource profile that facilitates the connection of information, people or context.

A fundamental skill of a knowledge broker is the capability to make proficient use of the digital technologies to bridge the gap between different stakeholders or communities (Straus et al., 2009). Pawlowski and Robey (2004) wrote that the 'brokering practices include gaining permission to cross organizational boundaries; facilitate the transfer of knowledge among organizational units' (2004: 663). For instance, a knowledge broker gives both decision makers and researchers a better understanding of each other's field of expertise or interest.

Table 3. Knowledge brokering in the Higher Education system. Source: Authors.

A knowledge broker (KB) can be identified in different socio-cultural contexts. In the specific case of Higher Educational institutions, a KB becomes a 'knowledge networker' who connects and bridges different activities of knowledge generation and distribution within the university but also outside of it (see Table N°3). Depending on the link (see arrows) and the stakeholder or context the networking activity could vary significantly.

The profile of the KB is based on the understanding that if knowledge is not in action (translated and disseminated) it is underexploited or even worse it could be simply ignored. In this perspective, the knowledge-to-action process is an activity that has to be pursued by an iterative, dynamic, and complex process of creation and application of knowledge. In this action-cycle there is a blurring of boundaries between creation and action components' (Straus et al., 2009: 22).

Jacobson et al. (2003) explain that 'Knowledge brokers mediate between researchers and user communities. Individuals serving as brokers must understand both the research process and the users' decision-making process' (2003: 98). From an educational perspective, teachers and other educators should develop the skills of a knowledge broker in order to better connect (and update) the knowledge that is being created with what is taught and learnt by students. Coming back to the key functions of the university, the teaching discovery, application and integration of knowledge should be driven by people who are able to understand and adopt this profile. In other words: knowledge brokering 'links researchers and decision makers, facilitating their interaction so that they are able to better understand each other's goals and professional culture, influence each other's work, forge new partnerships, and use research-based evidence' (Straus, Troe and Graham, 2009: 125).

Knowledge brokers also promote the 'interaction between researchers and end users, as well as to develop capacity for evidence-informed decision making [...] developing a mutual understanding of goals and cultures [...]and] facilitates the identification, access, assessment, interpretation, and translation of research evidence into local policy and practice' (Dobbins et al., 2009:2).

4.2 Knowledge in transformation

Straus et al. (2009) summarize the stages of knowledge generation (research) in three levels. One of the key roles of Higher Education institutions is to design and adopt differ-

ent strategies to foster the discovery of new knowledge. It is important to keep in mind that not all the knowledge is discovered at the same stage. Also, it will depend on the discipline or the subject studied the phase that will be adopted during the production of knowledge.

1. **First-generation knowledge** is derived from primary studies such as sampling error and measurement error.
2. **Knowledge synthesis is second-generation knowledge:** Aggregation of existing knowledge. It involves the application of explicit and reproducible methods to the identification, appraisal, and synthesis of studies or information relevant. Identify, review, and select the knowledge or research relevant to the problem. Adapt the identified knowledge or research to the local context.
3. **Third-generation knowledge: Knowledge tools or products.** Present knowledge in clear, concise, and user-friendly formats and ideally to provide explicit recommendations. Facilitate and promote awareness and implementation of knowledge. It may include tools and products (Straus et al., 2009:27).

The academia has its traditional channels of dissemination of knowledge and, depending on the context, the educational system may provide incentives to foster this distribution. Some well-known examples of knowledge distributions mechanism are publication of peer-reviewed journals; book publications; presentation of posts in congress, among others. It is also known that depending on the discipline the strategies of knowledge distribution may vary. For instance, some disciplines promote the presentation of papers in congress meanwhile others prefer a high impact factor (average number of citations to articles published in science and social science journals) provided by the Institute for Scientific Information (cfr. ISI Web of Knowledge, visit here: <http://wokinfo.com>).

