UNDERSTANDING THE PROBLEMATIC RELATIONSHIP BETWEEN ECONOMICS AND COMMUNICATION STUDIES AND POTENTIAL SOLUTIONS

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Abstract

This article argues that communication scholars should collaborate with pluralist economists rather than traditional ones, as alternative economic theories are better suited to understanding the evolution of communication industries and to integration into multidisciplinary theoretical frameworks. In order to illustrate this point, first the main features of traditional economics that are incompatible with the study of the communication sector are outlined, then, a selection of theories and concepts from complexity economics, service innovation studies and the neo-Schumpeterian approach are presented. Moreover, as an example of the efficacy of alternative economic theories for explaining change in the communication sector, these concepts are used to provide arguments for the convergence of media and communication industries and to describe the main innovation drivers of the video tape and disk rental industry.

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The Contradictory Relationship between Mainstream Economics and Communication Studies

George Stigler once defined economics as an imperial science because economists attempt to "colonise" other disciplines by investigating various topics with their tools and methodology (Stigler 1984, cited by Wildman 2008). At least to a certain extent, communication studies have also been victims of this colonisation: as Wildman (2008) notes, the communication field is absorptive and outward-looking and its scholars tend to incorporate findings from related research by economists, while economists are much less inclined to cite the work of communication researchers. However, in this paper it is argued that only the "neoclassical" and mainstream economic approach is closed, inward-looking and "imperialist" and that communication scholars should find it more efficient to look into alternative economic approaches for concepts that can support their theories, given that alternative economic approaches are absorptive, outward-looking and more similar and compatible with communication studies in many ways.

In order to explain why mainstream economists rarely cite the work of communication researchers, one has to understand the fundamental characteristics of the neoclassical approach. First of all, neoclassical writers adopt deductive reasoning and mathematical modelling to describe economic dynamics and to solve economic problems, most of which can be said to be grounded on understanding individuals' choices of allocation of scarce means between alternative uses (Hodgson 2004). *Deduction* is a process of reasoning in which the conclusions must logically follow from a set of premises and it is particularly useful to find a solution (or a set of solutions) to defined problems. When this set of premises is complex, solutions can be found with deductive reasoning by using computers. *Induction*, on the other hand, is reasoning by pattern recognition and by drawing conclusions from a preponderance of evidence (Beinhocker 2007). So, if deduction is the reasoning process of computers, induction is reasoning process used, for example, by doctors to cure patients. After gathering as much information as possible from a patient, directly or from other sources, a doctor decides on a treatment course that, although the life of the patient might depend on, is nothing more than his or her best guess. A doctor cannot be sure to provide a solution to the patient's problem, because he or she relies on partial information and because he or she might be facing the unknown (i.e. a new disease). Moreover, "trial and error" is a methodology associated with inductive reasoning: when a doctor observes that a treatment does not provide the expected results, he or she uses the new information for a new best guess.

Deduction, meanwhile, is applied to find solutions to problems that are well defined, i.e. without ambiguity or information missing (Beinhocker 2007). Therefore, in order to use deduction and mathematical modelling, mainstream economists adopt neoclassical assumptions to remove uncertainty from economic problems. These assumptions transform consumers into rational individuals, whose behaviour is standardised and can be forecast and modelled. Hence, in economic models framed using standard neoclassical assumptions (which will be referred to here also as "traditional economic models"), first, individuals have the same consumption preferences; second, and more importantly, they have access to any piece of information they need; third, they are able to interpret all of this information to

make perfectly informed decisions on how to maximise their consumption (see Beinhocker 2007).[1]

The standardised firm is the object of neoclassical models when production is the focus of an economic analysis. As in the example above, this firm has access to information and takes perfectly informed decisions about prices and quantities to be produced so that its profits are maximised. Moreover, the quantities and prices chosen by all of the firms as assumed to match consumers' expectations, therefore they represent a given market's equilibrium. This equilibrium is only temporary as changes outside of the system-model (including people's inventions and government actions) occur and put the equilibrium under pressure. As firms (and individuals) are, however, assumed to have a perfect understanding of the consequences of these changes, they take new rational decisions leading to a new equilibrium. Assuming the existence of markets' equilibria is fundamental and has a crucial effect: it is necessary to justify the existence of models' solutions, but also, it implies that markets are self-regulating.

