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COMMUNICATION:
FROM ITS ORIGIN TO INTERNET

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Introduction.
From the origins to the changes in the digital age

Miquel de Moragas Spa

The book titled The evolution of communication tries to give the reader the key factors needed to understand communication within a context of fast-moving changes which affect strategic issues in our society: not only politics and culture, but also economy, education, everyday life and even entertainment. In order to carry out this analysis, the writers' approach follows an evolutionary perspective, searching for that which is permanent in human condition and that which shifts in accordance to historical changes.

The book has four main parts. Firstly, two chapters which explicitly deal with the evolution of communication: one written by W. Tecumseh focuses on the biological evolution of language, and Umberto Eco's which is titled "from internet to Gutemberg". This is followed by a text written by Joan Majó in which, after a brief description of the evolution of technologies in mankind since ancient times, he analyses in detail the consequnces that digitalization and the convergence of computing and telecommunications have for the entire communication system. These contributions are rounded off with a third part which considers the impact communication has had on two highly interesting issues from a social perspective: culture and education, with two chapters written by Miquel de Moragas and Urs Gasser, respectively. Finally, two chapters which focus more directly on politics, one is written by Ashley Beale and refers to the important changes that globalization has entailed for national cultures and the traditional forms of politics

in state-nations; the other is a chapter written by Peter Dahlgren on political participation in modern democracy and how it can be enhanced, but also manipulated, by using internet and the new media.

All of these authors reject adopting a deterministic position in the relationships between communication, technology and social benefits, but they also reject positions that ignore the drastic changes these relationships imply for the mentioned fields of culture, economy, politics and education, because communication is viewed as a cross-phenomenon that affects all these sectors.

Communication is a central factor in the current debate on democracy. In every chapter of this book, the same key question emerges: To what extent do the changes favour, enhance or damage participation and diversity or, in short, democracy?

The new forms of communication alone cannot solve the democratization of society because they have contradictory aspects. Along with world-scale concentration, we have witnessed the appearance of de-centralization and localization; new forms of control are confonted with new forms of connectivity and transparency.

That is why political commitment to democracy now needs an effort to understand the new logic of communication and mediation, their possibilities and obstacles, an indispensible step before we can make proposals to enhance participation, diversity and transperence, against exclusion, homogenization and authoritarian control in our societies.

The first chapter in this book, The biological evolution of language, written by W. Tecumseh Fitch, focuses on the appearance and biological evolution of language, the result of an evolutionary process which has taken place over millions of years.

From an evolutionary perspective, language is defined as a complex cognitive faculty which allows us to encode and express thoughts and experiences. The key question is: How did this fundamental human skill evolve?

It is true that some of these expressive abilities are not exclusively human, in fact, they are shared by other animals

such as chimpanzees. What do we have in common with them? In what way are we different from them?

The author proposes considering three semi-independent factors which have evolved to the point where they interact in a synergistic way in modern human beings: ability to signal and speak (pronouncing sounds), syntactic ability (arranging, setting hierarchies) and a semantical and pragmatical ability (recognizing and trying to correct other beings' ignorance). These three skills evolved in a different way, with stages during which some of them existed (ability to pronounce sounds) but others did not yet exist (syntactic skill). Research on language should be approached in evolutionary terms, from non-language to proto-languages, all the way to the current form of complete human language.

Reviewing Darwin's theories on this evolution, the author believes we need to look at "multiple factors" instead of focusing on one single factor as the key. Among these, he mentions the body and hand gestures as a proto-language, this evolution's starting point. The voice will be another factor in this evolutionary process.

The author goes into detail with regard to an aspect we believe is extremely interesting because it can also shed some light on current problems: considering music as a proto-language, which is also used by birds (and related to courtship and challenge). Imitating a beast of prey's grunt could have been the first step in the formation of a language.

This approach also allows us to establish certain links between language and technology: when and how did human beings reinforce their voices' capacity by using musical instruments (flutes, drums) thus vastly increasing their communication resources?

As for the vocal organs, they had become stronger and more perfect as voice got used, in a terribly long process before it could establish the setting of specific meanings, flexible to certain vocalizations.

Besides these factors —gestures, vocal sounds—, the singularity of human language implies the evolution of its cognitive capacities. The basic step in the road towards language was the general increase of intelligence in the lineage of hominids. Language is not just an instinct, but rather an "instinct to learn", and that would also allow us to explain the

enormous expressive capacity shown by the new generations who were born in the internet environment in their use of technologies.

The author ends the chapter by stressing that the current progress attained in the knowledge of humans and chimpanzees, the possibility of exploring comparative databases, allows scientists to go beyond speculation and propose rigorous hypotheses on the evolution of one of our species' most basic communicative features: the ability to acquire language.

Umberto Eco's chapter, titled From Internet to Gutenberg, analyses the impact that communication technologies have had on the narrative structures of messages, considering the role played by readers and their interaction with texts.

He focuses particularly on reading and books, analysing the pros and cons of the new hypertextual formats of computerized language. The function of texts is also compared to that of images throughout different stages of history. Thus, the current debate on multimedia and internet languages is set within its evolutionary context, indicating that the new phenomena have their origin in general aspects of human condition and the history of culture.

Without denying the advantages of being able to read online and "surf" through texts, Eco emphasizes the value of books. Books are provocative, they stimulate the thought of readers. He makes a distinction between "reference books" and "reading books". The reader always participates by interpreting in the latter, but he does so guided by the plots, the story lines, the deep structures of language which have been set by the author.

"Reading books" are irreplaceable. "Reference books", on the other hand, could be replaced by new computerized amd online formats. We shall be able to eliminate those shelves which are full of bulky dictionaries and encyclopaedias from our narrow houses with no regrets. To know that the big archives store some of these editions as a proof of the history of communication will be enough.

Computerized writing will not replace "reading books" because their contribution is not only to offer information, but to foster thought as we read: "After spending nearly 12 hours in

front of a computer screen —Eco says— my eyes are like two tennis balls, and I feel the need to sit comfortably on an armchair to read a newspaper, and maybe a good poem. I believe computers are spreading a new form of literacy, but they are incapable of satisfying all the intellectual needs they stimulate".

This in no way means to discredit the potential of hypertext: a computerized program can be more suitable than a book in order to teach genetics, for instance. The new ways of reading provided by hypertext liberate us from linear reading, they allow us to invetigate and, above all, to link topics, overcoming the segmentation which is typical of encyclopaedias.

The advent of new technological devices doesn't necessarily turn the previous ones into obsolete. It is true, for instance, that the car is faster than the bicycle, but cars have not turned bicycles into obsolete objects and technologies has made it possible to build lighter and safer bicycles. According to Eco, the notion of a new technology eliminating a previous one is far too simplistic. What occurs is more like a crossing of influences that drives us towards a more liberated society in which free creativity coexists with text interpretation. We cannot say that one thing has been replaced by the other; we have both things.

The visual galaxy has not replaced the Gutemberg galaxy (as McLuhan had predicted); there now exists a new form of coexistence between both galaxies in a multimedia horizon.

Another significant aspect in the process of transformation from Gutemberg to internet is the need to interpret changes in relation to their historical context and social reality. Thus, for instance, nomad peopes, given their nature, had to store their expression in sacred books, instead of permanent and hard images etched on stone in their temples. The cathedrals during the Middle Ages played the role of a kind of permanent and unchanging tv programme which was supposed to tell people all they needed to know as regards their daily life and their eternal redemption. Also during the Middle Ages there was a distinction between those who only had access to the images in the cathedrals and those who could actually read the manuscripts. Today that difference also exists between those who only watch television and those who are used to

reading "reading books" and use the compueter to select and edit information.

All these changes must be tackled from a critical perspective which focuses on education, allowing people to attain a new wisdom which will let them distinguish true sources from false ones, enabling them to select, eliminate, and choose from the vast quantity of available information.

Joan Majó's chapter titled Evolution of the communication technologies proposes a long historical perspective to interpret the current situation. He describes, firstly, the evolution of communication in human societies, identifying the consecutive breaks with the past that have been produced by technological changes throughout history. Subsequently, he analyses in detail the technological trends that have taken place in recent years, offering the keys to interpret the new logics of communication in the digital age. Finally, he puts forth some prudent hypotheses on the future of our system of communication, which is currently experiencing many changes. There are two main aspects in the evolution of the communication technologies: the ways of sending information between interlocutors, regardless of the place and time of the exchange, and the ways of storing the information, from the very first papyrus to the modern discs for digital storage.

Towards the end of the XIX Century, an speedy process began which involved transformations that multiply and diversify the systems of transmission and storage. New technologies which allow the broadcasting of the voice and sound through a cable (telephone) or through hertzian space (radio). New inventions enabled us to store information (records and magnetic tapes). However, these technologies are characterized by their heterogeneity, by their lack of convergence. Each sort of content has its own distinct and incompatible technological support (press, telephone, radio, photography, television). This is precisely the challenge that digitalization, which is characterized by the convergence of technological platforms, is striving to solve.

Thus, the fundamental change in communication takes place thanks to digitalization, which enables us to encode information into bits, dramatically increasing our ability to pass on and store information.

Digitalization is the base of other crucial factors in the new logics of modern communication, such as big memories (capable of storing great quantities of information), optic fibre (capable of multiplying transmission), broadband internet (capable of receiving and sending sounds, texts, data, graphs and images), flat screens (enabling new uses in the reception of information), digital cameras (enabling us to capture images more easily), the creation of a mixed and unified network of telecommunication (which enables local and global communication).

An especially significant convergence stands out in such a context: that which is produced between television and internet. Internet does not replace television, it enhances it, transforming some of its key aspects, such as the flexibilization of viewing times (tv on demand), the appearance of multimedia and interactive formats, or the reception of multiple screen formats. These changes will also affect the structure of bodies and tv channels in so far as the production of content becomes the core and critical point of the audiovisual industry, an industry which is now facing the risk of losing the quality of its programmes, all of this worsened by the current situation of crisis, with the media struggling to raise income from advertising and with public tv's budget cuts.

How can we predict what will happen in the future? As Umberto Eco also suggests in this book, two different ways of consuming audiovisual products will become popular: a passive style, following the channels' schedulling, and an active style, using tv on demand. Contents will be received primarily through internet, and this will call for regularory policies to guarantee free access to the networks, avoiding abuses of power resulting from the vertical concentration or the excessive market dominance, as Dahlgren also suggests in the book's final chapter.

As the possibilities increase connectivity and the number of channels, communication strategies will need to focus on reassessing the production of contents, in a much more participatory phase which will generate mixed forms, both professional and non-professional, with millions of consumers being able to produce, issue and exchange contents.

Majo's chapter finishes with some predictions that remind us about the need to open expectations regarding new

and bigger changes derived from the boost of connectivity between people and objects, between intelligent objects (which have identity sensors), with multiple applications in communication and everyday life. Hoping that these changes, by making inter-connection easier, will also favour transparency and democracy.

Urs Gasser's chapter, "New information technologies and the education of youth", deals with the "digital natives", those youngsters who were born after the 80's and whose schooling coincides with the worldwide introduction of internet, and their use of these technologies.

As a starting point, the author urges the reader to consider the contrast between the approach used for searching for information in a conventional library and the search of information online through Google when it comes to producing a research assignment for school, navigating amidst hyperlinks, exchanging information online with classmates or teachers.

Without ignoring the risks and contradictions that exist when using these technologies in training processes, the chapter emphasizes the positive aspects they may have in the edcational development of new generations, warning parents and children about the consequences of such innovations.

He highlights the fact that for these "digital natives" internet is not only a tool for searching for information, but also a way of establishing relationships, both expressive and knowledge related, with other people. Youngsters learn, they gather information and they express themselves, according to the new forms inspired by digitalization. The use of internet, social networks, instant messaging, entails exercises that could be invaluable for education in today's society of information, favouring creativity and the ability to inter-connect.

On the other hand, digital forms of communication tend to dissolve the old differences or dichotomies between formal learning and informal learning, bringing the practices of training and entertainment closer together. Digitalization enables us to learn while playing and to play through learning.

The chapter does not ignore the common worries that usually haunt parents and teacher regarding the intensive use of technologies, such as videogame addiction, a tendencie towards passive behaviour and obesity, the exposure of privacy,

cyber-abuse at school, or more conceptual issues such as the tendency to simplify or to be excessively brief when it comes to writing.

Among these fears, a current practice which affects many of today's students is highligthed: multi-tasking or task-switching. The use of smartphones and tablets (Ipads) within classrooms for going online, sending instant messages or even playing games, has become a nightmare for many teachers (also across universities) who witness their pupils' loss of concentration during the class.

Although he acknowledges these issues, the author proposes a positive take on the skills that can be acquired by youngsters who indulge in such practices if they know how to direct them towards preparing complex tasks which imply simultaneity, as in the case of aircraft pilots, who need to be aware of multiple actions in a coordinated manner.

These skills are also related to the demands of an training process which can adapt to the new economy of knowledge, though on this point the effects of the "digital gap", which divides the experiences of these native youngsters (who are future digital professionals) from the youngsters who live in countries that have a limited, or none at all, internet development.

The chapter also contributes with different guidelines as to how the educational institutions (schools) ought to adapt to the new information technologies. Replacing blackboards with computers and adapting pedagogical content to the new forms of communication are necessary changes, but they are not enough. The challenge lies in trying to create a new environment for learning (within and outside classrooms), understanding how the new logics of information and learning operate, in a world where the progressive erosion of borders between online and offline processes, between informal and formal learning. Schools and educational institutions ought to adapt to this paradigm shift.

At the end of the chapter, the author stresses that despite the fact that children are becoming self-taught and learn from their peers, parents and teachers will continue to have a crucial role to play in their training and, to that end, they should improve their own digital literacy, spending time sharing

experiences and working with their children in this new technological environment.

The chapter I wrote titled Communication, media and culture, analyses the relationship between communication and culture from the perspective of technological change, emphasizing the current convergence between these two important aspects of social life, which are becoming progressively inseparable.

Culture is defined in its broadest sense, which includes symbolic systems and, therefore, also includes the media and their different contents, culture being understood as much more than the field of arts and literature.

The evolution of the social debate ("apocalyptic intellectuals" versus "integrated intellectuals") on the nature and functions of culture in society, from the generalisation of mass culture or cultural industry all the way from the 40's and 50's to our present day, more focused on the subject of identities, diversity, multi-culture or cultural development is tackled in this chapter.

The convergence between communication and culture is also interpreted within the context of their respective public policies, especially in the case of the audiovisual field which has become one of the main cores of this convergence. Long after the MacBride report on the problems of modern communication was published in 1980 for UNESCO, communication policies are being reviewed within this new context, ackonwledged by UNESCO's approval of the 2005 Convention on the Protection and Promotion of Cultural Diversity.

The chapter deals with the new concepts that have been proposed by the studies on culture and political economy for the interpretation of culture, such as the ideas on intercultural flows, hybridization or the re-interpretation of culture in terms of production, distribution and consumption of goods, both related to the so-called creative industries and cultural industries which are more closely linked to the media.

The references to the relationship between communication and culture are rounded off with a reflection on the media, understood not only as producer or agents of cultural values but as broadcasters of their corresponding activities. It is true that in the digital age and with the resources that have been provided by internet, cultural institutions, artists

and writers now have at their disposal their own direct communication tools which do not depend on conventional media, but the media continue to exert the leadership when it comes to establishing a thematic agenda. In this sense –and agreeing with Dahlgren– I propose a critical view of the attention the media (especially tv) pay to culture, which is progressively more invaded by topics that border with the field of entertainment, such as information about celebrities, travel, adventures, gastronomy or fashion.

Sharing Joan Majó's opinion, I believe that digitalization and the spreading of internet affect key aspects of the cultural paradigm, establishing new convergences and shifting priorities. The production of contents (innovation and quality) becomes the axis of cultural development policies. This entails significant changes in cultural policies, which will need to focus more on the production of online contents (books, music, information, entertainment, training, files, new audiovisual formats) in order to satisfy the new forms of on-demand consumption.