Even acknowledging that the traditional channels of dissemination of knowledge already mentioned are massively adopted for scholars and scientists, it is important to keep in mind that these are not unique ways to distribute academic knowledge. When a scholar or a community of them only adopt the traditional channels of diffusion used to disseminate and circulate academic knowledge, there is a potential risk of knowledge underutilization that could affect further exchange of new knowledge generation within other academic communities and stakeholders. In many instances, this underutilization phenomenon could be tightly linked to neglect or simply ignoring the possibilities that the digital environment and new media provides. Dobbins et al. (2009) explain that ‘the evidence demonstrates that traditional one-way passive strategies used alone are relatively ineffective. Strategies that are more interactive and involve face-to-face contact show promising results, and involvement of decision makers in the research process is associated with a higher degree of research uptake’ (2009: 4).

Jenkins et al. (2008) refer to the importance of this action-cycle, which includes the knowledge creation and distribution. In that work about ‘spreadability’ they refer to the importance of knowledge in action saying ‘*If It Doesn’t Spread, its Dead*’ as a way to describe that is vital to create stretched connections between the knowledge creation and the knowledge distribution through different niche communities.

Based on the current evolution of the digital environment and considering how the global society is changing, it is important to enquire if the diversification of strategies to distribute and circulate knowledge today is sufficiently discussed by the academic community. Straus

et al. (2009) explain this diversity as follows: 'In the United Kingdom and Europe, the terms implementation science and research utilization are commonly used in this context. In the United States, the terms dissemination and diffusion, research use, knowledge transfer, and uptake are often used. Canada commonly uses the terms knowledge transfer and exchange' (2009: 19). Jacobson et al. (2004) also mentions that knowledge transfer is a concept close to terms like: research transfer, technology transfer, knowledge utilization and knowledge exchange.

As we can see, the concept of *knowledge brokering* (*broker*) is a useful theoretical tool for understanding the reintermediation processes in Higher Education and defining the new skills and profiles that the education professionals should develop.

5. Conclusions: The death of the university?

Regarding the future of educational institutions, Tucker (2010) proposes a sort of middle ground perspective. Interestingly Tucker highlights the social value of educational institutions (schools in this case); suggesting that they will evolve toward hubs to create and maintain social relationships. 'There will always be physical schools - students need to go somewhere during the day to enable the engine of modern economic progress: two parents working. But these schools will evolve into things that look more like civic centers - hubs for community involvement and rich relationship-building' (2010: para.7).

In order to summarize some of the main ideas proposed in this paper the authors highlight three questions that have been argued along this text and are open to further discussion:

1) Will Higher Education institutions disappear because of disintermediation processes?

As in other fields, disintermediation will not declare the death of university, however there are reasons enough to think that Higher Education institutions are not alone anymore: a complex network of platforms, systems and new institutions are operating in the educational field. Many of these platforms and systems were born under the disintermediation flags, but now some of them are good examples of cyberintermediation, that is a series of digital environment that promote some kind of 'collaborative intermediation'.

2) How is the Higher Education system mutating?

New actors, new relationships, new teaching/learning processes. The traditional educational institutions do not occupy a monopolistic position anymore.

The traditional *closed / closed* system (*closed* generation of knowledge + *closed* distribution and access) is changing to a *closed / open* system (*closed* generation of knowledge + *open* distribution and access), and evolving toward a more radical stage: an *open / open* system (*open* generation of knowledge + *open* distribution and access). *OpenCourseWare*¹⁶¹ or *iTunesU*¹⁶² are remarkable examples of a *closed / open* model, meanwhile the P2P University¹⁶³ and the Khan

161 <http://www.ocwconsortium.org/>

162 <http://www.apple.com/education/itunes-u/>

163 <http://p2pu.org/>

Academy¹⁶⁴ are examples of an *open / open* model.

We consider that the opposition is not anymore between intermediation or disintermediation. Disintermediation platforms are the new digital collaborative intermediaries, but these systems are often working together with traditional intermediaries like universities. In this context we could talk a 'hybrid system' where old and new intermediaries coexist in the same environment.

3) How are the relationships between traditional intermediaries and new intermediaries?

Universities should not compete but collaborate with new cyberintermediaries. Between traditional and new practices we can identify countless micro and macro combinations where Higher Education institutions apply new disintermediated logics that include new agents, actions and transactions.

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