Nelson and Winter's seminal critique of the neoclassical approach (Nelson and Winter 1982) explains why this is not absorptive and imperialist. They argue that neoclassical theories define the economic variables, the relationships that are important to understand, the way in which explanations are acceptable and, more generally, certain ways of talking about economic phenomena. Consequently and by exclusion, neoclassical economic theories also classify some phenomena as peripheral, unimportant and theoretically uninteresting, and certain kinds of explanations as ill-informed and unsophisticated (Nelson and Winter 1982). From this critique, one can understand why the mainstream economic approach is largely incompatible with the work of communication researchers: neoclassical writers are likely to consider communication scholars' writings as ill-informed given that, at least to a large extent, communication scholars apply induction reasoning to samples, comparisons, simulations, empirical exercises and/or historical analysis to justify their *conclusions* instead of framing their questions as problems and looking for *solutions* by adopting deduction and mathematical modelling.

Moreover, even though communication policy and economics of communication industries are two areas where communication scholars and mainstream economics researchers are most likely to be aware of work by members of the other discipline (Wildman 2008), there are more practical reasons explaining why collaboration between them might, nevertheless, be difficult. These reasons stem from the incompatibility between standard traditional assumptions and what communication scholars consider important characteristics of communication policy and industries. For example, most traditional economists tend to frame policies and regulations as external factors in their models and independent from the choice of individuals and firms (possibly, also in light of some markets' capacity to self-regulate).[2] While many communication scholars tend to think of policies and regulations as shaped by many factors, including the dominant ideology or the pressure exerted by important corporations (e.g. McChesney 1999; 2001) as well as integrating (and fundamental) elements of communication markets. In addition to this, media content producers have a very unclear understanding of consumer preferences given that, at least prior to the act of consumption, consumers themselves have often a poor understanding of the level of satisfaction that might result from consuming

a creative product (Flew 2007). This characteristic of media markets is considered by communication scholars as important for understanding the business models of media industries, but, on the other hand, is clearly incompatible with the rational decision-making process assumed by traditional economists. Therefore, ironically, communications scholars should find some of the most fundamental economic theories (i.e. the ones embracing all the traditional assumptions) as ill-informed and their results uninteresting.

Many years have passed since 1953 when Milton Friedman was arguing that unrealistic assumptions simply did not matter in economic theories as long as they made correct predictions, as nowadays, even neoclassical economists challenge the use of restrictive assumptions (Beinhocker 2007). Communication scholars, therefore, can certainly find within the field of mainstream economics recent and less "traditional" models that question the same assumptions that are incompatible with their own vision of communication policies and the economics of communication industries. It is argued here, however, that communication scholars are likely to find the use of some alternative economic theories more efficient and useful than the adoption of mainstream economic theories. This can be argued, first of all, because the range of methodologies employed by communication and alternative economics scholars is quite similar as it is characterised by the (also combined) use of samples, historical accounts, comparisons, simulations and/or empirical exercises, as well as the use of induction as the main process of reasoning.

This claim can be further supported by arguments explaining the potential of alternative economic theories for studying communication policies and communication industry economics are provided. The theories presented here belong to three alternative economic approaches: service innovation theories, institutional economics (and neo-Schumpeterian) accounts and complexity economics. After a short introduction about their basic characteristics, theories from these approaches will be introduced with the intention of illustrating how they can help to understand different aspects of communication industries' innovation dynamics. Although these approaches differ from their respective main focuses, all three of these schools of thought frame *innovation* as a multidimensional process of change that is compatible with communication scholars' accounts on how media industries evolve. Service innovation studies, for example, stress the need for a broad concept of innovation that includes the non-technical changes typical of service activities. The notion of stylistic innovation put forward by Schweizer (2003), for example, is a notion of change that can be applied to new technical devices as well as to new types of narratives.[3] Institutional and complexity economics, on the other hand, embrace an evolutionary definition of innovation. According to this notion, innovation is a trial and error process also affected by random elements; therefore innovators (e.g. film producers, book writers, editors, etc.) can only partially anticipate the effects and the consequences of their efforts.

Service Innovation Literature

Service innovation scholars argue that service activities have long been understood as being low-capital intensive because they do not require the construction of expensive production plants. Rather than innovators, service enterprises are also generally conceived as innovation adopters and dependent on the manufacturing

sector for technological change. Moreover, these scholars also argue that mainstream economists tend to see a company's capacity to innovate as proportional to the size of its fixed capital and the level of its R&D efforts (Gallouj 2002). Service innovation scholars are also critical of those mainstream economists that undermine the non-technical, "upgrading" routines typical of many service activities. They also stress the importance of extending the concept of "innovation," which is traditionally understood as primarily a process increasing the stock of science and technology (S&T) knowledge. Miles (2003), for example, explains that innovation is also aesthetic, cultural, social and organisational, and that it not only contributes to S&T knowledge, but also to knowledge of markets and user requirements. Moreover, empirical studies show that there is a multitude of different investments that, together with R&D, can be considered essential or supporting elements of innovative activities. These include intangible investments in know-how, industrial patterns and design, patents and licenses, artistic creations, copyright, rights to receive royalty payments, training, and also other investments in human resources, market share, product certification, customer lists, subscriber lists and lists of potential customers, product brands and service brands, and software and similar products (Den Hertog and Bilderbeek 2000). Moreover, service innovations scholars distinguish themselves from mainstream economists because they stress the importance of defining the relationship between users and providers, more so than concentrating on the actual object (tangible or intangible) of the exchange (e.g. Gadrey 2000).