All of this takes place in a new global and local stage which questions the traditional concepts of identity. The new global-local dialectic does not imply an alternative, but an addition. Local is not alien to global and viceversa: the network is global, but the contents have a local origin. To speak about identity does no longer mean to refer exclusively to one's own roots and territory, but (using them as a starting point) to build relationships, networks, flows and exchanges.

In the chapter titled From state media to world networks Ashley Beale analyses the impact that new communication technologies have had on the construction, and also de-construction, of both transnational and state/local cultural spaces.

With regard to state-nations, she believes that communication technologies have contributed to the erosion of the old homogeneous identity spaces, through their crossing with new networks which have multiplied transnational relationships. But this process, at the same time, has ensured the survival of local spaces and the emergence of new transnational dimensions. We therefore witness a restructuring process which is taking place on multiple levels, affecting both states and international hegemonies.

Ashley Beale argues that the construction of state-nations was inseparable of communication and cultural spaces. The media –press and, subsequently, radio and tv— played a crucial role in the building process of modern states. Each of them built and defended its own cultural and linguistic space. To build a unified nation also meant building a unified symbolic imagery. These unifying processes were always coupled with different forms of repression of local identities. Despite this, many local languages managed to survive.

The state-nations' centralizing strategies, especially in Europe, were reinforced with the appearance of big state tv corporations (BBC, RTF, RAI, TVE), when news bulletins started replacing newspapers as the main source of information and when entertainment programmes began to contribute to the creation of a new fictional universe and a national star system.

This centralizing process was also reinforced by the influence, wich should not be underestimated, of the state monopolies of communication and telecommunications infrastructures, such as the postal, telegraph and telephone services, all of which were big monopolies that were not privatized until the end of the XX century.

The first movements that transformed these homogeneous spaces through the broadcasting of programmes on satellite tv took place throughout the beginning of the 80s. This was followed by a quick process of deregulation and privatization of both radio-tv corporations and telecommunications. These processes were broadened and accelerated by the spreading of internet and social networks such as Twitter, Facebook o You Tube.

In the XXI century, a shift that diminished the influence of the states' old homogeneous cultural spaces occurred, favouring the new mixed spaces which had a more cosmopolitan nature.

While in previous historical periods a country's number of newspapers, radios and television sets could be viewed as an index of the state's success in its attempt to instil cultural homogeneity and national cohesion in the population, today the number of users of technological devices which imply transnational, translinguistic and transcultural communications can be viewed, conversely, as an index of cosmopolitanism. The

feelings of belonging to local, national or transnational groups are no longer exclusive.

In order to verify these hypotheses on cultural exchanges and the degree of cultural heterogeneity in the current world, significant data on the flow of communications, with detailed analysis of the book and film industries, is displayed within the chapter.

These figures prove the overwhelming dominance of English language, both as regards translations and published books, for they account for up to 35 per cent of all the books in the world and the number of translations from English into other languages is nearly ten times greater than that of the translations made from other languages into English. This, however, is no obstacle for the coexistence of a proliferation of publications in very different languages, which have an important cultural significance albeit having a lesser industrial impact.

Similar trends can be noticed in the case of the film industry, with the leading role of India as the main film producer, which even surpasses the United States in this field.

There is also significant data regarding the spreading of internet on a world scale. Great imbalances can be seen in this sense, with countries such as Sweden, with nearly 90%, and other developing countries which suffer the so-called "digital divide". But we can also stress the fact that there are countries that have managed to surpass the 50% barrier of users, among them Spain with an index which is close to 60%, which configures a new panorama of global connectivity, thus fostering cultural cosmopolitanism, which is currently also accessible for local cultures.

Peter Dahlgren's chapter on the media landscape and political participation analyzes, firstly, the problems of current democracy, which is characterised both by the search for new ways of participation and by the loss of credibility of political parties which are questioned due to their inability to adapt to globalization and to respond to the economical crisis which has evolved over the first decade of the XXI century. What effect or influence do the media have on this process? Or, more precisely, what impact could internet have on the emergence of

new ways of democratic participation and on the configuration of a public sphere?

Dahlgren avoids an excessively naive or propagandistic stance as regards the benefits of internet, and instead adopts an analytic approach that suggests both the positive aspects and the dangers or limits of these processes. On the one hand, he acknowledges that internet offers a favourable environment for creativity, citizen participation and the dissemination of decentralized information (blogosphere, social networks), but he also admits that these practices entail danger for democracy, insofar as they create "mini public spheres" which tend to isolate its members from the big discourse flow of political society.

Throughout the second part, he analyzes the panorama of the media, emphasizing the new web environmnet, taking into consideration the new borders —which are becoming progressively more fragile— between the traditional media and the new media. In the third part, he analyses the current situation of professional journalism, its transformations and weaknesses, and the emergence of the so-called participatory journalism. The last part of the chapter focuses on the potential effects of the digital transformation on the public sphere and on the evolution of democratic participation.

The existing relationship between politics and media has a double coordinate: on the one hand, the economical and political elites' use of the media and, on the other hand, the citizens' use, which is becoming progressively more extensive, of communication technologies for democratic purposes.

In his diagnosis of the current situation of the media, the author has considered three key factors: the proliferation of offers (and channels), the concentration on a global scale (with the big giants of global communication) and globalization which affects the cultural and communication industries.

These factors generate a new landscape that favours the information industries, welcoming market mechanisms and the progressive erosion of the public communication services.

Politicial journalism is being replaced by political communication, with the proliferation of public relations experts, media consultants, and advertising consultants who enter the scene in order to help the political actors and the economic elites to shape their communication strategies.

This tendency can only be mildly counterbalanced with the appearance of new forms of participatory journalism, in which non-professional citizens are involved in a journalistic production that strives to be more interactive, cooperative, diverse and inmediate, but fails to fully solve the issue of credibility.

The new media entail the diversification of actors and stages in the political field: political parties, professional journalism, governing bodies, they all now share prominence with civil society initiatives such as NGOs, civic forums and alternative social movements.

The issue of whether internet fosters participation or fails to do so cannot be solved with a precise answer. Research does not show that the network, by itself, has driven citizens to participate. However, we can state that internet will be able to "contribute" to dynamic processes which will transform society, its public sphere, on several levels: providing vast quantities of information, fostering decentralization and diversity, enabling communication and individual interaction, providing a communicative space to those who need it, redefining the premises, and the nature of civic compromise and political participation. As regards these aspects, the author believes it is justified to be moderately hopeful.

In the 7 following chapters, the reader will not only find the description of the communication system's main aspects in the current phase of digital transformation, but he will also find some of the key issues needed to interpret the new paradigm of communication and its effect on different aspects of society: everyday life, education, economy, politics and the culture of our time.

1
The Biological Evolution of Language

W. Tecumseh Fitch

Introduction. Darwin's theory of language evolution revisited

The capacity for language, more than anything else, is what makes us human: the unique power of language to represent and share unbounded thoughts is critical to all human societies, and has played a central role in the rise of our species in the last million years from a minor and peripheral member of the sub-Saharan African ecological community to the dominant species on the planet today. Language is a complex cognitive faculty that allows us to flexibly encode and express our thoughts and experiences via hierarchical structures (sentences) built up from arbitrary units (words). Despite intensive searching, it appears that no communication system of equivalent power exists elsewhere in the animal kingdom. The evolution of human language is thus one of the most significant and interesting evolutionary events that has occurred in the last 5-10 million years, and indeed during the entire history of life on Earth.

Despite its central importance, the study of language evolution was shunned for many years by both linguists and evolutionary biologists. Part of the reason for this was the sense of many that, because language doesn't fossilize, there can be no truly scientific study of the origins of this capacity. Another reason was a series of confusions between the evolution of the *capacity* for language (a question of human phylogeny) and the historical development of *languages* like

English or Catalan. While it is still common to see discussions of "language evolution" that are focussed on such historical processes, it is important to separate these two, quite different, phenomena conceptually. The latter process is often termed "glossogeny" to keep this interesting topic of study, e.g. the development of Italian, French, Spanish and Catalan from Latin, clearly separated from issues of biological evolution (Hurford, 1990). The reason is that, from a biological point of view, there has been no relevant change in the *biological* capacities of humans to learn language from Cicero's time to now, despite the massive changes that have occured in the phonology, lexicon and syntax of the Romance languages.

In this chapter I consider a question that reaches back much deeper in time: how did the human capacity to acquire and use language evolve? We know that this capacity has a genetic, biological basis that is shared across all human cultures: every normal child, from anywhere in the world, has the capacity to acquire any of the world's languages. We also know that this capacity differentiates us from our nearest cousins, the chimpanzees, because chimpanzees can neither acquire a human language, when raised in a human home (Yerkes and Yerkes, 1929; Hayes, 1951), nor do they possess a system with the expressive power of language in the wild (Goodall, 1986; Cheney and Seyfarth, 2007; Fitch, 2010). Therefore, some changes occurred, specific to the human lineage, since our divergence from chimpanzees around 6-7 million years ago. Although we do have abundant hominid fossils from the last 4 million years, and can document such factors as increasing brain size, increasingly sophisticated tool use, and the spread of our ancestors across the globe, none of this fossil evidence allows us to say when and why language evolved. Furthermore, despite the long-held hope that fossil evidence would at least allow us to date *speech* if not all of syntactic language, even these fossil indicators turn out to be extremely tenuous (Fitch, 2000; 2009). How then can we study the biological evolution of language?

1. Beyond the Monolith: Divide and Conquer

A serious problem in past approaches to the study of language evolution has been that language was treated as a monolithic entity: either you have it or you don't. From an evolutionary viewpoint, this amounts to the idea that language emerged, fully formed like Athena from Zeus's brow, at a particular point in time.

In contrast, the modern approach to language evolution is based on the key idea of analyzing language into its component parts, and treating the evolution of each of these parts as an independent problem. Of course, the notion that language has different, semi-independent components is nothing new: this is why there are linguistic subdisciplines like phonetics, phonology, syntax and semantics. However, from a biological perspective it is not clear that these are the "natural", biologically meaningful components of the human language capacity. Rather, we can use comparisons of humans with chimpanzees and other animals to determine which of the various abilities underlying language are shared with other species.

Such comparisons reveal (Hauser *et al.*, 2002; Fitch, 2010) a wide variety of abilities that are shared with other animals, and at least three major components of human language that are not shared with chimpanzees, and therefore evolved in the last ten million years:

1. **Signalling** and Speech: Chimpanzees lack a capacity to imitate complex sounds heard in their environment, either spoken or sung;
2. **Syntax** and Structure: Nonhuman primate vocalizations, including those of chimpanzees lack a complex hierarchical structure;
3. **Semantics** & Pragmatics: Even trained chimpanzees provided with means to communicate do not have the desire to share information and attention with others, nor do they recognize and attempt to correct ignorance in others.

We have good reasons to believe that these components are biologically meaningful, because the first (vocal imitation) has evolved multiple times in other, non-primate, lineages. Also we

see hints of more complex hierarchical structures in complex learned songs of birds or whales, suggesting that some form of proto-syntax can evolve independent of semantics. Finally, the biological basis for semantics, which is closely tied to Theory of Mind, can be sharply impaired in some humans (e.g. those suffering from autism-spectrum disorder) who are otherwise capable of normal speech and syntax (Baron-Cohen, 1995; Happé, 1995; Frith, 2001).

Thus, the comparative and clinical data allow us to fractionate language into at least three semi-independent components, which interact synergistically in modern humans but rest upon different neural bases, and might have had separate evolutionary histories.

2. The Notion of "Protolanguage"

We can now ask, when did these three independent mechanisms evolve? Unless all three appeared simultaneously, which seems very unlikely, it is clear that there was a period during human evolution where some aspects of language (e.g. speech) were present, while others (e.g. complex syntax) were not. Such a hypothetical system, which in retrospect was a step towards modern language, can be termed a "protolanguage" (Hewes, 1973; Bickerton, 1990; Fitch, 2010).

The study of language evolution can thus be re-conceptualized in terms of an evolutionary path from no language, to one or more protolanguages, to the final modern form of full human language. The job of theorists is then to construct hypothetical protolanguages that can make sense of this transition. Because evolution does not have foresight, a protolanguage would have to be a system that was useful in its own right. Furthermore an adequate model should specify how transitions occurred from one state to the next, and why such a transition would be favoured evolutionarily. All of these factors can be constrained both by what we know of living humans and animals, and whatever constraints are imposed by the fossil record. Finally, we can seek corroborative evidence about ease of evolution and selective forces by examining the parallel or convergent evolution, in distantly related species, of similar traits. Together, these factors make constructing a model of

protolanguage that is consistent with all that is known quite challenging.

3. Gestural Protolanguage

One of the oldest ideas about an intermediate stage of language evolution, and the first to be explicitly termed "protolanguage", is that the initial stages of language evolution occurred in the gestural domain. Rather than using the voice to communicate via learned, arbitrary spoken words, gestural protolanguage models suggest that some proto-linguistic hominin species communicated using hand and body gestures, perceived visually. While this hypothesis was already suggested by Condillac in 1747 (Condillac, 1971 (1747)), it was first voiced in its modern form by anthropologist Gordon Hewes, who also introduced the term "protolanguage" in its modern sense (Hewes, 1973). This model has been adopted and elaborated in various ways by numerous modern writers (e.g., Armstrong *et al.*, 1995; Corballis, 2002; Arbib, 2005a; Tomasello and Call, 2007)

Hewes provided several good reasons to believe that gesture might be a useful starting point for language evolution. First it was clear then, and even more so today, that apes and other primates are much more flexible in their use of gesture than of voice. Apes gesture frequently in the wild, and do so intentionally, attending to others' states of attention (Call and Tomasello, 2007). apes exposed to sign language can master many of the hand shapes and movements of this manual system, showing vastly more flexibility than in their vocalizations (Gardner and Gardner, 1969). Second, humans around the world gesture pervasively, as a part of normal spoken communication (McNeill, 1992; 2000).These considerations show that gestural communication was, and still is, an important component of linguistic communication. Third and finally, it is now well-known that signed languages of the deaf are full languages, capable of all the richness of expression of spoken language (Stokoe, 1960; Klima and Bellugi, 1979; Petitto and Marentette, 1991; Emmorey, 2002).

It is this final fact that also poses the biggest problem for theories of gestural protolanguage. For, "if language began as

gesture, why did it not stay that way, especially if, as the deaf have demonstrated to us, it is perfectly possible to have a fully-fledged language that is not spoken?" (Kendon, 1991). In other words, if syntax and semantics evolved in humans in the context of sign language, why was there a complete shift, later in our evolutionary history, to the spoken domain? Although it is easy enough to come up with advantages of speech over sign (you can speak with your hands full, you can communicate in darkness) there are comparable advantages of sign over speech (you can sign with your mouth full, during eating, you can communicate silently, you can communicate in noisy environments). It is thus difficult to see why, if humans evolved language in the gestural domain, our species made such a full transition to spoken language later on.

This brings us to a second hypothesis about protolanguage, the notion of a musical protolanguage. This is a model which has received comparatively little attention until the last few years (e.g., Richman, 1993; Brown, 2000; Mithen, 2005; Fitch, 2006), a neglect made all the more surprising by the fact that it originated with Darwin and thus was the very first model of language evolution to be framed in the context of modern evolutionary thought.

4. Darwin's "Musical Protolanguage" Model[1]

Darwin's "Origin of Species" (Darwin, 1859) made little mention of human evolution. This initial avoidance of human evolution was no oversight, but rather a carefully calculated move: Darwin was well aware of the widespread resistance his theory would meet from scientists, clergymen, and the lay public, and mention of human evolution might have generated insuperable opposition. But Darwin's many opponents quickly seized on the

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[1] This part of the current chapter was initially published online on Darwin's 200th birthday in the year of the 150th anniversary of the "Origin of Species", (12 Feb 2009) at:
http://languagelog.ldc.upenn.edu/nll/?p=1136

human mind, and language in particular, as a potent weapon in the battle against Darwin's new way of thinking. Alfred Wallace, whose independent discovery of the principle of natural selection spurred Darwin into finally publishing his long-developing "outline" of the theory in 1859, didn't help by arguing that natural selection was unable to explain the origins of the human mind. Although Wallace had reservations about all evolutionary approaches to the mind, human language provided the most powerful argument, due to the respectable position of linguistics and philology in Victorian science.

Darwin's most formidable foe on the linguistic front was Friederich Max Müller, professor of linguistics at Oxford University, a very well-known and well-respected scholar (Stam, 1976). In his "Lectures on the science of language," delivered at the Royal Institution of Great Britain in 1861, and rapidly published thereafter (Müller, 1861), Müller launched a full frontal attack on Darwin and Darwinism, using his credentials in the "science of language" as a powerful bludgeon. Müller's position was uncomplicated: "language is the Rubicon which divides man from beast, and no animal will ever cross it... the science of language will yet enable us to withstand the extreme theories of the Darwinians, and to draw a hard and fast line between man and brute." For Müller, "Language" was the key feature distinguishing humans from all animals. Müller's arguments were seen by many as convincing: his student Noiré dubbed him "the Darwin of the mind" and considered Müller to be "the only equal, not to say superior, antagonist, who has entered the arena against Darwin" (p. 73, Noiré, 1917). Müller's argument about the unbridgeable, qualitative difference between human language and all forms of animal communication, combined with Wallace's opinions, provided arguments that Darwin by necessity took very seriously.

Thus, when Darwin finally broached the subject of human evolution in 1871, in his second great book "The Descent of Man and Selection in Relation to Sex," the need to provide a credible explanation of language evolution was a central concern (Darwin, 1871). Darwin rose to the challenge: his "musical protolanguage" model represents a powerful marriage of comparative data, evolutionary insight, and a biological perspective on language. Darwin's view of language was ahead of its time, and his model and arguments remain surprisingly

relevant to contemporary debates. He clearly adopted a "multicomponent" view of language, one that recognized the necessity of several distinct mechanisms to produce the complex product that we now call language, rather than privileging any one factor as the single "key" to Language in a monolithic sense. Among these several components, he presciently recognized the necessity for complex vocal learning, and recognized that this biological capacity, while unusual among mammals, is shared with many birds. The importance of vocal learning has often been forgotten, but also frequently reaffirmed by later scholars (Marler, 1976; Nottebohm, 1976; Janik and Slater, 1997; Fitch, 2000; Egnor and Hauser, 2004).

Darwin also adopted an empirical, data-driven approach to the problem at hand, exploiting what Botha has termed "windows" into language evolution (see Botha, Chp N). In particular, Darwin exploited a wide comparative database, exploiting not just his knowledge of nonhuman primate behaviour, but also insights from many other vertebrates. Finally, and most characteristically, he resisted any special pleading about human evolution. He intended his model of human evolution to fit within, and remain consistent with, a broader theory of evolution that applies to beetles, flowers and birds. Unlike Wallace, who remained a human exceptionalist to his death (Wallace, 1905), Darwin aimed to uncover general principles, like sexual selection and shifts of function, to provide explanations of unusual or unique human traits. While gradualistic, his model does not assume any simple continuity of function between nonhuman primate calls and language, and he clearly recognized the uniqueness of language in our species. In many ways, then, Darwin's model of language evolution finds a natural place in the landscape of contemporary debate concerning language evolution, and it is surprising that his model has received relatively little detailed consideration in the modern literature (for exceptions see Donald, 1991; Fitch, 2006).

In this chapter, I aim to redress this neglect by considering Darwin's model of language evolution in detail. After discussing Darwin's main points and arguments, I will briefly review additional data supporting Darwin's model that has appeared since his death. I will also discuss the issue of meaning, about which Darwin had too little to say, but which

can be resolved by the addition of a hypothesis due to (Jespersen, 1922). My conclusion is that, suitably modified in the light of contemporary understanding, Darwin's model of language evolution, based on a "protolanguage" more musical than linguistic, provides one of the most convincing frameworks available for understanding language evolution. The present volume provides an appropriate place to discuss Darwin's model, given the heavy reliance of both on comparative data concerning birdsong. The timing of my writing, on the 150th anniversary of the Origin, and the 200th of Darwin's birth, is also appropriate for a revival of interest in Darwin's compelling and well-supported hypothesis.

5. Language as an "Instinct to Learn"

Chapter Two of the *Descent of Man*, entitled "Comparison of the mental powers of man and the lower animals" is one of the most remarkable in the entire Darwinian corpus, noteworthy for its concision and its breadth of argument, in considering the evolution of the human mind. The first half of the chapter lays the groundwork of modern research in comparative cognition, arguing that animals have emotions, attention, memory as well as many other mental traits in common with humans. However, Darwin's opponents, notably Müller, had already ceded the point that animals have memory, experience emotions, and so on. Language was the key issue, and one can imagine considerable anticipation of both pro- and anti-Darwinian readers as they turned to the section simply titled "Language".

In ten densely-argued pages, Darwin considers some theoretical preliminaries, and then lays out his theory of language evolution. The first stage involved a general increase in intelligence and complex mental abilities, and the second involves a sexually-selected attainment of the specific capacity for complex vocal control: singing. The third stage was the addition of meaning to the "songs" of the second stage, which was both driven by, and in turn fueled, further increases in intelligence.

Theoretically, Darwin makes a number of important observations. First, he recognizes the crucial distinction between

the language *faculty* (the biological capacity which enables humans to acquire language) and particular languages (like Latin or English). The former capacity, which Darwin refers to as "an instinctive tendency to acquire an art" (p 56), is shared by all members of the human species. Darwin neatly bypasses the unproductive nature/nurture debate that has consumed so much scholarly energy by observing that language "is not a true instinct, as every language has to be learnt. It differs, however, from all ordinary arts, for man has an instinctive tendency to speak, as we see in the babble of our young children" (p 55). As ethologist Peter Marler has put it, language is not an instinct, but an "instinct to learn" whose expression entails that both biological and environmental preconditions be fulfilled. It is this "instinct to learn" for which an biological, evolutionary explanation must be sought: a thoroughly modern perspective.

Second, although he was well-aware of the peculiarities of the human vocal tract, Darwin argues that the human capacity for language must be sought in the brain, rather than the peripheral vocal tract. He acknowledges that "articulate speech" (by which he means vocalization augmented by controlled movement of the lips and tongue, p. 59) is "peculiar to man", but he denies that this mere power of articulation suffices to distinguish human language "for as every one knows, parrots can talk." Instead, Darwin states that it is not speech, but humans' "large power of connecting definite sounds with definite ideas" that is definitive of language, and that this capacity "obviously depends on the development of the mental faculties" (p. 54). By locating the language capacity in the human brain, Darwin's viewpoint is again thoroughly modern.

Finally, Darwin recognized the relevance to language evolution of birdsong, which he considered the "nearest analogy to language". Like humans, birds have fully instinctive calls, and an instinct to sing. But the songs themselves are learned. He recognized the parallel between infant babbling and songbird "subsong", and recognized the key fact that *cultural* transmission ensures the formation of regional dialects in both birdsong and speech. Finally, he recognizes that physiology is not enough for learned song: crows have a syrinx as complex as a nightingale's but use it only in unmusical croaking. All of these parallels have been amply confirmed, and further

explored, by modern researchers (Marler, 1970; Nottebohm, 1972; 1975; Doupe and Kuhl, 1999).

6. Darwin's "Musical Protolanguage" Hypothesis

Darwin's model of the phylogenesis of the language faculty, like most models today, posits that different aspects of language were acquired sequentially, in a particular order, and under the influence of distinguishable selection pressures. The hypothetical systems characterized by each addition can be termed "protolanguages", as discussed above. Darwin's first hypothetical stage in the procession from an ape-like ancestor to modern humans was a greater development of proto-human cognition: "The mental powers in some early progenitor of man must have been more highly developed than in any existing ape, before even the most imperfect form of speech could have come into use" (p 57). He elsewhere suggests that both social and technological factors may have driven this increase in cognitive power.

Next, Darwin outlines the crucial second step: what I have dubbed "musical protolanguage" (Fitch, 2006). Having noted multiple similarities with birdsong, he argues that the evolution of a key aspect of spoken language, vocal imitation, was driven by sexual selection, and used largely "in producing true musical cadences, that is in singing". He suggests that this musical proto-language would have been used in both courtship and territoriality (as a "challenge to rivals"), as well as in the expression of emotions like love, jealousy, and triumph. Darwin concludes "from a widely-spread analogy" (amply documented with comparative data later in the book) that sexual selection played a crucial role driving this stage of language evolution, in particular suggesting that the capacity to imitate vocally evolved analogously in humans and songbirds.

The crucial remaining question is how emotionally-expressive musical proto-language made the transition to true meaningful language —how, in Humboldt's words, humans became "a singing creature, only associating thoughts with the tones" (p. 76, von Humboldt, 1836). This leap, from non-propositional song to propositionally-meaningful speech, remains the greatest explanatory challenge for all musical

protolanguage theories (cf. Mithen, 2005). Darwin, citing the previous writings of Müller and (Farrar, 1870), suggests that articulate language "owes its origins to the imitation and modification, aided by signs and gestures, of various natural sounds, the voices of other animals, and man's own instinctive cries". Darwin thus embraces all three of the major leading theories of word origins of his contemporaries (cf. Fitch, 2010). Once proto-humans had the capacity to imitate vocally, and to combine such signals with meanings, virtually any source of word forms and meanings would suffice, including onomatopoeia (an imitated roar for "lion", or "whoosh" for wind), and controlled imitation of human emotional vocalizations (mock laughter for "play" or "happiness"). The attachment of specific and flexible meanings to vocalizations required only that "some unusually wise ape-like animal should have thought of imitating the growl of a beast of prey ... And this would have been a first step in the formation of a language".

Darwin does not suggest that the evolutionary process would stop with the initial acquisition of meaning. For "as the voice was used more and more, the vocal organs would have been strengthened and perfected". Additionally, language would have "reacted on the mind by enabling and encouraging it to carry on long trains of thought" which "can no more be carried on without the aid of words, whether spoken or silent, than a long calculation without the use of figures or algebra". Thus began the interactive evolutionary spiral that led to modern human language, and human intelligence, today.

7. Signalling Modality: Vocalization or Gesture?

Darwin also explicitly acknowledged the role of gesture in conveying meaning, echoing Condillac's earlier arguments (Condillac, 1971 (1747)) and presaging contemporary discussions (Hewes, 1973; Stokoe, 1974; Corballis, 2003; Arbib, 2005a; Tomasello and Call, 2007). Darwin was aware of the power of signed language: he reminds us that using his fingers "a person with practice can report to a deaf man every word of a speech rapidly delivered at a public meeting" (p 58). He also acknowledged the value of gesture in conveying

meaning, and allowed that vocal communication would have been "aided by signs and gestures" (p. 56). Nevertheless, he argues against gestural theorists, because the pre-existence in all mammals of "vocal organs, constructed on the same general plan as ours" would lead any further development of communication to target the vocal organs rather than the fingers.

Darwin clearly believes that the power of speech is neural, not peripheral, citing the early aphasia literature as a demonstration of "the intimate connection between the brain, as it is now developed in us, and the faculty of speech". Comparing the vocal organs and brain, he concludes "that the development of the brain has no doubt been far more important". And although he uses a continuity argument to support the early and sustained role of speech, he firmly acknowledges the abrupt modern *discontinuity* in the linguistic system that has thus evolved. Thus, like many other insightful commentators (e.g., Hockett and Ascher, 1964; Donald, 1991), Darwin recognized that posing phylogenetic continuity and modern discontinuity as in any way opposed is to create a false dichotomy. The tree-like nature of phylogeny guarantees that both are core parts of the evolutionary process.

8. Darwin Redux: Modern Comparative Data

Summarizing, Darwin suggested that the first step on the road to human language was a general increase in intelligence in the hominid lineage. In a typically pluralistic fashion, he recognized both "social intelligence" ("Machiavellian intelligence" in the modern trope (Byrne and Whiten, 1988)) and technological/ecological intelligence (e.g. for tool use) as playing important selective roles. Given our modern understanding of hominid evolution, this first stage might be provisionally linked to the genus *Australopithecus* or perhaps early *Homo* (e.g. *Homo habilis*).

The second stage is the least intuitive: that before vocalizations were used meaningfully they were used, so to speak, aesthetically, to fulfil many of the same functions that modern humans use music today (courtship, bonding, territorial advertisement and defense, competitive displays, etc.). This

idea that complex vocalizations (and thus some aspects of phonology and syntax) might have preceded the ability of speech to convey propositions and distinct meanings is the most challenging aspect of Darwin's model. But Darwin uses the comparative database, and particularly detailed analogy between learned bird song and human song and speech, to show that this step is not just plausible but well-documented: it has occurred in many other species. Indeed, modern data shows that vocal learning, without propositional meaning, has evolved independently in *at least* three other clades of mammals (cetaceans, pinnipeds and bats) and three clades of birds (parrots, hummingbirds and oscine songbirds) (Janik and Slater, 1997; Jarvis, 2004). Such convergent evolution, or repeated independent evolutionary developments of a comparable ability, provides our strongest empirical basis for estimating the likelihood of a particular type of evolutionary event (Harvey and Pagel, 1991). Many of the chapters in this book affirm, and extend, the observations of parallels between language learning and birdsong that Darwin offered in 1871. Thus, whether intuitive or not, Darwin's focus on, and hypothesis for, the evolution of vocal learning is consistent with a wealth of evolutionary and comparative data.

9. Difficulties with Darwin's Model: Evolving Phrasal Semantics

> *"How did man become, as Humboldt somewhere defined him, 'a singing creature, only associating thoughts with the tones'?"* Otto Jespersen 1922 (p. 437)

Despite its many virtues, there remain some important problems with Darwin's model that have impeded its acceptance today. The first and most important is his explanation of the addition of meaning. Darwin's explanation, as typical for his day, was concerned only with *word meanings* (what today would be termed "lexical semantics"). But from the viewpoint of modern linguistics, his model seems wholly inadequate to deal with large swaths of semantics, particularly those aspects tied in with the interpretation of whole phrases and sentences ("phrasal semantics"). Modern formal semantics has developed

rigorous models of this aspect of linguistic meaning (Montague, 1974; Dowty *et al.*, 1981; Guttenplan, 1986; Portner, 2005), and it is far more complex and difficult to explain than lexical semantics. Although one can hardly blame Darwin for not foreseeing these relatively recent developments in linguistics, they nonetheless raise substantial difficulties for his model. For much of the syntactic "glue" which binds sentences together into large, meaningful wholes (function words, inflection, bound morphemes, word order, and a host of others) cannot be understood as resulting from onamatopoeia or imitation of emotional expressions. Nor can they be readily understood as "inventions" of some uniquely intelligent individual: all evidence suggests that these indispensable linguistic tools develop reliably in individuals of normal intelligence (Bickerton, 1981; Mühlhäusler, 1997; Mufwene, 2001; Kegl, 2002; Senghas *et al.*, 2005). This key aspect of language thus seems to have a biological basis. Darwin does recognize the phenomenon today called "grammaticalization": he states that "conjugations, declensions, &c., originally existed as distinct words, since joined together" (p 61). But he offers no model for the origin of these distinct words, and it is hard to see how onamotopoeia or similar processes could have generated this original syntactic and semantic "glue". Thus, complex phrasal semantics remains unexplained by Darwin's model.

However, this oversight was remedied long ago by the linguist Otto Jespersen (Jespersen, 1922). Jespersen's basic insight involves recognizing the link, in humans, between musical and linguistic phrases, and working conceptually backward from there. Jespersen suggested a form of protolanguage in which, initially, whole propositional meanings attached to entire sung phrases, but where there was no consistent link between the individual *conceptual* components of the meaning, and component parts of the musical phrases (syllables and notes). Thus, there were no "words" as we now understand them. From this "holistic" starting point, Jespersen argued that a cognitive process of analysis started, which slowly isolated individual chunks of the musical phrase (syllables, or multi-syllabic "phraselets" —what today we call "words"—) and associated them with individual components of the meaning (e.g. nouns, verbs and adjectives, whose precursors were

already present in the conceptual systems of our pre-linguistic ancestors).