Most activities of the communication sector are best described as services, therefore concepts drawn from service innovation studies are particularly useful in understanding how these activities evolve. On the contrary, studies investigating innovation in service activities that are informed by mainstream economic theories can be misleading. Generally, traditional economic studies focus on pricing and interfirm strategies when they examine a firm's behaviour and they consider each market as a distinct entity and independent to its environment or cultural and economic settings (Shepherd 1975; cited by Babe 1993). For example, a study conducted by the multinational consulting firm Arthur D Little Inc in the early 1980s claimed that cinema theatres were destined to disappear and be replaced by new and alternative film exhibition outlets, such as pay TV and home video rentals, by 1990 (Gomery 2004). The analysis carried out by researchers at Arthur D Little Inc is a good example of a rather naive application of mainstream economic thinking to the analysis of communication industries' behaviour. The main argument of this study can be summarised as follows: given that cinema theatres and other exhibition outlets fulfil the same role of final deliverers of audiovisual media products, they are part of the same market and compete for the same market shares. Therefore, economists at Arthur D Little thought that the more modern services of pay TV and home video rentals were going to replace cinemas because all of these services are in the business of delivering the same audiovisual media products and because the former were growing faster than the latter, at least when their study was carried out.

On the contrary, an economic analysis informed by a service innovation viewpoint is likely to concentrate on the relationship between users and providers and, therefore, it is likely to be more attentive to the different aspects of the experiences that media outlets offer to users. Such an analysis would agree that home video

rental services and cinema exhibition theatres although they share the same type of content, they offer different experiences to users, characterised by different factors. These include, for example, the time of release of these movies and the conditions in which users see them. Therefore, this theoretical approach, contrary to what Arthur D Little Inc was forecasting, can be used to explain that in the last twenty years cinema theatres have flourished and increased their revenue, because cinema theatres are directly competing with pay television or home video only to a limited extent. In fact, cinema theatres are the blockbuster movies' producers use cinemas as the first release window for most of their films and other media outlets as subsequent windows. Therefore, these types of services are better understood as complementary rather than substitute, as synergies are realised between cinema theatres and alternative media outlets, as the latter group also benefits from the marketing efforts spent in promoting movies to cinema audiences.

Complexity Economics

The second economic approach presented here as an alternative to traditional economics for studies of communication industries is *complexity economics*. There are many questions marks regarding what falls under this umbrella term, as "complexity economics" is better defined as a research program rather than as a single, synthesised theory. However, as Beinhocker (2007) claims, complexity economics distinguishes itself from work that has gone before it, because of five principal ideas: first, contributors to this school of thought consider the economy as defined by the existence of open, dynamic and non-linear systems that never reach a static equilibrium. Second, these social systems exist through the interaction of agents composing them; these agents use inductive rules of thumb to take decisions which are based on incomplete information and learn and adapt over time. Third, networks provide the model of interactions between agents. Fourth, there is no distinction between micro and macroeconomics; the latter emerge directly from agents' behaviours and interactions at the micro level. Fifth, evolution is the process of differentiation, selection and amplification that is responsible for a system's order and complexity growth (Beinhocker 2007).

Systems are the focus of investigations in complexity economic studies, like institutions in evolutionary economics, or the rational individual/firm in neoclassical economics. In its most general definition, a system is any set of space, matter, energy or information for which boundaries can be defined (Beinhocker 2007). Systems are composed of sub-units which are also systems. Some groups of sub-units known as *modules* present the following characteristics – their elements are strongly connected with each other but weakly connected with elements of other units (Baldwin and Clark 2000). In the case of some systems (e.g. open and "intangibles" such as the Internet), their boundaries are only conceptual and they can be the result of a rational exercise. Using the concept of systems is very useful, particularly in light of the rule that sub-systems share some of the characteristics of their containers and obey the same laws. Therefore, one can understand how a particular product, process or institution changes and innovates from the properties of the hypothetical system-container representing the product, process or institution's environment. Therefore, many communication scholars should find this principle of complexity economics (as well as the illustration reported here below) interesting, as

it confirms that communication industries are "embedded" in (i.e. exercising and influence on, and at the same time, being influenced by) other social spheres and that change in these industries also depends on innovations in these other social spheres.