Jespersen's hypothesis of a "holistic protolanguage" has recently been rediscovered and championed by linguist Alison Wray (Wray, 1998; 2000) and neuroscientist Michael Arbib (Arbib, 2005a). Both cite considerable additional evidence supporting this "analytic" model, including data from modern adult language, child language acquisition, and cognitive neuroscience. Supporters of the more intuitive "synthetic" model of protolanguage, in which words evolved first followed by syntactic operations for combining them (e.g., Bickerton, 1990), have subjected holistic models to extensive criticisms (Bickerton, 2007; Tallerman, 2007; 2008). However, I argue that most of these critiques miss their mark if the notion of a musical protolanguage is accepted as a starting point (cf. Fitch, 2010). Jespersen/Wray's model of holistic protolanguage thus dovetails nicely with the musical protolanguage hypothesis, in ways that I believe resolve many, if not all, of these criticisms (cf. Mithen, 2005; Fitch, 2006).

A second problem with Darwin's model remains unresolved at present: his focus on sexual selection as the force driving the evolution of musical protolanguage. Appearing as it did as a few pages of an extensive tome introducing and then extensively documenting the very idea of sexual selection, this aspect of Darwin's theory has the virtue of explaining a core aspect of human evolution using a broad principle abundantly demonstrated in the evolution of other species. As throughout his work, Darwin eschewed "special pleading" for our own species. The central difficulty for this beautiful hypothesis is posed by two ugly facts about modern human language: it is equally developed in males and females, and is expressed very early in ontogeny, essentially at birth (Fitch, 2005a). These aspects of language differentiate it sharply from most sexually-selected traits, which are strongly biased to develop in the more competitive sex (typically males), and only at sexual maturity. If anything, human females have superior language skills when compared to men (Maccoby and Jacklin, 1974; Kimura, 1983; Henton, 1992), and language is remarkable in its very early development, with at least some early tuning to phonology already occurring *in utero* before birth (DeCasper and Fifer, 1980; Mehler *et al.*, 1988; Spence and Freeman, 1996).

There are several potential answers to the difficulty that these facts pose: one is to argue that during the musical protolanguage stage, sexual selection was the driving force, and song was (as in most bird species) expressed mainly in males at sexual maturity. Then, at a later stage (presumably during the evolution of meaningful language) some other selective force kicked in, so that language became equally (or better) expressed in females, and was pushed to develop early. A candidate selective force is kin communication: that selection for information transmission between parents and their offspring, or more generally between adults and their younger kin. I have suggested that kin selection drove this second stage of the evolution of propositional semantic content (Fitch, 2004; 2007). For an exploration and critique of this idea, see (Zawidzki, 2006). This kin-selection scenario neatly explains the early ontogenetic appearance of language in infants (the earlier offspring begin absorbing their elders' knowledge, the better), and its bias towards females (who are primary caregivers in all hominoids). The continued presence of meaningful speech in males is easily explained by the dual facts that immature males must also learn, and that, unusually in humans, adult males play an important role in child rearing (whether the father, or male siblings of the mother, is irrelevant to this fact). Finally, this kin-selection model has the virtue of explaining why language evolved in humans and *not* in other "musical" lineages. Humans combine an extended childhood, with ample time to acquire knowledge, with very small reproductive output. The fact that ape babies are born singly, and rarely, conspire to make the survival of each individual hominid infant a crucial component of reproductive success in the great ape lineage (cf. Hrdy, 1999; 2004; Fitch, 2007).

An alternative possibility is that sexual selection was, and remains, an important driving force in human cognitive evolution, including language (Miller, 2001), but that human pair-bonding has "changed the rules" in significant ways, so that both sexes are choosy, and both compete for high-quality mates. Some comparative data can be cited in support of this second option. Recent data shows that female bird song is not so uncommon as thought by Darwin, who considered female song to be a simple aberration (Ritchison, 1986; Langmore, 2000; Riebel, 2003). There is some evidence suggesting that

sexual selection can indeed drive female bird song, though it seems clear that female song is a secondary derivation of male song in most lineages (Langmore, 1996). While these observations provide some support for the idea that the dual-sex expression of human language could result from sexual selection, it is important to recognize that female song still appears to be numerically speaking exceptional and that *any* model based on sexual selection will have difficulty explaining the extremely early development, and productive use, of language in human infants.

A final possibility is that sexual selection *never* played a role in the evolution of music or of language. The popular notion that music evolved for courtship (Miller, 2000; 2001) stands on a surprisingly weak empirical footing compared to a less obvious, but better-documented function of music: mother-infant communication (Trainor, 1996; Trehub, 2003a; b). Mothers sing to their infants all over the world, even those who claim to be unable to sing (Street *et al.*, 2003), and infants both *prefer* song to speech, and *respond* to song in manifestly adaptive ways (e.g. engaging with and getting excited by play songs, and being lulled to sleep by lullabies (Trehub and Trainor, 1998). These observations suggest that music originally functioned in a childcare context, as it continues to do today. By this model, the use of music in bonding among adults is simply a side-effect of this central function, and its occasional use in courtship is a red herring (Trehub and Trainor, 1998; Dissanayake, 2000; Falk, 2004). This final possibility is clearly compatible with the kin-selection arguments advanced above, but here there would be no intervening stage of language evolution in which sexual selection ever played a dominating role. Even Darwin was occasionally wrong.

10. Terminological Details: Musical or Prosodic Protolanguage?

A final, less crucial difficulty with Darwin's model is terminological. Darwin himself seemed to conceive of his pre-semantic protolangage in terms directly comparable to modern day music (or at least he provides no indication that this is *not* the case). He concludes that "musical notes and rhythm" were

present in this protolanguage, and that they were deployed "in producing true musical cadences, that is in singing." This is why I term his model "musical protolanguage". However, modern human music consists not just of song, but also instrumental music, so this appellation might immediately have connotations of drumming, whistling or flutes that are not, strictly speaking, relevant to language evolution. More pertinently, if we take the musical protolanguage model seriously, we must acknowledge that modern music may not necessarily preserve the state of this protolanguage precisely, and that both music and language have changed in the interim (cf. Brown, 2000). That is, Darwin's hypothetical communication system was proto-music, not music *per se*. Adopting the logic of comparative reconstruction, we can then ask which aspects of modern speech and song are shared, and thereby reconstruct this earlier system (Fitch, 2005b). The central shared aspects are prosodic and phonological: the use of a set of primitives (syllables) to produce larger, hierarchically-structured units (phrases) which are discretely distinctive. But two key "musical" aspects are not shared between speech and song: namely discrete-pitched notes, and temporal isochrony (a steady beat). I have used this comparison of modern speech and song to argue for a subtly different model from that of Darwin, which I termed "prosodic" rather than "musical" protolanguage, in which protolanguage consisted of sung syllables, but *not* of notes that could be arranged in a scale, nor produced with a steady rhythm (Fitch, 2006). This prosodic protolanguage model thus includes the "sung cadence" aspect of Darwin's model, while rejecting both his "notes" and "rhythm" (at least as normally construed). Both of these aspects of (most) modern song are, by hypothesis, more recent developments in music, not present in protolanguage. I see this as an adjustment of Darwin's hypothesis, fully in keeping with its spirit. Furthermore, it is unclear from his writings whether Darwin would have disagreed with this adjustment.

A different reconstruction of the common ancestor of music and language, involving both discrete pitches and isochronic rhythm (as well as tone-based meaning) is given in (Brown, 2000). Brown also argues that his hypothetical protolanguage, which he dubs "musilanguage" could not have evolved by normal neo-Darwinian selection and thus demands a

group selection explanation. This remains its clearest, and most dubious, distinction from what is otherwise just a rediscovery of Darwin's basic hypothesis (for critiques see Botha, 2009; Fitch, 2010).

11. Conclusions Regarding Darwin's Model

I have argued that Darwin's model for language evolution, "musical protolanguage," suitably updated, provides a compelling fit to both the phenomenology of modern music and language, and to a wealth of comparative data. By placing vocal control at the centre of his model, Darwin availed himself of the rich comparative database of other species who have independently evolved complex vocal imitation, and he thus explains two of the features of human language that set if off most sharply from nonhuman primate communication systems: vocal learning and cultural transmission. The biggest missing piece in Darwin's model, as I see it, is a reasonable explanation of phrasal semantics (and the aspects of syntax that go with it), but this gap was filled by Jespersen by 1922. Together, these hypotheses provide one of the leading models of language evolution available today (for an enthusiastic book-length exploration seeMithen, 2005), and one that has been repeatedly re-discovered by later scholars (e.g., Livingstone, 1973; Richman, 1993; Brown, 2000). While many aspects of what has now become a family of models remain to be explored empirically (the issues surrounding sexual, kin and group-selection remain particularly unclear), this is a model worthy of detailed consideration and elaboration today. Most importantly, Darwin's model makes numerous testable empirical predictions (for example about the partially overlapping nature of the brain mechanisms underlying music and spoken language, and their genetic basis) that can be answered in the coming decades. The fact that it was born of, and supported by, the similarities between birdsong and human speech and song makes it particularly relevant to the modern research scene.

12. General Conclusions

There are several other models of protolanguage available, including the "lexical protolanguage" model embraced by such linguists as Derek Bickerton and Ray Jackendoff (Bickerton, 1990; Jackendoff, 1999). Michael Arbib and Adam Kendon have developed models which blur the boundaries between gestural and musical protolanguage, both positing a parallel evolution of sign and speech in a virtuous interactive spiral (Kendon, 1991; Arbib, 2005b). A more detailed analysis and critique of different models of protolanguage can be found in (Fitch, 2010). For the purposes of the current volume, however, this detailed exposition of Darwin's model serves, I hope, the purpose of showing that models of protolanguage, and more generally, models of the evolution of the human capacity for language, need not be simply speculative exercises. By rich use of both the current state of humans and chimpanzees, and a rich exploitation of the broad comparative database, scientists today can go beyond speculation to pose rigorous testable hypotheses about the evolution of one of our most central traits as a species: our capacity to acquire language.

2
From Internet to Gutenberg

Umberto Eco

According to Plato (in *Phaedrus*) when Hermes, the alleged inventor of writing, presented his invention to the Pharaoh Thamus, he praised his new technique that was supposed to allow human beings to remember what they would otherwise forget. But the Pharaoh was not so satisfied. "My skilful Theut, he said, memory is a great gift that ought to be kept alive by training it continuously. With your invention people will not be obliged any longer to train memory. They will remember things not because of an internal effort, but by mere virtue of an external device."

We can understand the preoccupation of the Pharaoh. Writing, as any other new technological device, would have made torpid the human power which it substituted and reinforced —just as cars made us less able to walk. Writing was dangerous because it decreased the powers of mind by offering human beings a petrified soul, a caricature of mind, a mineral memory.

Plato's text is ironical, naturally. Plato was *writing* his argument against writing. But he was pretending that his discourse was told by Socrates, who did not write.

Nowadays, nobody shares these preoccupations, for two very simple reasons. First of all, we know that books are not ways of making somebody else think in our place; on the contrary they are machines that provoke further thoughts. Only after the invention of writing was it possible to write such a masterpiece on memory as Proust's *La Recherche du Temps Perdu*. Secondly, if once upon a time people needed to train

their memory in order to remember things, after the invention of writing they had also to train their memory in order to remember books. Books challenge and improve memory; they do not narcotize it. However, the Pharaoh was instantiating an eternal fear: the fear that a new technological achievement could abolish or destroy something that we consider precious, fruitful, something that represents for us a value in itself, and a deeply spiritual one.

It was as if the Pharaoh pointed first to the written surface and then to an ideal image of human memory, saying: "This will kill that."

More than one thousand years later Victor Hugo in his *Notre Dame de Paris*, shows us a priest, Claude Frollo, pointing his finger first to a book, then to the towers and to the images of his beloved cathedral, and saying "ceci tuera cela", this will kill that. (The book will kill the cathedral, alphabet will kill images).

The story of Notre Dame de Paris takes place in the 15th century, a little later than the invention of printing. Before that, manuscripts were reserved to a restricted elite of literate persons, but the only means to teach the masses about the stories of the Bible, the life of Christ and of the Saints, the moral principles, even the deeds of the national history or the most elementary notions of geography and natural sciences (the nature of unknown peoples and the virtues of herbs or stones), was provided by the images of the cathedral. A medieval cathedral was a sort of permanent and unchangeable TV program that was supposed to tell people everything indispensable for their everyday lives as well as for their eternal salvation. The book would have distracted people from their most important values, encouraging unnecessary information, free interpretation of the Scriptures, insane curiosity.

With the hypertextual browsing allowed today by Internet, or special DVD programs, books are supposed to become obsolete. If you even consider that a hypertext is usually also multimedial, the complete hypertextual devices could in the next future replace books as wells as videocassettes, and many other supports that in the previous decades were seen as new and extraordinary electronic instruments.

Now we must ask ourselves if such a perspective is a realistic one or is mere science-fiction -as well as if the

distinction we have just outlined between visual and alphabetic communication, books and hypertexts is really that simple. Let me list a series of problems and possible perspectives for our future.

Even after the invention of printing books have never been the only instrument for acquiring information. There were paintings, popular printed images, oral teaching, and so on. One can say that books were in any case the most important instrument for transmitting scientific information, including news about historical events. In this sense they were the paramount instrument used in schools.

With the diffusion of the various mass media, from cinema to television, something has changed. Years ago the only way to learn a foreign language (outside of travelling abroad) was to study a language from a book. Now our kids frequently know other languages by listening music coming from the computer, by watching movies in the original edition, by deciphering the instructions printed on a beverage can. The same happens with geographical information. In my childhood I got the best of my information about exotic countries not from textbooks but by reading adventure novels as the ones by Jules Verne. My kids very early knew more than me on the same subjects from watching TV. One could learn very well the story of the Roman Empire through movies, provided that movies were historically correct. The fault of Hollywood is not to have opposed its movies to the books of Tacitus or of Gibbon, but rather to have imposed a pulp-and romance-like version on both Tacitus and Gibbon.

A good educational computer program can today explain genetics better than a book.

Today the concept of literacy comprises many media. An enlightened policy of literacy must take into account the possibilities of all of these media. Educational preoccupation must be extended to the whole of media. Responsibilities and tasks must be carefully balanced. If for learning languages, DVD or computer programs are better than books, take care of DVD and of computer programs. If a presentation of Chopin, with commentary on CD, helps people to understand Chopin, don't worry if people do not buy five volumes of the history of music.

Even if it were true that today visual communication overwhelms written communication, the problem is not to

oppose written to visual communication. The problem is how to improve both. In the Middle Ages visual communication was, for the masses, more important than writing. But Chartres Cathedral was not culturally inferior to the *Imago Mundi* of Honorius of Autun. Cathedrals were the TV of those times, and the difference from our TV was that the directors of the medieval TV read good books, had a lot of imagination, and worked for the public profit (or, at least, for what they believed to be public profit).

The real problems lay elsewhere. Visual communication has to be balanced with the verbal one, and mainly with the written one for a precise reason. Once, a semiotician, Sol Worth, wrote a paper, "Images cannot say Ain't". I can verbally say "Unicorns do not exist" but if I show the image of a unicorn the unicorn is there. Moreover, is the unicorn I see a given unicorn, or does it stand for unicorns in general?

This problem is not as immaterial as it can seem, and many many pages have been written by logicians and semioticians on the difference between such expressions as *a* child, *the* child, *this* child, *all* children or *childhood* as a general idea. Such distinctions are not so easy to display through images. Nelson Goodman in his *Languages of Art* wondered if a picture representing a woman is the representation of Women in general, the portrait of a given woman, the example of the general characteristics of a woman, the equivalent of the statement *there is a woman looking at me*.