Complexity economists use the first two laws of thermodynamics and the *evolution* algorithm, which apply to all systems belonging to the physical world, to demonstrate that this property of "inheritance" between systems is a rule and not just an assumption. Of course, these principles also apply to communication industries, as they are systems – as their boundaries can be defined – and they belong to the physical world – as their components and features can be observed; therefore, as it will be argue, although very abstract, these concepts can enrich the way scholars understand how these industries change and develop.

The first law (or the conservation of energy principle) stipulates that, in the universe, energy is neither created nor destroyed. The second law states that entropy, which is a measure of disorder or randomness in a system, is always increasing. Thermodynamic systems are characterised by a never-ending battle between energy-powered order creation and entropy-driven order destruction. For order to be created in one part of the universe, order must be destroyed somewhere else, because the net effect must always be increasing entropy/decreasing order (Beinhocker 2007). The economy is a social system contained by the system-universe (i.e. the physical world) and, therefore, also subject to the law of entropy and *evolution*, which is the mechanism by which order is created (Georgescu-Roegen 1971, cited by Beinhocker 2007). In essence, evolution is an algorithmic process of variation, selection and replication that is conducted recursively on the population, with output from one round acting as the input for the next round. At the origin of this process there are design spaces, which are the imaginary containers of all the different forms systems can take. Evolution discovers designs through a process of trial and error: a variety of candidate designs are rendered and introduced into the environment where they compete for scarce resources. In the environment, some designs are successful and retained, replicated and built upon, while others are unsuccessful and discarded. Moreover, the fittest interactors are also the most frequently replicated and built upon (Beinhocker 2007).

From first two principles of thermodynamics and the concept of one can understand the media activities' innovation in the following way. Every system (i.e. an industry, an activity, a product or a service) has its own hypothetical design space which contains all of the possible forms it can take. If inventions are the elements of design spaces, innovations are the inventions that are rendered, i.e. introduced into the environment after having been materialised. A market is the most likely environment in which media industries' products (good or service) are introduced. Markets have their rules as well as other social and cultural conditions, which carry out the evolution algorithm and test innovations' fitness. Therefore, the innovation process of communication industries is also subject to entropy, as energy is employed to create and/or improve existing solutions. Furthermore, in a way that is reminiscent of Schumpeter's waves of creative destruction, innovations that the market judges as "fit" are successful, replicated and built upon (which means that they are improved and re-introduced into the market), while old technologies and unsuccessful characteristics of these old technologies, become obsolete, disappear and are no longer replicated.

At least two other schools of thought, which can be easily integrated with complexity economic approaches, provide useful concepts for investigating change in communication industries. These are complex products and systems (CoPS) and modularity approaches. Both of these schools of thought investigate activities delivering complex products and services and, more specifically, they focus on the relationship between products and organisational design. First of all, innovation increases a system's complexity in the sense that it increases the amount of specialised knowledge that is embedded in it and that is necessary to produce (Pavitt 2005). The first consequence of this trend is that production processes and, more in general, the organisational design, constantly adapt in order to adjust to the new conditions. In some cases, organisations are also re-designed as modular as a consequence of products (or services) becoming modular.

Baldwin and Clark (1997) define modularity as the practice of designing systems from smaller subsystems that function together as a whole, but that can be designed independently. Modular systems have several characteristics and advantages in comparison to integrated systems, which are those systems where the sub-units work only when they are combined together. First, modular systems require interfaces or "rules of the game" that determine how modules work together. When a system is not "self-generating," a system architect plays the leading role in the creation of the interfaces and in delineating the standards defining inter-operability and compatibility of these interfaces. All the module makers need to be aware of the inter-operability rules for the system to work as a collection of modules: therefore, the knowledge composing the interfaces, which is referred to as *visible design rules*, is shared among the system's participants. The personal computer, for example, is a modular system; therefore components makers (such as monitor producers) do not have to worry about making their products compatible to all of the other peripherals that can be attached to a computer (mouse, keyboards, printers, etc.), as they only need to comply to the standard interface (e.g. Conventional Peripheral Component Interconnect), which is a set of rules shared by all.

On the other hand, the knowledge generated by module-makers that determine the functioning of a sub-system but does not affect its inter-operability, is kept private by its owner(s) and referred to as the *hidden design parameters* (Baldwin and Clark 1997). The second feature of a modular system is that the design, innovation and/or production can be outsourced to specialised module makers. Moreover, thanks to the existence of interfaces (and visible design rules), coordination between production units is achieved with minimal managerial efforts and costs (Brusoni and Prencipe 2001). Third, and most importantly, modular systems are assumed to be characterised by a faster innovation rate then equivalent integrated systems. This faster innovation rate at a system level is achieved thanks to the existence of parallel innovation efforts carried out by the module makers (Baldwin and Clark 1997). The existence of parallel local research efforts is also susceptible to improving the quality of innovation, because competing approaches attempt to solve the same problems (Nelson 1982). Going back to the example of the personal computer, this means that there is a pool of stakeholders focussing on (and competing for) improving hard drives and, at least to a large extent, this research process does not influence other attempts carried out by other stakeholder targeted at improving display technologies.