One can say that in a poster or on an illustrated book, the caption or other forms of written material can help to understand what the image means. But I want to remind you about a rhetorical device called example, on which Aristotle spent some interesting pages. In order to convince somebody about a given matter, the most convincing is a proof by induction. In induction I provide many cases and then I infer that probably they instantiate a general law. Suppose I want to demonstrate that dogs are friendly and love their masters: I provided many cases in which a dog has proved to be friendly and helpful and I suggest that there must be a general law by which every animal belonging to the species of dogs is friendly. Suppose now I want to persuade you that dogs are dangerous. I can do this by providing you with an example: "Once, a dog killed its master...." As you easily understand, a single case

does not prove anything, but if the example is shocking I can surreptitiously suggest that dogs can even be unfriendly, and once you are convinced that it can be so, I can unduly extrapolate a law from a single case and conclude: "this means that dogs cannot be trusted." With the rhetorical use of the example I shift from a dog to all dogs.

If you have a critical mind you can realize that I have manipulated a verbal expression (*a dog was bad*) so to transform it into another one (*all dogs are bad*) which does not mean the same thing. But if the example is a visual rather than a verbal one, the critical reaction is made more difficult. If I show you the poignant image of a given dog biting its master it is very difficult to discriminate between a particular and a general statement. It is easy to take that dog as the representative of its species. Images have, so to speak, a sort of Platonic power: they transform individuals into general ideas.

Thus by a purely visual communication and education it is easier to implement persuasive strategies that reduce our critical power. If I read on a newspaper that a given man said "*we want mister X as president*" I am aware that I was given the opinion of a given man. But if I watch on the TV screen a man saying enthusiastically "*we want mister X as president*" it is easier to take the will of that individual as the example of the general will.

Frequently I think that our societies will be split in a short time (or they are already split) into two classes of citizens: those who only watch TV, who will receive pre-fabricated images and therefore prefabricated definitions of the world, without any power to critically choose the kind of information they receive, and those who know how to deal with the computer, who will be able to select and to elaborate information. This will re-establish the cultural division which existed at the time of Claude Frollo, between those who were able to read manuscripts, and therefore to critically deal with religious, scientific or philosophical matters, and those who were only educated by the images of the cathedral, selected and produced by their masters, the literate few.

A science fiction writer could elaborate a lot on a future world where a majority of proletarians will receive only visual communication planned by an élite of computer-literate people.

Let me return to the problem of books.

There are two sorts of books: these to be read and these to be consulted. As far as books-to-read are concerned (they can be a novel, or a philosophical treatise, or a sociological analysis, and so on) the normal way of reading them is the one that I would call the *detective-like story*. You start from page 1, where the author tells you that a crime has been committed, you follow every path of the detection until the end, and finally you discover that the guilty one was the butler. End of the book and end of your reading experience. Remark that the same happens even if you read, let us say, Descartes' *Discourse de la methode*. The author wanted you to open the book at its first page, to follow the series of questions he proposed, to see how he reaches certain final conclusions. Certainly, a scholar, who already knows that book, can re-read it by jumping from one page to another, trying to isolate a possible link between a statement of the first chapter and one of the last one... A scholar can also decide to isolate, let us say, every occurrence of the word Jerusalem in the immense opus of Thomas Aquinas, thus skipping thousands of pages in order to focus his or her own attention on the only passages dealing with Jerusalem... But these are ways of reading that the layman would consider as unnatural.

Then there are the books to be consulted, like handbooks and encyclopaedias. Sometimes handbooks must be read from the beginning to the end; but when one knows the matter enough, one can consult them, so selecting also certain chapters or passages. When I was in high-school I had to read entirely, in a linear way, my handbook on mathematics; today, if I need a precise definition of logarithm, I only consult it. I keep it on my shelves not to read and re-read it every day, but in order to keep it up once in ten years, to find the item I need to consult it about.

Encyclopaedias are conceived in order to be always consulted and never read from the first to the last page. Usually one pick up a given volume of one's encyclopaedia to know or to remember when Napoleon died or what is the formula of sulphuric acid. Scholars use encyclopaedias in a more sophisticated way. For instance, if I want to know whether it was possible or not that Napoleon met Kant, I have to pick up the volume K and the volume N of my encyclopaedia: I discover that Napoleon was born in 1769 and died in 1821, Kant was

born in 1724 and died in 1804, when Napoleon was already emperor. It is not impossible that the two met. I have probably to consult a biography of Kant, or of Napoleon —but in a short biography of Napoleon, who met so many persons in his life—, this possible meeting with Kant can be disregarded, while a in a biography of Kant a meeting with Napoleon should be recorded. In brief, I must leaf through many books in many shelves of my library, I must take notes in order to compare later all the data I collected, and so on. In short, in order to discover that Napoleon never met Kant I should spend a lot of painful mental and physical labour.

With a hypertext, instead, I can navigate through the whole encyclopaedia. I can connect an event registered at the beginning with a series of similar events disseminated all along the text, I can compare the beginning with the end, I can ask for the list of all the words beginning by A, I can ask for all the cases in which the name of Napoleon is linked with the one of Kant, I can compare the dates of their birth and death —in short, I can do my job in few seconds or few minutes.

Hypertexts will certainly render obsolete encyclopaedias and handbooks, also because a computer (or an USB flash driver) can store in its memory the information provided by tenth of encyclopaedias, with the advantage that it permits crossed references and non-linear retrieval of information. The encyclopaedia cannot be transported as a USB can, the encyclopaedia cannot be easily updated. The shelves today occupied, at my home as well as in public libraries, by meters and meters of encyclopaedias could be eliminated in the next future, and there will be no reasons to complain for their disappearance.

Moreover, if a scholar needs to know, let us say, how many times the word *good* appears in the *Paradise Lost,* a printed book can be fruitfully transformed into an hypertext.

Does it mean that hypertextual programs will definitely replace the books to be read?

Books will remain indispensable not only for literature, but for any circumstance in which one needs to read carefully, not only to receive information but also to speculate and to reflect about it. To read a computer screen is not the same as to read a book. Think to the process of learning a new computer program. Usually the program is able to display on the screen

all the instructions you need. But usually the users who want to learn the program either print the instructions and read them as if they were in book form, or they buy a printed manual (let me underestimate the fact that presently all the computer's Helps are clearly written by irresponsible and tautological idiots, while commercial handbooks are written by smart people). It is possible to conceive of a visual program that explains very well how to print and bind a book, but in order to get instructions on how to write (or how to use) a computer program, we need a printed handbook.

After having spent no more than 12 hours at a computer console, my eyes are like two tennis balls, and I feel the need of sitting comfortably down in an armchair and reading a newspaper, and maybe a good poem. I think that computers are diffusing a new form of literacy but are incapable of satisfying all the intellectual needs they are stimulating.

In my hours of optimism I dream of a computer generation which, compelled to read a computer screen, gets acquainted with reading, but at a certain moment feels unsatisfied and looks for a different, more relaxed and differently-committing form of reading.

Years ago, during a symposium on the future of books held at the university of San Marino, Regis Debray has observed that the fact that Hebrew civilization was a civilization based upon a Book is not independent on the fact that it was a nomadic civilization. I think that this remark is very important. Egyptians could carve their records on stone obelisks, Moses could not. If you want to cross the Red Sea, a scroll is a more practical instrument for recording wisdom. By the way, another nomadic civilization, the Arabic one, was based upon a book, and privileged writing over images.

But books also have an advantage in respect to computers. Even if printed in modern acid paper, which lasts only 70 years or so, they are more durable than magnetic supports. Moreover, they do not suffer of power shortage and black outs, and are more resistant to shocks. Up to now, books still represent the more economical, flexible, wash-and-wear way to transport information at a very low cost. Computers communication travels ahead of you, books travel with you and at your speed, but if you shipwreck in a desert island, a book can serve you, while you don't have any chance to plug a

computer anywhere. And even though your computer has solar batteries you will never be sure that it does not go haywire. Books are still the best companions for a shipwreck, or for the Day After.

Moreover, remark that we have the scientific proof that a book can last six centuries (since in our libraries we store up beautiful incunabula from the 15th century) while we do not have any evidence about the duration of an old floppy disk, because our new computers are unable to still read it.

However there are today new hypertextual poetics according to which even a book-to-read, even a poem can be transformed into a hypertext. Conceived in a hypertextual way even a detective story can be structured in a open way, so that its readers can even select a given reading-path, that is, to build up their own personal story —even to decide that the guilty one can and must be the detective instead of the butler.

Such an idea is not a new one. Before the invention of the computer, poets and narrators have dreamt of a totally open text that the readers could infinitely re-write in different ways. Such was the idea of *Le Livre*, as extolled by Mallarmé; Joyce thought of his *Finnegans Wake* as a text that could be read by an ideal reader affected by an ideal insomnia. In the sixties Max Saporta wrote and published a novel whose pages could be displaced so as to compose different stories. Nanni Balestrini gave one of the early computers a disconnected list of verses that the machine put together in different ways so to compose different poems; Raymond Queneau invented a combinatorial algorithm by virtue of which it was possible to compose, from a finite set of lines, billions of poems. Many contemporary musicians have produced musical movable scores, and by manipulating them one can compose different musical performances.

As you have probably realized, even here one is dealing with two different problems.

1. The first is the idea of a text which is physically movable. Such a text should give the impression of the absolute freedom on the part of the reader; but this is only an impression, an illusion of freedom. The only machinery that allows one to produce infinite texts already existed from millennia, and it is the alphabet. With a reduced

number of letters one can produce, really, billions of texts, and this is exactly what has been done from Homer to the present days.

A stimulus-text which provides us not with letters, or words, but with pre-established sequences of words, or of pages, does not set us free to invent anything we want. We are only free to move in a finite number of ways pre-established textual chunks.

But I, as a reader, do have this freedom even when I read a traditional detective novel. Nobody forbids me from imagining a different end. Given a novel where two lovers die I, as a reader, can either cry on their fate, or to try to imagine a final chapter in which they survive and live happy forever. In a way I, as a reader, feel more free with a physically finite text, on which I can muse for years, than with a movable one where only some manipulations are permitted.

2. This possibility leads us to the second problem which concerns a text which is physically finite and limited but that can be interpreted in infinite, or at least in many ways. This has been in fact the aim of every poet or narrator. But a text which can support many interpretations is not a text which can support every interpretation.

   I think that we are confronted with three different ideas of hypertext. First of all, we should make a careful distinction between systems and texts. A system (for instance a linguistic system) is the whole of the possibilities displayed by a given natural language. Every linguistic item can be interpreted in terms of other linguistic or other semiotic items, a word by a definition, an event by an example, a natural kind by an image, and so on and so forth. The system is perhaps finite but unlimited. You go in a spiral-like movement ad infinitum. In this sense certainly all the conceivable books are comprised by and within a good dictionary and a good grammar. If you are able to use the Webster you can write both the *Paradise Lost* and *Ulysses*.

   Certainly, if conceived in such a way, a hypertext can transform every reader into an author. Give the

same hypertextual system to Shakespeare and a schoolboy, and they have the same odds of producing *Romeo and Juliet*.

However a text is not a linguistic or an encyclopaedic system. A given text reduces the infinite or indefinite possibilities of a system to make up a closed universe. *Finnegans Wake* is certainly open to many interpretations, but it is sure that it will never provide you the demonstration of Fermat's theorem, or the complete bibliography of Woody Allen. This seems trivial, but the radical mistake of irresponsible deconstructionists was to believe that you can do everything you want with a text.

This is blatantly false. A textual hypertext is finite and limited, even though open to innumerable and original inquiries. Hypertext can work very well with systems, they cannot work with texts. Systems are limited but infinite. Texts are limited and finite, even they can allow for a high number of possible interpretations (but they do not justify every possible interpretation).

There is however a third possibility. We may conceive of hypertexts which are unlimited and infinite. Every user can add something, and you can implement a sort of jazz-like unending story. At this point the classical notion of authorship certainly disappears, and we have a new way to implement free creativity. Being the author of the *Open Work* I cannot but hail such a possibility. However there is a difference between implementing the activity of producing texts and the existence of produced texts.

We shall have a new culture in which there will be a difference between producing infinite texts and interpreting precise and finite texts. That is what happens in our present culture, in which we evaluate differently a recorded performance of Beethoven's Fifth and a new instance of a New Orleans Jam Session. We are marching towards a more liberated society in which free creativity will co-exist with textual interpretation. I like this. But we must not say that we have substituted a old thing with another one. We have both, thanks God. TV zapping is a kind of activity which has nothing to do with watching a movie. A hypertextual device that allows us to invent new texts has nothing to do with our ability to interpret pre-existing texts.

There is still another confusion between and about two different questions: (a) will computers made books obsolete? and (b) will computers make written and printed material obsolete?

Let us suppose that computers will make books to disappear. This would not mean the disappearance of printed material.

The computer creates new modes of production and diffusion of printed documents. In order to re-read a text, and to correct it properly, if it is not simply a short letter, one needs to print it, then to re-read it, then to correct it at the computer and to reprint it again. I do not think that one is able to write a text of hundreds of pages and to correct it without printing it at least once.

We have seen that our hope that computers, and specially word processors, would contribute to save trees, is wishful thinking. Computers encourage the production of printed material. We can think of a culture in which there will be no books, and people will go around with tons and tons of unbound sheets of paper. This will be pretty difficult, and will pose a new problem for libraries.

People desire to communicate with each other. In ancient communities they did it orally; in a more complex society they tried to do it by printing. Most of the books which are displayed in a bookstore should be defined as products of Vanity Presses, even if they are published by a university press. But with computer technology we are entering a new Samizdat Era. People can communicate directly without the mediation of publishing houses. Lot of people do not want to publish, they simply want to communicate each other. Today they do it by E-mail, Facebook, or Internet sites, and this will result in being a great advantage for books, books' civilization and books' market. Look at a bookstore. There are too many books. I receive too many books every week. If the computer network will succeed in reducing the quantity of published books, it would be a paramount cultural improvement. One of the most common objections against the pseudo-literacy of the electronic instruments of communication, from the SMS to Twitter, is that young people get more and more accustomed to speak through cryptic short formulas.

I am a rare-books collector, and I feel delighted when I read the seventeenth-century titles that took one page and sometimes more. They look like the titles of Lina Wertmuller's movies. The introductions were several pages long. They started with elaborate courtesy formulas praising the ideal Addressee, usually an Emperor or a Pope, and lasted for pages and pages explaining in a very baroque style the purposes and the virtues of the text to follow.

If Baroque writers read our contemporary scholarly books they would be horrified. Introductions are one page long, briefly outline the subject matter of the book, thank some National or International Endowment for a generous grant, shortly explain that the book has been made possible by the love and understanding of a wife or husband and of some children, and credit a secretary for having patiently typed the manuscript. We understand perfectly the whole of human and academic ordeals revealed by those few lines, the hundreds of nights spent underlining photocopies, the innumerable frozen hamburgers eaten in a hurry...

But let me guess that in the near future we will have three lines saying: "W/c, Smith, Rockefeller," (to be read as: I thank my wife and my children; this book was patiently revised by Professor Smith, and was made possible by the Rockefeller Foundation.") That would be as eloquent as a Baroque introduction. It is a problem of rhetoric and of acquaintance with a given rhetoric. Today passionate love messages are sent in form of emoticons, and perhaps this beautiful verse from Emily Dickinson *I love you, therefore I cannot live with you* could be communicated by an essential formula, since even the dilemma of Hamlet can be expressed as *2B OR/NOT 2B.*

There is a curious idea according to which the more you say in verbal language, the more you are profound and perceptive. Mallarmé told us that it is sufficient to spell out "*une fleur*" to evoke a universe of perfumes, shapes, and thoughts. Frequently for poetry, the fewer the words, the more the things. Three lines of Pascal say more than 300 pages of a long and boring treatise on morals and metaphysics. The quest for a new and surviving literacy ought not to be the quest for a pre-informatic quantity. The enemies of literacy are hiding elsewhere.