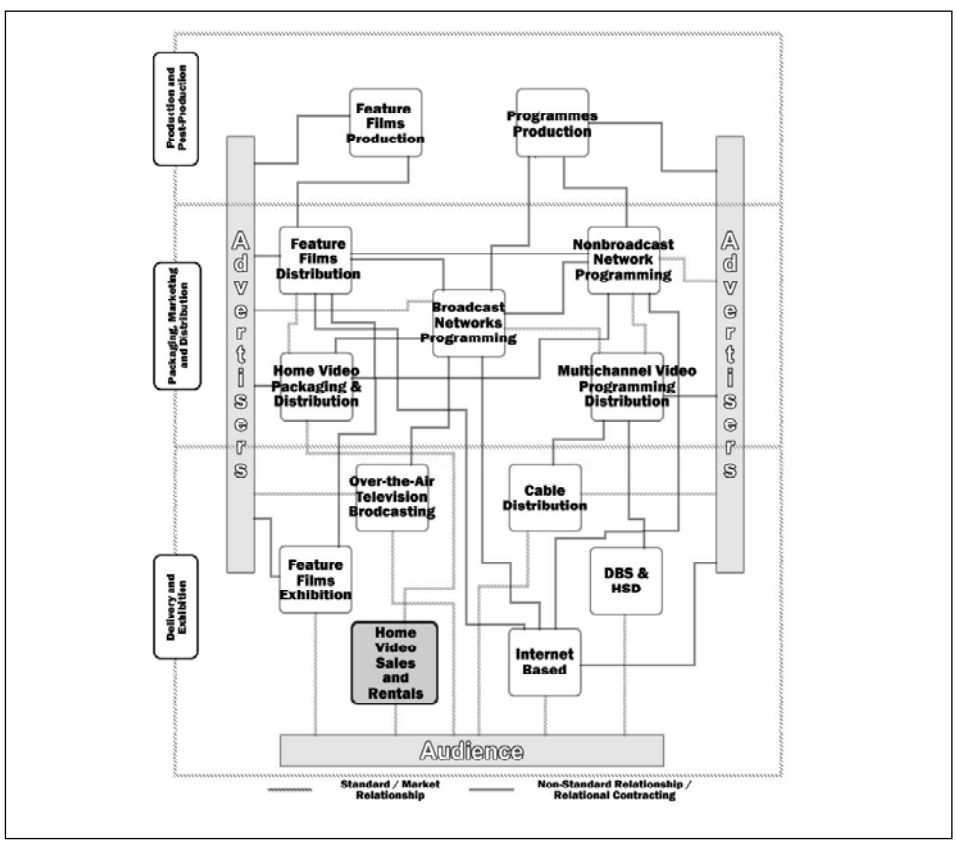
As explained above, complexity economics concepts can be useful to inform accounts of innovations in communication industries: the properties of these types of complex and modular systems can be used to explain, for example, how media industries' products and services adapt and benefit from innovations within their environment. As an illustration of this claim, recent changes in the US video tape and disk rental industry are presented with a short evolutionary account informed by complexity economics concepts. First of all, the video tape and disk rental industry can be considered as a part of a group of interdependent activities (i.e. *modules*) belonging to the audiovisual media service sector (i.e. its system-container). This sector includes three value-chain stages: (1) the production, (2) the distribution and marketing and (3) the exhibition of audiovisual media content (see figure 1). Over the years and as a result of the introduction of many innovations the knowledge embedded in the audiovisual media service sector has increased and this system has become more complex. The increased complexity of this system can be illustrated with the multiplication of activities: so if in the early stages (i.e. from the 1920s to the 1940s) the audiovisual media service sector was more integrated and film producers were also responsible for the distribution and exhibition of content in cinema theatres (see De Vany and Mc Millian 2004), nowadays and as a result of numerous innovations, the production of audiovisual media content is delivered to final users through a variety of different activities, including, for example, cinema theatres, broadcast and cable television channels and video tape and disk rental outlets. Consequently, the video tape and disk rental industry innovates independently within its own design space, but this process of innovation is influenced by the changes taking place at the system-container level (i.e. the audiovisual media service sector).

By the mid-1980s the main technical innovations and regulatory norms providing the basis for the future growth of the home video industry were already in place, but the video tape and disk rental industry only reached a mature stage by 1995, when almost 90 percent of all households with a television had one and they were renting a video nearly every week (Winston 1998). Two types of innovation have recently shaped this industry into its current form. The first was the diffusion of a new form of media distribution, the Digital Versatile Disk (DVD). The quality of this new "packaging" of audiovisual media content was superior to its predecessors and it was quickly adopted by the market. As a consequence, the video and disk rental industry benefited from the diffusion of this technical innovation that contributed to improve its services.