Until now I have tried to show that the arrival of new technological devices does not necessarily made previous device obsolete. The car is goes faster than the bicycle, but cars have not rendered bicycles obsolete and no new technological improvement can make a bicycle better than it was before. The idea that a new technology abolishes a previous role is too much simplistic. After the invention of Daguerre painters did not feel obliged to serve any longer as craftsmen obliged to reproduce reality such as we believe to see it. But it does not mean that Daguerre's invention only encouraged abstract painting. There is a whole tradition in modern painting that could not exist without the photographic model, think for instance of hyper-realism. Reality is seen by the painter's eye through the photographic eye.

Certainly the advent of cinema or of comic strips has made literature free from certain narrative tasks it traditionally had to perform. But if there is something like post-modern literature, it exists just because it has been largely influenced by comic strips or cinema. For the same reason today I do not need any longer a heavy portrait painted by a modest artist and I can send my sweetheart a glossy and faithful photograph (by e-mail), but such a change in the social functions of painting has not made painting obsolete, except that today painted portraits do not fulfil the same practical function of portraying a person (which can be done better and less expensively by a photograph), but of celebrating important personalities, so that the command, the purchasing and the exhibition of such portraits acquire aristocratic connotations.

This means that in the history if culture it has never happened that something has simply killed something else. Something has profoundly changed something else. According to McLuhan (writing in the Sixties), the Visual Galaxy had substituted the Gutenberg Galaxy. Few decades later this was no longer true.

McLuhan stated that we are living in a new electronic Global Village, but the real problems of an electronic community are now the following:

1. Solitude. The new citizen of our new village is free to invent new texts, to cancel the traditional notion of authorship, to delete the traditional divisions between

author and reader, but the risk is that being in touch with the entire world by means of a galactic network one feels alone....

2. Excess of information and inability to choose and to discriminate. Certainly the Sunday *New York Times* is the kind of newspaper where you can find "everything fits to print", and in its 500 hundred pages you can find everything you need to know about the events of the past week and the ideas for the new one. However, a single week is not enough to read the whole Sunday NYT. Is there a difference between a newspaper full of information but which cannot be read, and a newspaper which says nothing. Is there a difference between NYT and Pravda?

Notwithstanding this, the NYT reader can still distinguish between the book review, the pages devoted to the TV programs, the Real Estate supplement, as well as between advertising, news and signed opinions. The user of Internet has not the same skill. We are today unable to discriminate, at least at first glance, between a reliable source and a mad one. We need a new form of critical competence, an as yet unknown art of selection and decimation of information, in short, a new wisdom. We need a new kind of educational training.

Let me say that in this perspective books will still have a paramount function. As well as you need a printed handbook in order to surf on Internet, so we will need new printed manuals in order to cope critically with the World Wide Web.

Let me conclude with a praise of the finite and limited world that books provide us. Suppose you are reading Tolstoy's *War and Peace*: you are desperately wishing that Natasha will not accept the courtship of that miserable scoundrel who is Anatolia; you desperately wish that that marvellous person who is prince Andrej will not die, and that he and Natasha could live together happy forever. If you had *War and Peace* in a hypertextual and interactive form you could rewrite your own story, according to your desires, you could invent innumerable *War and Peaces*, where Pierre Besuchov succeeds in killing Napoleon or, according to your penchants, Napoleon definitely defeats General Kutusov.

Alas, with a book you cannot. You are obliged to accept the laws of Fate, and to realise that you cannot change Destiny. A hypertextual and interactive novel allows us to practice freedom and creativity, and I hope that such a kind of inventive activity will be practised in the schools of the future. But the written *War and Peace* does not confront us with the unlimited possibilities of Freedom, but rather with the severe law of Necessity. In order to be free persons we also need to learn this lesson about Life and Death, and only books can still provide us with such a wisdom.

3
The Evolution of Telecommunications Technology

Joan Majó

1. Introduction. Television and the Internet

The idea here is to discuss communication among human beings and to do so from a technological perspective. During a stage of evolution in which technology still played a small role, our ancestors used two languages to communicate among themselves: oral language (noise with meaning) and body language (gestures with meaning). At a later stage, they incorporated written language (drawings with meaning). Technological innovations have improved, enlarged and modified the capacity of our societies to communicate, but they haven't changed the nature of the three languages. One only has to notice the recent use of a new language involving both static and moving images. What influence has technology had in the appearance of a third and fourth language, and in facilitating the use of the first two? Where do we stand now and where are we going?

It's not possible to give a complete history of the evolution of telecommunications technology within the space of a chapter; rather, the goal should be to contemplate its recent evolution, situate it within a historical framework and extract some prudent insights for the future. The recent history of telecommunications has one clear protagonist, which is the audiovisual revolution and, nowadays, we can add a second with broadband networks. It is no whim to centre part of this chapter on television. This is a logical consequence of the enormous importance that television has had in the current

world of telecommunications and, at the same time, confirmation of the changes that are taking place now as television meets the Internet. As a result, one should not be surprised that an important part of this text deals with television and the Internet, which are, in some ways, like a couple that meets and produces the future.

This chapter has three parts. First of all, there is a quick review of the history of communication within human societies with special mention of the breaches that technological changes have brought about over the centuries. Secondly, there is a description of technological tendencies in the past fifty years and the changes that have come about in communication systems. I will finish by combining these changes with some social and economic tendencies in order to formulate some hypotheses (as opposed to predictions) regarding the future.

It's difficult to foresee the future. That's fortunate because it means that we can. The future hasn't been written, but it is determined by available technology, regulations that are in force, cultural habits and economic restrictions. Different futures seem possible, but not all of them are. Technology and changing regulations can open up new opportunities to do things that weren't possible before. On the other hand, economic and legal restrictions place limits and, as a result, keep some ideas from ever reaching fruition. Future innovations are those ideas that are imagined and carried out. The rest remain as projects or even utopias.

I will try to identify where these tendencies are making their mark felt enough so as to determine the future. Not everything that seems important now actually is. Distinguishing between what is important and what isn't can be very useful. I will speak about three groups of tendencies that, to my way of thinking, seem profound and that I believe will only become stronger. It's not possible to clearly separate these tendencies because their mutual influences go in every direction; however, I will group them into three areas: technology, social habits and economic habits. I will delve more into the first; however, it's not possible to isolate it from the other two because technology is not a purely causal independent variable (a frequent mistake); rather, all are very much tied together, and they relate to each other and feed each other in a cyclical process that is not at all linear.

2. A short technological story about communication

In the history of the human species, there are events that possess a unique character in the sense that they bring about important changes, usually for the better, and constitute progress for the species. Many of these changes have been related to some type of scientific or technological innovation. Human beings are fundamentally primates that have been endowed with a very developed brain (intelligence), some very useful upper limbs (technique) and a large capacity for symbolic communication (sociability). Their ability to generate and accumulate knowledge, to use that knowledge for a purpose and to engage in group tasks has placed them in a preeminent –and, at the same time, dangerous– position on this planet. Without the capacity to communicate, none of that would have been possible, but collective work as a group has been the basis for progress. Therefore, technology related to human communication which allows for and improves that work has determined a good part of the history of the species.

If we were to schematize this, we could say that individual survival, as well as survival of the species, depends on the capacity to obtain the elements we need for life (energy and information) from the environment, as well as the ability to protect ourselves from environmental aggressions, an ability that in the case of human beings –unlike other species– often means modifying the environment. We use technology to obtain resources, as well as to change the environment and, for that reason, progress in the field of energy-related technologies, such as communication, has gone hand in hand with qualitative leaps in human progress.

Let's talk about communication. The appearance of language, which is to say the attribution of a fully meaningful symbolism to sounds and gestures, is lost in the cloud of time. These two types of language have an extraordinary potential and continue to be the basis for communication, but in prehistoric times, they had two great weaknesses. People who lived in primitive societies (before the Mesopotamian civilizations) could only transfer information orally or through signs. This communication was already quite rich; however, in

order to make it possible, it was necessary for the actors to coincide in the same place and at the same time because voice and gaze only reach a short distance. Apart from that, there was no external information warehouse outside the human brain. The discovery of writing broke down the barriers of time and space thanks to the invention of codes (letters, ideograms) and the appearance of a physical warehouse that was external to the brain (papers, parchments, books...). Being able to cancel out distance within space and time, as well as the permanence of knowledge in support material allowed for the beginning of history. The technology that made this possible was of a material nature (physical support, recording material) as well as non-material (numeration systems, representational systems, alphabets.... in a word, codes). The evolution of codes in a fundamental element in all communication as it allows a symbolic element to "materialise" (to be coded) and, as a result, makes storage and transmission possible, which is to say, enormously enlarges the capacity for communication.

From Mesopotamian times up until a couple of centuries ago (more than 4,000 years!), there were no great changes in either communication or communication-related technology. With the printing press, Gutenberg made the printed word available to the masses and eliminated the need to "copy" texts one at a time. By industrialising the construction of all types of written documents, he made them more abundant and less expensive, which allowed for reading to expand and, as a result, culture.

On the other hand, the end of the 19th century and first part of the 20th brought about a revolution. The possibility of transmitting sound over distance with the support of electronic waves, be they cable (telephone) or by means of Hertzian space, the possibility of storing them in the form of microgrooves or using magnetic backup (disks and tapes) and chemically storing images (photography) gave rise to new developments that converged and culminated in the decade of the 1950s with the invention of television. It was a very ripe situation, but also one with a great deal of diversity given that the different types of information content were supported by very diverse technologies: physical (printing press), electronic (telephone and radio), chemical (photography) and electronic (television).

I would like to point out that this technological diversity has resulted in a diversity of codes based on different material phenomena. Text uses an alphabet code. Natural voice uses sound frequencies. Radio and telephone use electronic frequencies. Photography is based on the photo-chemical properties of some elements. This means that each type of information has had different forms of storage (books, disks, magnetic tapes, video tapes, photographic film), all of which are perfectly incompatible and have led to multiple communication areas that are complex, not very homogeneous and, as a result, segregated.

This was the situation midway through the 20th century when the information processing revolution with the technology to process numbers (microprocessor, silicon memory) and a new code (binary code, bit) was born in an area far removed from all communication. This revolution invaded the communication world at the end of the last century and linked up with the web revolution that was taking place in its very core. The impetus of both of these transformed communication in a way that had not happened since the days of Mesopotamia. To put it another way: When we learned to store all types of computer content in bits, the technical revolution of information processing, along with the development of webs, have produced a social revolution within the field of communication. Let's examine the technical aspect of this in more detail.

3. Recent technological tendencies

What are the big changes that have taken place in this area in the last few decades? The answer can be summed up in seven points.

A. Digitalization. The use of numerical codes in the transmission, storage and processing of all types of information determines everything that is going on of any importance. All of the tendencies which I will explain wouldn't have been possible without the ability to work using bits. As a result, the possibility of coding all information in bits is at the heart of the revolution that took place at the end of the previous century in the world of information.

In essence, digital coding consists of storing or transmitting the numerical measure of something as opposed to storing or transmitting information using a natural phenomenon. Instead of transmitting or storing a wave (sound, light...), the numerical information (frequency, width, etc) of that wave —which describes it and allows it to be identified and reproduced— is transmitted or stored. Digitalisation has converted all types of information into numerical information, which, in turn, is expressed in bits.

Technological progress in the area of microelectronics has greatly increased our capacity to store and transmit bits and has enabled us to do anything we want to do with numbers, pretty much without limits. If these numbers are used to describe a sound or an image, this means that we can do whatever we want with whatever type of information. We are on the verge of a social revolution as regards information and communication.

B. Electronic and magnetic memory. The ability to memorize bits —and, as a result, to store information— has grown at an extraordinary rate. At the end of the century, silicone chips took us from storing information on Kbits to Mbits. Now, external disks have taken us from Gbits to Tbits. This means a growth rate of one billion in 40 years with a small increase in cost, which is to say, with a reduction in cost per bit of much more than a billion.

As a reference point, keep in mind that the memory capacity of the human brain does not reach 1 Gbit (no need to mention how difficult that is to calculate...!), and that on a 1Tbit disk, we can store texts for 1 million books or 500 hours of good quality video. It's possible to say that we have surpassed the limits of what we need and, for a ridiculously low price, we are able to upload a vast storeroom of information onto our devices or the Internet.

C. Fibre optics. The telephone cables that we have in our homes have had a capacity of a few dozen Kbits per second for many years. This is more than enough for a conversation, but not enough to comfortably allow for other uses without losing one's patience. The use of compression technologies (of the ADSL variety) allows "bits to pass through the same tube under

greater pressure", but even that capacity is limited to a few Mbits per second. When the fibre optic cables that are currently used for splicing are used in homes and can be distributed throughout building interiors, all of these limitations will be a thing of the past.

D. The Internet. Two types of communication networks, each with opposite topologies and characteristics, have coexisted during the final decades of the 20th century.

The "telephone" network is a network in the sense in which we understand this word today. All users are able to connect with any other user (multipoint) and all users can send and receive information (bidirectional); however, with little capacity for transmission (a few Kbits per second, narrow band). This is a network that can transmit sound with great ease, but which is not prepared to transmit images because of the speed required to do so.

The "television" network is one of diffusion in which only one point of the network broadcasts and all the network's users can receive the broadcast without having to be connected among themselves. The information only circulates in one direction (point-multipoint and one way); however, with a high capacity for transmission (Mbits per second, wideband).

The convergence of these two networks has created what is known as "the web" or more specifically "wideband Internet", which has the advantages of both: everyone can connect with everyone and everyone can send and receive, and the capacity is such that one can send voice, text, data, graphs, images, videos and films. We now have a web that is multipoint, two-way and wideband. One could even exaggerate and say that all members of the human race could one day be permanently connected, with the ability to exchange (send and receive) any type of message to any other city in the world, as long as one knows the email address.

I've said that this was an exaggeration because presently, the number of people who have access to wideband Internet at home constitute a small part of the world's population (less than 10%); regardless of how quickly access is spreading. Internet's reach is fast and continuous. However, in Africa there are still fewer points of connection than on the island of Manhattan!

E. Flat screens. Until recently, all screens (television, computer) have been based on cathodic ray tube technology. This technology has at least three big disadvantages: the tube is a three-dimensional element, which means that the container must be cube-shaped. Therefore, the larger the screen, the greater the depth of the television, making the television heavy and impossible to transport. There are size limitations and it is not possible to make either very large screens or very small ones. The different types of flat screen technologies (plasma, liquid crystal and, now, lit by LEDs) means that they are not deep, they weigh very little, they can be very small or increasingly larger and soon they will be flexible enough to be rolled up. This will mean that screens can be used anywhere, integrated, hidden, if necessary, and easily transported from one place to another.

F. Digital readers. Whether one is talking about photographic cameras, video cameras or mobile phones with built-in cameras, the tools needed to register images are within reach of everyone as far as cost and user friendliness are concerned. This has been made possible by improvements in optical systems and their reduced size, together with advances in information technology material. However, what is new and important is the fact that to record something, you no longer need chemical or magnetic supports; rather, electronic ones and, as such, recorded material is uploaded onto a computer or directly onto the Internet given that it is coded in exactly the same manner as all other material: in bits.

G. Waves and wires together. For many years —the entire second half of the 20th century— telephone transmission was done over wires and television broadcasts were with waves, which is pretty absurd given that telephones are "personal" devices and yet they are "hooked into" walls using a cord, while televisions are not... This would explain the overwhelming success of mobile phones in the last century! The situation varies greatly among different countries; however, with varying degrees of intensity, television broadcasts have transitioned from waves to cable, to the point that in some areas of Europe, there is not a single TV antenna to be found on rooftops.

On the opposite end of the spectrum, one can fine a proliferation of "Wi-Fi" areas in small enclosed spaces; for example, shopping centres, airports, open urban areas. All of these connexions use waves, which saves an impressive amount of cable, and allows for a new type of mobility. This leads us toward a new concept of unified mini network, with predominance of cable and, in some cases, satellites for long-distance transmission and waves for local distribution.