Secondly, new contractual agreements (or "rules of the game"/interfaces) between rental outlets and distributors were also responsible for the improvements to this service and the increase of revenue. According to the prior rules of the game, distributors provided video tape and disk rental outlets with pre-recorded VHS tapes of a new release at the wholesale price of around 60 to 70 dollars. After a period of generally five months in which the pre-recorded tapes could only be rented, distributors used to start selling pre-recorded tapes at a "sell-through re-pricing" of ten to fifteen dollars (Mortimer 2005).The main problem of this old system was that rental shops were exposed to a risk: over-stocking of pre-recorded tapes. Therefore, rental shops used to underestimate demand giving up opportunities to make extra business as they often found themselves stocked-out of new releases. As

the cost of producing pre-recorded cassettes and DVDs shrank, it made more sense to promote a new system based on revenue sharing. According to Dana and Spier (2001) the home video and DVD distributor that is credited with the introduction of this system is Rentrak. Under this new system, videos are purchased by rental and sales outlets for a price that ranges from zero up to eight dollars each and the rental revenue is typically shared as follows - the video retailer keeps 45 percent of the revenue, the movie studio gets 45 percent, and the remaining 10 percent goes to distributor (Dana and Spier 2001; Chiou 2006). The fixed cost of buying extra copies is reduced and so is the risk involved in the acquisition of large amounts of pre-recorded disks. Moreover, with the introduction of standard revenue-sharing agreements, distributors have extended the design space of the video and disk rental outlets. The latter, as a result of this change, are now freer to innovate and decide, for example, on the length of the rental window (see Mortimer 2005 and Chiou 2006), or on the timing and the quantity of new releases to go on sale. As the Federal Communication Comission (FCC) reports, the sales and rentals of DVDs have grown to account for 60 percent of entertainment companies' profits over the past eight years (FCC Media Bureau 2006), and, certainly, the diffusion of the revenue-sharing system is likely to have played a major role in this growth.

Figure 1: The Home Video Sales and Rentals as a Module of the Audiovisual Media Service Industry



Institutional Economics and the Neo-Schumpeterian Approach

The main focus of institutional economists is to investigate and demonstrate how specific groups of common habits are embedded in, and reinforced by, specific social institutions (Hodgson 1998). Processes of innovation are also part of these common habits investigated by institutional economists. In particular, they investigate how innovation is influenced by other routines and cultural and social aspects of institutions. Institutions are not simply organisations (such as corporations, banks, and universities) but also integrated and systematic social entities such as money, language and law. They involve the interaction of agents, with crucial information feedback, they sustain and are sustained by shared conceptions and expectations and, although they are neither immutable nor immortal, they have relatively durable, self-reinforcing, and persistent qualities. Furthermore, institutions incorporate values and processes of normative evaluation. In particular, they reinforce their own moral legitimation (Hodgson 1998, 179).

Neo-Schumpeterian writings also fall under the category of institutional economics; however, their main focus is the rationale, shape and length of long waves of economic development (also known as Kondratieff Waves or Cycles). These studies offer some assistance and provide a complement to the political economy of media and communications tradition (Mansell 2004). They are useful, for example, in order to understand the general, long term economic environment in which new communication technologies are introduced and the role of different sectors and industries within this environment. Therefore, according to neo-Schumpeterian theories, (here only briefly summarised) the "trigger element" of an upward and structural economic trend is a specific innovation (or a set of specific innovations), referred to as the key factor, which fulfils the following conditions: (1) presents low and rapidly falling relative costs; (2) has an unlimited availability of supply over long-term periods; (3) bears the potential of being used profitably in many products and production processes (Perez 1983; Freeman and Perez 1988).

Different industries or sectors play different roles within the general innovation trend or techno-economic paradigm; this role also depends on the ways that the benefit from the key factor. Perez (1983), for example, provides a classification of different sectors based on the roles and distinguishes between motive branches, which are responsible for the production of the key factor, and other inputs that are associated with it; carrier branches, which are activities developed by making intensive use of the key factor; and induced branches, which are the activities complementary to the carrier branches. This categorisation is applied to classify and understand the dynamics of the last four – and the currently unfolding fifth – Kondratieff Cycles or "economic revolutions." The first wave started in the 1780s, peaked around 1815 and then ended in 1848. The key factors identified for this wave were iron, raw cotton and coal, while the techno-economic paradigm was characterised by the water-powered mechanisation of industry. On the other hand, the fourth wave, which is the one completed most recently, started in 1941 and peaked around 1973; its techno-economic paradigm was characterised by the motorisation of transport, civil economy and war, while its key factors were oil, gas and synthetic materials (Freeman and Louçă 2001).