4. The impact on television and its future

As I've said from the beginning, I wish to track this revolution by focusing on what has happened as regards television because this has been the media form that has played the most important role for five decades and where one can see the most changes.

It can be said that from the birth of television until the arrival of colour, there were no changes. The introduction of colour improved its quality, but did not change the nature of television. The appearance of coaxial cables and, above all, fibre optic, along with the use of satellites, complemented terrestrial airwaves and configured a panorama in which one type of content could reach viewers by way of three different channels, as long as they were analogical. Television as a consumer system of audiovisual content, with its social habits, greatly expanded and increased in quality, but it didn't change much. However, during the nineties, three events took place that are changing the panorama for television.

In first place, digitalisation of the entire chain (production, broadcast, transmission, reception) with new standards that will be adapted to all types of transmission: ground (in Europe, TDT), via cable or via satellite. One should understand that digitalising an image, which is to say, the image's transmission and storage using a digital code, means that all the information we have is numbered and, therefore, the advances that have taken place in the world of information technology can be applied to television, creating new possibilities that were impossible with the analogue system. Microprocessors' increased power and speed, and the capacity of electronic memories have modified communication. The

software programmes that deal with and manipulate images using a computer, which so many photography enthusiasts are familiar with, are even more powerful when used in television production. And let's not forget what electronic digital editing has meant to publishing.

In second place, there is a physical network that is bidirectional and multi-point with increasing band width and transmission protocols for packets and surfing (Internet) have been created that allow for the transmission of all types of content. The new wideband Internet means that there will no longer be a distinction between television reception by means of waves, cable or satellite, given that it will only be necessary to be connected to the Internet in order to watch TV. The bits go through cables, back and forth from some satellite, and if they are received on a laptop or mobile phone, they also circulate via waves, but this does not make any difference to the consumer. The Internet encompasses all types of transmission and, in the same way that one can receive all types of content when connected to the Internet, it is also able to transmit television broadcasts, but using a different reception modality. This point is an important one because this Internet change, brought about by digitalisation, changes a lot of other things too.

And, thirdly, the development o a new type of screen that no longer needs cathodic ray tubes. The new flat screens with their very different dimensions, neither bulky nor heavy, can receive information in very diverse conditions: inside, outside, while in movement, using portable or fixed screens, screens that are very small or very large.

All of these possibilities give rise to new developments that are now commercially recognised as "TV on demand," "Internet television" or "mobile TV". Some other different technological developments (which I will not reflect on) are also being introduced: "HDTV" (high-definition television) and "television in 3D". All of these names are synonymous with a different model for television. Television has entered a new stage, or to put it quite simply, what's coming is no longer television. Consumer habits change.

5. Television meets the Internet

There are those who see it as a media fight. There are those who see it as a fruitful encounter. I belong to the latter group. It is a fact that many people —especially young people— watch fewer hours of television because they spend more hours on the Internet. Those who wish to take a negative point of view say that the Internet is replacing television. I believe that the statement is poorly framed.

The Internet is not a media outlet. Press, radio and television are, but the Internet is not. It is a place for communication, just as the agora was or the telephone network. To stop reading the newspaper in order to watch television is to move from one media form to another. To stop watching television and connect to the Internet is something else. Connecting to the Internet means entering a space in which one can find all the traditional media forms, but many other things as well. It involves changing the way in which one is informed, the form of communication, the way in which social relations are established, the way in which one lives in community. When someone connects to the Internet, they spend time receiving information from diverse sources, sending and exchanging information, emotions, photographs and videos, and also a lot of time watching television and consuming other audiovisual products.

It probably won't take long before there is an increase in the time we spend in front of a television; however, this television will be connected to the Internet and we will use its screen for many other purposes, just as we currently do with the computer. Internet isn't displacing television; it's increasing its potential in many aspects, but it's also changing it. The arrival of television through the Internet places us at a new level in the evolution of communication. Television is entering a new space for communication. We could say that it is no longer television, but something else.

This new way of "watching television" is a consequence of what I've already explained. The first characteristic is that it's consumerism "on demand" in which one decides what to watch and when. In the television system that we've been familiar with up to now, the viewer must watch the programme at the time that it's broadcast. This requirement is no longer necessary

as it's very inexpensive to install large storage units for bits at any point of the network that can be downloaded whenever anyone wants. We've gone from a "synchronised" transmission to one that is "unsynchronised". We need to think about how that will affect two realities that form a part of our everyday lives: radio and broadcasting stations, and receptive devices. First, however, I'd like to provide a brief historical summary.

In the beginning, there was oral and visual communication among human beings, but with two big requirements: one was space (a short distance) and the other was time (synchronisation). Writing and written documents took care of these two barriers to oral communication and, many centuries later, photography added communication through images to written communication. A short time afterward, the invention of the telephone overcame the distance barrier due to sound and TV did the same with images, but neither of these two could overcome the barrier of time (as a general rule the requirement for synchronisation continued except when recording material was used at home). That has all ended with the appearance of Internet TV and the proliferation of servers. Nowadays, time and distance are two dimensions that no long pose any sort of limitation. We can communicate in the present and in a synchronised manner, but at a distance, or we can communicate when close by and in an unsynchronised manner or in a synchronised manner, but at a distance. And in all of these instances, we can exchange as much quantity of information as we wish. This is the new paradigm and the new measure of freedom.

Now, even if we go back to TV and, specifically, to networks and television sets, the contents that we consume (films, documents, programmes...) will be deferred or perhaps they won't have ever gone through network programming and may come directly from the producers or any organisation or person who has uploaded the product onto the Internet.

The consequence of all of this is that television networks will become less important. Currently, television is supported by three pillars: the network, the transmitting frequency and programming. Every network is assigned a frequency to transmit (if there is no frequency, there is no broadcast and, as a result, the possibility of broadcasting something is available to only a few —a certain oligopoly—) and creates a programming

grid that is made public prior to broadcast. Knowing what the frequency is —which button to push on the remote control— and the programming grid, the consumer decides what he/she wants to see by looking at the offer available at that moment. If these characteristics change, the network's role is weakened and reduced to little more than a way of watching television.

There is a variety of ways in which one can be a consumer: collective consumerism, individual consumerism and Internet consumerism. The first type of consumerism is the one we have known for decades in which there was only one television set in each home (family consumerism, consumerism in a bar...). The second type of consumerism came about with the proliferation of television sets in different parts of the house and has made a quantitative leap with personal computers and mobile phones. The third type of consumerism is beginning to grow much as social networks have on the Internet. It is important to view consumerism from this perspective because the consumption of audiovisual products has a dimension that is personal and another one that is collective, depending on the nature of the product. A group of friends watching a football match or a live concert is not the same "act of consumerism" as someone who watches a summary of current events in his/her office.

Television networks that have been an adequate tool for delivering the type of service we have been familiar with will not be efficient in this new landscape. They will either adapt of disappear. If they adapt, they will be less important, but will survive. It should come as no surprise that some of the large European companies in this sector, such as the BBC, are preparing to reduce the number of channels on TV and radio stations while, at the same time, increasing investments in their website's activities.

And what will happen with television sets, those apparatuses that have become iconic parts of our furnishings and our culture? Their role has finished. In order to receive audiovisual content, the only things you need are a synthesiser, a decoder (which is a powerful computer), a screen and speakers. The only one of these that is specific to a television set is the first one and it's no longer necessary when reception is digital or cable. We've got screens, speakers and computers everywhere: on PCs, telephone, consoles... All of these devices

are potential television sets and, the fact is, they are already acting as receptors. In the future, we will watch "television" by way of multiple screens: small, large, mobile, hung on the wall or carried in a pocket and these screens will also be used with other applications that have nothing to do with television.

Will we continue to have television sets at home? Apparently so, but in reality, what we will continue to have will be screens, which are the visible part. Flat screens and internal networks within the house (with cords or cordless) will lead to a modular way of building receptors, similar to stereo equipment. It won't be necessary to go out and buy a television set. We can buy screens, speakers, synthesisers, amplifiers, decoders, memory cards, etc... We will be able to watch television, look at documents or photographs we have stored on a disk or ones that we get over the Internet, see the person with whom we are speaking by telephone or write a text on the computer, all on each one of the screens we have installed. It's obvious that manufacturers will create "packets" with these modules and will continue to offer products under different names. The reality is that all of them will be multifunctional. More than anything, the product's name will depend on the size of the screen.

6. Free reception

As I said in the introduction, technological progress opens up new possibilities; however, that does not mean that we can always take advantage of those possibilities due to legal restrictions or, moreover, economic ones. I would like to address the economic issue.

Currently, all audiovisual media has a problem with financing, a consequence of a mistake that was made in the beginning: gratuitousness. In general, users are accustomed to listening to the radio, watching television or downloading content from the Internet free of charge. Many countries have established a special tax for television, but in others, television is paid for either with public money or by accepting what feels like an overwhelming amount of publicity. Different forms of direct financing have appeared (membership, pay per view, communal quotas, music or video shops) that lessen the problem, but it still isn't enough.

Television is an atypical sector from an economic point of view, a sector in which the consumer does not pay for what is consumed, as if the content were a free commodity. Laws which relate offer, consumption and prices do not come into play here. In other sectors of the economy, the variation of demand necessitates an adjustment in price or a reduced offer. But how does a sector work when the product is apparently free for consumers, but publicity and public entities only provide one third of the cost to produce that product? The price can't be adjusted so that the consumer doesn't have to pay. In order to finance a production, the cost of advertising would have to be increased, but that isn't possible unless the audience increases, which is impossible in a market in which there are more and more channels to be distributed among the viewer population...

The mistake that was made in Spain when DTTV became available was to increase the number of channels for each operator from one to four instead of having fewer channels, but with better technical quality (HDTV). What's more, telephone service providers and cable providers have created channels that more often than not are in addition to ones they previously had. Some are financed through payments, but in general, we continue to be immersed in programming that is free of charge, on television as well as over the Internet, and that means that production and broadcasting must be paid for through channels that are reaching their limit of sustainability. Publicity and public money will not be enough to finance the production that is needed to "satisfactorily" fill the thousands and thousands of broadcasting hours of dozens of channels that have been created. I calculate that the number of broadcasting hours have multiplied between four and eightfold. The cost of broadcasting, but above all, that of producing, has increased dramatically, while revenues have lessened and this trend will continue because revenue from publicity, as well as subsidies from public entities, will both be reduced.

The pronounced budget cuts in public spending aren't purely coincidental. All areas have been affected and it's easy to understand why maintaining public media outlets isn't a top priority for governments. Let us not forget that public television is a public service (because it makes up for things that commercial television does not and never will do, because it insures that citizens have access to rigorously documented

information, because it offers quality entertainment, because it maintains and promotes minority languages, where that is the case), but it also provides a service to the government en terms of information and in many cases, unfortunately, this has been the biggest reason for its existence. For this reason, the more professional, rigorous and diverse public television is, the smaller the interest that governments will have in continuing to assume its cost and financing. Even if the expenditure of private advertising is maintained, it will never be enough to cover the cost of more hours. And, what's more, the new paths created by the Internet, that are also being developed following a cost-free model, will need advertising and will absorb it from classical written and audiovisual outlets.

Networks will generate less revenue and have greater costs. The most obvious solution would be to reduce the number of networks and temporarily reserve a part of the spectrum for high definition broadcasts, but that isn't happening. There will be closings, mergers or syndication to ease the imbalance. It's also possible to generate new revenue by making some of these channels pay-per-view. This has already begun, but even though it lessens the magnitude of the problem, it doesn't resolve it.

In the end, the effect will be a notable decrease in the general quality of programming, based on repeats and budget cuts in the production of new programmes, not only in "second-tier" networks, but in general. The evolution that began just a few years ago clearly demonstrates this tendency because the remedy that is being applied is the easiest: reduce the cost of production by reducing the quality of the product. Everyone can imagine the big difference there is in the cost per hour to produce a good series and a game show or a discussion between two guests where they exhibit an unhealthy curiosity regarding the personal lives of celebrities.

7. Pluralism and participation as part of communication

An important difference between human beings and higher-functioning primates is our capacity for transmitting acquired knowledge and abilities from one generation to the next. It's true that new systems and new habits take the place of others,

but that hardly ever means that the past is completely marginalised. Whatever is new always incorporates all that is useful and convenient from what was. Society is built on positive accumulation. What's more, not everyone is willing to "migrate" towards the latest novelty, either due to comfort or a lack of ability. This is the game of progress in human societies: a mixture of what is new and social inertia. In the sector that we are considering, things don't have to happen another way. What is foreseeable in the near future?

A. There will be two ways of consuming audiovisual products. We can give them different names: programmed and on demand (push and pull). Some users will have habits that put them more in the active consumerism (pull) group, and I believe that this group of consumers will continue to grow; however, it's possible that the other group of strictly passive consumers (push) will continue to exist. We have discussed "digital natives" and "digital immigrants" quickly in passing in order to distinguish those who were born after the digital era was underway from those who have had to immigrate, with difficulty from the analogue era. This second group will continue to decrease as time goes by.

B. Whether one is an active or passive user, the content is going to reach the user primarily through the network. The network is indispensable when using the active mode because the infrastructure for DTTV does not allow for enough interactivity. Once part of the content is received, reception through the antenna is not maintained and, as a result, there will only be one point of entrance to the house, which will be via the cable. This means that the network of repeaters for DTTV will continue to decrease on the one hand, while on the other hand, the network's capacity will need to increase. What will happen with the current repeaters and the spectrum? We will see a pronounced struggle among different interest groups to claim the freed up space. The result will depend on the market confrontation that has already begun among different types of businesses: production companies (Disney, Warner), broadcast stations (CBS, CNN), service providers (Google, Microsoft), appliance manufacturers (Sony, Apple) and web operators (Telefónica, BT). All of them will try to become actors in almost

all the areas and the result will mean that in the end, the types of offers available will be conditioned by the types of operators that are able to dominate the market.

It is necessary to closely follow the economic structure of the sector, of any changes and alliances that take place, because the result is not only important from an economic point of view (some companies will dominate and expand; other will lose their standing and be absorbed or will merge), but because it will not be the same for the consumer to have a market controlled by web operators, service operators, appliance manufacturers or production companies.

C. I don't know if this will happen or not, but it would seem to me to be rational if the networks as well as the receivers were neutral and open, meaning that consumers would not be tied to using the technology and standards owned by one company. If that can be avoided, the marketing competition will be good because it will be centred on the quality and prices of services and content. However, previous experience in the introduction of other innovations in the past few decades shows that things do not always proceed along the most rational path. The possibility of conditioning access to services through specific terminals or being connected to a concrete network is very tempting when it comes to maintaining client fidelity and chances are that the experience will repeat itself.

It's important that the regulatory agencies, especially at the European level, remain attentive to the way in which standards are created, how access to the network is regulated and how abuse of power due to vertical concentration or excessive market dominance can be avoided. We must be capable of turning around an anomalous situation that has happened with the union of communication and transportation networks. The anomaly is that the user receives two services at the same time, a connecting service and another one with content; however the user usually only pays to be connected and receives the content free of charge when everyone says that the latter is the more important. During the telephone era, the user provided all the content and the service he/she received was one of transportation, but now that has changed. However, we continue to consider content as an extra with very little value. This is the original sin, both for TV and the Internet

and as long as we do not face this mistake, we won't be able to solve our current problems.

D. We are entering a stage that is much more participative and less professional. I'll explain this by using an example that takes place in the field of energy. All of our homes and industrial or commercial buildings are big electrical energy consumers. The current system is "radial". There are "plants" that generate an enormous amount of electricity (thermal energy plants, nuclear plants or recently, wind farms or solar energy parks) and a "distribution network" that transports the energy to "consumers".