More interesting for the purpose of this paper and its audience of communication scholars, is the existence of a fifth Kondratieff Cycle, which is a long wave of economic development sustained by the succession of innovations taking place in various branches of the information sector. The key factors of the current wave are semi-conductors, and the techno-economic paradigm is explained by the diffusion of the products of carrier branches, such as the computer and telecommunication industries, and the large variety and diffusion of products and services by the induced branches, which include media content producers, distributors and exhibitors, and other businesses exploiting the existence of computer networks. Therefore, this fifth "economic revolution" represents the environment in which new digital communication technologies are evolving and testing their fitness; an environment that, although new and evolving, also present many features in common with the four preceding cycles.

For example, neo-Schumpeterian economists explain the economic dynamic of all of the long waves as follows: key factors are responsible for creating the conditions for new techno-economic paradigms. A new key factor gradually matures (i.e. the key factor is improved by incremental innovations, the number of applications and their diffusion increases) during the downswing of a Kondratieff Cycle, while the key factor and related products of the preceding wave loses momentum. In this period, investors start looking at the development of new technologies and they are more ready to take risks (Freeman and Perez 1988). At some stage, there is harmony between the techno-economic paradigm that has been maturing during the downswing of the previous Kondratieff Cycle and the socio-institutional climate (Perez 1983). It is in these conditions that investments are made so that the new paradigm is developed, fostering economic growth up to a new peak. During this period, there is a bandwagon effect and every productive unit, one after the other, tends to apply what becomes the "optimal form of productive organisation." A new international pattern of investment, trade and production is established. Society and institutions also adapt. New statistical quantifications are introduced to better understand the impacts of the new paradigm and the need for new and better tuned policies. The peak is a sort of economic frenzy while the new techno-economic paradigm produces big success stories (Perez 1983). The exhaustion of new product and process investment opportunities associated with the new technology and the consequent slowing down of the economic performance of carrier branches is what triggers the downswing. The capabilities of motive branches to maintain, or to reduce further, the relative cost advantage of the key factor are worn out. Various disequilibria manifest themselves in the various markets (labour, inputs, money, and equipment), as a result both of the contraction in the old dynamics and the uncertain market trends generated by the new investment patterns. More and more pressure is put on the central authority to find new means of stimulating and managing the economy. Furthermore, investments in new technologies become less risky and more logical as the power of the heuristics of the current/old paradigm has diminished (Perez 1983).

Media and communication industries convergence is an important subject of investigation in communication studies. According to Küng, Picard and Towse (2008), there are three main aspects of convergence that are investigated in the literature; a first approach focuses on computers and their increasing role as ver-

satile communication tools, while a second approach focuses on the rise of new networks and their capacity to offer different communication services. A third approach looks at the consequences of digitalisation on the organisation of the communication sector and the rise of information conglomerates that incorporate content (i.e. media), computing (i.e. information technology) and communication (i.e. telecoms and broadcast distribution) industries (Küng, Picard and Towse 2008). On the other hand, institutional economics and neo-Schumpeterian economic concepts provide an alternative viewpoint to understanding these trends as they can be used to sketch a parallel between digital-convergence and the "steam-powered mechanisation"-convergence of the first economic revolution.

Therefore, thanks to neo-Schumpeterian concepts, the convergence of communication/media activities can be explained as the consequence of two related innovation trends occurring within the more general context of the current long cycle. Information industries are complex and composed on many interdependent activities (or modules). Some of these activities emerged during the current techno-economic paradigm and they can be considered *induced branches*. Innovations in the semi-conductor, (other) hardware and software industries have transformed computers from office tools to powerful multimedia platforms, as computers' applications have expanded to include also the creation, distribution and exhibition of media content. Therefore, the industries that incorporate these new activities are "converging" because induced branches-activities, which have common roots and innovate as a consequence of the improvements in the semiconductor and computer industries, are multiplying.

However, convergence is not occurring purely because there are many new activities, largely "induced" by innovations in the leading industries of the current economic paradigm; activities within the communication sectors which existed before the beginning of the new paradigm are also changing. Moreover, innovation in these activities (as in many other) is a trial and error process, and efforts to innovate are carried out with a relative high degree of incertitude. Therefore, investing in the technologies responsible for the main success stories of the new techno-economic paradigm and, as a consequence, adapting to what is considered the optimal form of productive organisation, is the most likely outcome because it is also considered the safest one. Moreover, as Perez (1983) explains, the socio-institutional climate changes and favours the adoption of the technologies that are characterising the current economic paradigm: therefore, governments, for example, are likely to promote the use of products based on semi-conductor technologies and/or or of "computerised" services. As a consequence, it is safe to assume that many "old" activities within the communication sector converge because the current general business climate shape their preference for digital technologies as the basis for possible innovations.

Conclusion

This paper focussed on the potential for the integration of economic theories with communication studies. So far, it has not contemplated why this process can be potentially an interesting objective for communication scholars. The most obvious explanation is that economics is the academic discipline that plays the biggest role in shaping public policies and industrial trends. Clearly, this is also the case

in the field of communications: for example, in 1993 the FCC reviewed and further relaxed the rules limiting the concentration of media ownership and although the consequences of media concentration is certainly an extensively debated topic in media studies, the FCC's decision was supported by twelve studies which focused predominantly on the economic aspects of the issue, while virtually excluding other analytic perspectives (see Blevins and Brown 2006).[4]

Moreover, the neoclassical paradigm is the mainstream economic approach and much more influential than alternative approaches because it is "non problematic" given that is not critical (Mansell 2004). Also, the neoclassical approach occupies the centre and right of centre space in the political spectrum and it provides information, advice and policies that strengthen capitalism (Mosco 1996). Although its critics attach a political "colour" to this approach, mainstream economists defend its neutrality because it supposedly relies on mathematical rigor and scientific objectivity, even to the point of considering it unrelated to ethical considerations and moral concerns (Mosco 1996; McCloskey 2002). On the contrary, political economy of communication is indeed critical and committed to historical analysis, to understanding the broad social totality, to moral philosophy or the study of social value and of the good social order, and, finally, to social intervention or praxis (Mosco 1996).

However, in order to adopt mathematical models and to provide linear solutions, traditional economists have to simplify economic problems. Mathematical models and linear solutions, nonetheless, can only identify and explain partial trends (Solow 1985). Hence, one could argue that traditional economics cannot fulfil the task of explaining the communication sector's evolution and its growing complexity *without* the collaboration of other theoretical approaches. On the other hand, this task of understanding the complex evolution of the communication sector as some media, cultural economists and communication scholars suggest (e.g. Küng, Picard and Towse 2008; Flew 2007; United Nations 2008), should be undertaken by adopting multi-disciplinary theoretical frameworks. Therefore, alternative economic concepts and traditions like the ones illustrated in this paper, which are not "imperialist" and bear the potential for inclusion in multi-disciplinary frameworks, can be found useful for studying these complex trends. Moreover, many communication scholars might not be aware that a transformation process is evolving and changing the field of economic studies. The most recent form of this transformation process aims at breaking the almost exclusive presence of the neoclassical theories in teaching, university books and economic policy analysis and is now led by the post-autistic economic movement, which organise alternative economic conferences and seminars and publish alternative economic books and journals (see Fullbrook 2004).

Therefore, in order to attempt to increase their influence on public policies and industrial trends communications scholars should consider embracing, and contributing to, this pluralist economic revolution at least for two reasons: first, because studies informed by traditional economics analysis have created many exaggerated expectations about the economic effect of the generalised adoption of digital sources of information, therefore, there may now be greater receptivity to studies of innovation in media that are informed both by sociological and political economy approaches (Mansell 2004). Second, because instead of being confined

to academic debates, the limits of traditional economics for understanding real economics' trends are increasingly becoming known to a wider audience (e.g. *The Economist* 2009), therefore alternative economic approaches bear the potential for becoming more prominent in a near future.

Acknowledgements:

The author would like to thank the anonymous reviewer for the helpful comments. This study received financial support from the Irish Social Sciences Platform (ISSP).

Notes:

1. Traditional economics is the set of concepts and theories articulated in undergraduate and intermediate graduate-level textbooks. It also includes the concepts and theories that peer-reviewed surveys claim, or assume, that the field generally agrees on (Nelson and Winter 1982).

2. Writings about the "regulatory capture," on the contrary, investigate how vested interests affect state intervention in different forms. These papers can be considered as neoclassical economic writings, although not traditional economics as defined above. For a review of these papers, see Dal Bó (2006).

3. A stylistic innovation is "the sum of product and/ or process features, which: (a) Differentiate a (group of) producer(s) from other (groups of) producer(s), (b) are based on particular cognitive structures leading to the realization of new means and/or ends in the product and/or process and (c) Are perceived as novel and therefore mismatching the collective expectations of a particular certification environment." (Schweizer 2003: 28).

4. Unsurprisingly, economic analytical frameworks were also adopted at the expense of other perspectives in the process of trying to assess the effects of media ownership concentration on social spheres other than economic welfare (e.g. when attempting to assess the consequences of concentration on the diversity of media content) (Blevins and Brown, 2006).

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