But this panorama is going to change and production points will multiply. Energy generating equipment will be installed in factories, little waterfalls, solar panels for a building or community. Each of these consumers will be connected to a network and will receive energy from a centralised plant when need be, but will also pass on any excess energy to that same plant when individual consumption is low. The network will no longer be one-way; rather, it will become an exchange network. There will no longer be a monopoly on production and many consumers will become producers.

This is how I imagine the future wideband Internet should be: large "professional" information-generating, reference and entertainment centres and millions of consumers who will also have the capacity to produce, emit and exchange content —and everyone's connected. Little by little the borders between professionals and what nowadays we refer to as "amateurs" or "spontaneous users" (those whose recordings are used by many television networks when they don't have their own) who, with their laptops, video cameras or mobile phone will play an important role in the future.

There will be a lot of new actors on the scene —individuals, but above all, small organisations— who up to know were outside the "system" and who only played the role of receivers or participants. This will mean rethinking both the economic and regulatory bases of the audiovisual market. As I've already said before, all of this will mean a decrease in the value of having a broadcasting frequency, but an increase in the value of producing creative professional content. It will be more difficult to regulate the rigorousness and veracity of

information, because in addition to the problem of gratuitousness, there is the additional problem of anonymity. The process of how public opinion is formed will change. The oligopoly of information is over, as is that business model. However, this system that requires responsibility when creating and emitting information will become complicated. We've already seen some very clear cases of this. The information error that the Spanish government made two days after the terrorist attack in Madrid in March 2004, which changed the result of the election, completely turning it around, the decisive role the Internet has played in US elections since 2008 or the uprisings in the north of Africa in 2011 demonstrate this tendency toward communication venues that are much more open, participative and even democratic. These venues are where these tendencies will become more pronounced and where changes will impact more on social life.

8. New technological impetus: a connected society

The path toward a connected society began many centuries ago, has greatly advanced up to this point and is entering a new stage soon as a consequence of some technological developments that are underway. I would like to go over some fundamental points that I consider definitive when it comes to being connected. In the world of energy, I would say to have the ability to exchange energy. In the world of communication, I would say to have the ability to exchange information, that is, to relate to others personally. That depends, among other things, and from a technical point of view, on networks and codes (which means roads and vehicles).

The more people have this ability, the more extensive and two-way the network is and the easier it is to use codes, the more connected a society is. As I have already said, digital TV, wideband Internet and mobile phones allow everyone to be connected with everyone, anywhere and anytime, and to be able to use this system as one wishes. This is what current technology allows us.

Now we are going to try to understand the impact of some of the latest changes that are taking place. I feel obligated to choose just a few without being sure which ones

will be more important; however, these are the ones that seem the most important to me. We are at a point in which one can say that they are technically possible, but haven't yet achieved majority use. Two have to do with the Internet and one with codes.

A. RFID and sensors. The acronym, still not well know, comes from English ("Radio Frequency Identification"). It involves the use of very small microchips, that can be attached, sewn on or integrated into any object, regardless of the material used (wood, metal, clothing...) and that can emit a signal that, among other things, identifies the object. This means that objects now have their own ID. In the same way that cashiers in supermarkets scan and identify products using bar codes, these microchips identify objects and all their characteristics using the radiation they give off. These chips could have a very wide use, from locating and controlling objects to other diverse actions.

At the same time, we will have a large variety of nanometric sensors available in our interior or exterior environments that can detect changes in temperature, movement, noise and acceleration. Other, more sophisticated sensors, can pick up peoples' vital signs non-intrusively if they are nearby, noting whether they are anxious, relaxed, if they are about to fall asleep (for example, as they are driving) and, as a result, can prevent dangerous situations by adapting the environment to individual needs or checking —for security reasons— to see if the person present is the person who is supposed to be there and act accordingly.

B. Internet for things. These days, people are connected to the Internet. In reality, it's our computers that are connected and we use this electronic machine to give meaning and purpose to this connection. While it's very common, though still not widespread, there are computers that receive, process and send information without a human operator making the decisions. Once programmed, the machine is able to understand what it has received, make decisions and dispense answers. There are several thousand computers in the world that currently fulfil these tasks. The possibility of creating a computer within a chip (a microprocessor) means that many

large and small items, such as fridges, cars, car keys, ovens, office lighting, door locks, heating furnaces, etc., can have this ability. I've intentionally used only household items as examples, but you can come up with examples in the areas of business, public services or the military!

Many people are used to sending an order to turn on the heating via telephone, but that is simply a remote command that does not use dialogue or "intelligence". A furnace that is connected to the Internet will be able to receive orders, but will also be able to detect a failure within the system and send an alert or even directly notify maintenance by sending all the necessary data. A fridge that is connected to the Internet can know what its contents are at any given time, can detect the need to restock items and can send an order to the supplier while informing the owner. Those who have studied this subject say that in a few years, the number of things connected to the Internet will be ten times higher than the population and right now, there are 1 billion of us.

A society's level of "connectedness" in which everyone is permanently connected, but also in which the majority of material objects that make up that society are connected, is much higher and allows for very different guidelines for coexistence. There is a lot of speculation, and I won't speculate myself, but I don't consider the observation to be a frivolous one that a society that is so connected begins to take on its own characteristics, typical in higher functioning organisms, that are the beginning of a new evolutionary stage in life on the path toward greater complexity and efficiency (atoms, molecules, cells, tissue, organs, individuals, social organisms...). In any case, it will be a new form of society that, if it follows historical tendencies, should be more cohesive, more cooperative and with greater well-being. The implications that this could have in terms of an increase in collective values in comparison with individual values could be important. I hope, though I'm not sure, that this increase in connectedness and the possibility to communicate will enlarge the collective conscience and sense of belonging, and not provoke confrontations. The evolutionary path of the species more and more is about maximising the potential of cooperation in order to solve collective problems. And that's valid for the next group, but also for more global areas.

C. The natural code. Just as I explained at the beginning, communication allows for the transmission of thought and, as thought is immaterial, a physical support system and code are necessary for thought transmission. However, it's important to understand that even though it's immaterial, the thought process within the brain already has a physical support system. There are connections among neurons and activity involving synapses, which consists of transferring ions through synaptic channels and generating variations in electrical energy that travel along the neuron. There is, therefore, a "natural code" that is electric. (It's good to know that the brain is the human organ that consumes the most energy when the body is resting.) All the different types of language that we use exist because of the difficulty in directly using this code.

The possibility of using this small electric signal to "transmit thought" has been the object of a great deal of science fiction literature, but in the last few years, it has begun to be a topic of experimentation with very positive results. The majority of these experiments consist of using thought to make external objects work through what is known as "brain-computer interfaces" (give a mental command to a machine instead of pushing a button or use a word as we frequently do today with telephones).

There is also experimentation going on, though with much more precaution, with "brain prostheses". In the same way in which we use external or internal prostheses in order to improve eyesight (glasses or contact lenses), it is possible to increase the capacity of the human memory by adding an external memory. There's no need to mention the problems involved (technical, medical, ethical), however, one shouldn't forget that our brain has the capacity of a few gigabytes, which means that it's very inferior to any of the electronic memory devices we use each day.

Anything that increases the possibilities for connection among people or between people and things without having to obligatorily go through one of our senses in order to emit information (voice, touch, movement) or to receive it (sight, hearing, touch), is of great help in the short term for those persons who have malformations or dysfunctions involving these organs (think of Stephen Hawking); however, in the long

term, these devices could become a new way of communicating and could even lead us to an evolutionary crossroads. Experimentation in these fields is still in its initial stages and there are all manner of difficulties that must be taken into account and resolved with a great deal of prudence and calm before any type of implementation can take place, but it would still be imprudent not to accept that this is a scenario which must be considered.

9. A transparent society

Imagine a village in the mountains with a population of less than 500 people a century ago. Everyone in the village knows everyone well. They relate directly with one another (good relationships or even ones in which they hate each other...). They talk to each other frequently and everyone is aware of everyone else's personal situation, both good and bad. Any news spreads quickly throughout the village. This is an example of an isolated society, but one that is internally very well connected. It is a society that is connected and, at the same time, transparent. It would be difficult for there to be many secrets among its members, whether they involved money, health or matters of the heart. As one of the members of that society might say: "We know everything about everyone here".

I have often asked myself if it's possible to have a connected society, such as the one we are currently building, without that society becoming transparent. I don't know if the situation I've described with a limited group of people can be transferred to a larger dimension, but I am convinced that, in the end, the society would be transparent. In the first place, because there would be an increase in interconnectedness, the ability to form relationships, even if they weren't physical, would facilitate communication. In second place, because the exclusive nature of centres that emit information, the current oligopoly of formal media, would disappear and everyone would be a centre that generates information from many different points of view, and once that information is generated, its circulation would be widespread and fast. And also, because the force, necessarily repressive, that would be necessary to avoid that situation would be so great as to no longer be tolerable,

given that it would mean a considerable loss of freedom. A Spanish proverb comes to mind here about the impossibility of putting doors on a wheat field.

If my intuition is correct, we need to revise concepts regarding privacy, private life, and the protection of reserved spheres that have been tied to the process of individualisation in the last centuries and that undoubtedly need to be re-examined in light of what I have just explained. I am a great defender of what is a person's private life, but I think that concealment and lack of transparency in many political, social and economic aspects is one of the causes of many of our current social problems. It is necessary to clearly separate the private sphere from the public; however, it is important to know how to detect private behaviours that, due to the public consequences, need to be considered differently. (Agreements concerning the quantities and forms of compensation between a bank and its directors, for example, are of a private nature, but can have and have had enormous repercussions in the economy...). I am hopeful that the jolt that so many people in the field of finance and the economy have experienced with the recent global economic crisis, with its strong implications in the world of politics, has served as an intellectual stimulus to accept the need for this revision that I am asking for. In the same way in which we understand that we must accept individual limitations to our freedom in order to increase collective security, we need to understand that a society that is more transparent and adequately regulated can be a more prosperous and more cohesive society.

Technology not only allows for transparency; it practically imposes it. We use technology for those things which are socially good and we place barriers on those things which hinder collective interests. These judgments shouldn't be made from a technological standpoint; rather, from an ethical and political one, which is to say, from a democratic standpoint.

4
New Information Technologies and the Education of Youth

Urs Gasser

1. Introduction[2]

Trevor scrolled through the results of his Google search for the word "Prohibition", the subject of a research paper for his sophomore-year history class. The teacher had convinced the school's librarian to give a tour of the library and show the class how to use the card catalogue, but Trevor spent most of the class texting his friends. The card catalogue was older than he was, dust spraying out of it as he flipped through its cards. Trevor was certain that anything he needed to know could be found via his laptop. Reading off the computer screen went faster for him than reading paper. More importantly, he could search the text for key words, without having to fumble through the indexes of large heavy volumes.

His search had returned over 18 million hits. Trevor tried to sort through the returned URL's, trying to figure out

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[2] I wish to thank the members of the Youth and Media team at the Berkman Center for Internet and Society at Harvard University for their contributions. Special thanks to Sandra Cortesi, Ned Crowley, Nathaniel Levy, and Seongmin Lee for help and support. An in-depth exploration of the topics outlined in the chapter can be found in Palfrey, J., & Gasser, U. (2008). Born digital: Understanding the First Generation of Digital Natives. New York, NY: Basic Books.

which sources seemed the most legitimate. He always started off with Wikipedia to get a general overview of the subject, but he wasn't going to put it down as one of his sources. Even though his teacher the year before had been okay with people using Wikipedia as a source, and had even encouraged students to add to its entries whenever possible, this year some kid in his class had gotten points off for using it– not only had some of the facts been wrong, but some of the key terms had been made up, and she'd copied parts of the entry verbatim.

The links in the Wikipedia article were often the most helpful part. Trevor tried to use sites that ended with .org, .gov, or .edu, though sometimes if the .com sites seemed legitimate, and not just someone's Tumblr page, Trevor would use that too. He also knew that he could simply add the word "paper" to his search term, and tons of websites would pop up offering cheap term papers written by professionals in no time flat. Trevor had no intention of cheating– all the students at his school had to sign a paper about academic honesty at the beginning of the year, and when one kid had been caught handing in a paper he'd bought online, he was expelled. Trevor wasn't sure how the teachers knew, but Trevor suspected that teachers just had an extra sense for this kind of thing. His mom used to be a teacher, and she could always tell if something was up.

The one useful thing Trevor had gotten from the library presentation was the school passwords to log into databases that require membership, like ProQuest and JSTOR, and tips from the librarian on how to search them, too, just like the way he searched in Google. Part of the assignment for his paper was to have a good mix of primary and secondary sources. The old newspaper articles would work well for the primary sources, and he quickly found old New York Times articles from the 1920's by looking for "prohibition" and also, "the noble experiment," a term he had seen used in the Wikipedia article. Trevor liked looking at old newspapers, and it was easy for him to get sidetracked. As his mom called him for dinner, he realized that he had spent the last half hour looking at various trapeze accidents from the 1920's, instead of the policies of the prohibition era. It made for spirited dinner conversation, anyway.

2. Information Behavior

While fictional, Trevor's story illustrates important characteristics of many young people —we call them Digital Natives— who were born around 1980 and who have access to digital technologies and the skills to use it. For Trevor, as well as millions of his peers around the world, the Internet plays a fundamental role in his life. In many European countries, for instance, almost all teenagers have access to the online world. In the United States, 95% of teens ages 12-17 are online. And whether their homes are in San Francisco, Madrid, or Shanghai, Digital Natives regard the Internet as their preferred medium for looking up information and communicating with others —today often on social networking sites like Facebook or— or simply for playing games. Just as young people's activities online run the gamut from play to work, they likewise occur in every context, from personal to social to academic. In fact, the strict divisions between these activities and contexts adults often draw are unfamiliar to youth, who increasingly experiment with their personalities in online spaces, socialize as they find and evaluate information, and learn through play and creation.

Digital Natives have a very different relationship to information today than they did a generation ago. Digital Natives were small children when the DVD replaced the VCR, if they'd been born at all by that point. Today, research for our students is more likely to mean a Google search or a Facebook visit than a trip to the library. Put another way, they are more likely to ask their online friends on a social networking site for advice rather than they are to ask a Reference Librarian for help (though they are often richly rewarded, and surprised by what they learn about online sources, when they do ask a great Reference Librarian). They rarely, if ever, buy the newspaper in hard copy; they graze through news and other information online. Digital Natives are learning, accessing information, and expressing themselves in new, digitally-inspired ways.

Digital Natives experience the vast ocean of potentially relevant digital information at their fingertips in ways quite different than previous generations interacted with information in the pre-digital world. Consider the different ways in which Digital Natives come to learn about the world around them and

about knowledge in general. Trevor, for example, came to develop a mode of experiencing the "news" that's quite distinct from his father or grandfather's approach to experiencing news. A Digital Native doesn't read the New York Times or his local paper cover-to-cover over coffee in the morning. Trevor doesn't rush home to hear the news read by the local news anchor. He gets his daily dose of news either on reddit, or via a friend's post on Facebook. He dips into a river of information as it flows —or, gets "pushed"— to him all day long. A Digital Native may or may not be less likely to talk about the news around the dinner table with his family, but that does not mean he doesn't engage with other people about what he's learning. To the contrary; he might share stories and links with his Digital Native friends over instant messaging services. More likely, he shares "news," defined a bit more broadly, with his peers within a social network like Facebook or Twitter.

Digital Natives' ways of experiencing news and other kinds of information online form a distinctive pattern. Although this pattern can also appear in the context of school-based learning, our first step is to understand how students get their news and information about current events. In the paradigmatic sense, it's a three-step process. There are variants to this basic pattern, but in the simplest form, it works like this:

The Digital Native gets introduced to new facts through the process of grazing. The source of his facts might be any number of news providers, from a major news outlet (CNN, MSNBC, the New York Times, Al-Jazeera, and so forth) to a comedian, such as Jon Stewart or Steven Colbert, or a post by a friend on Facebook. The way that he accesses these facts might be through an RSS reader, which allows a computer user to choose which news sources to aggregate into a single web page, browser window, or segment of his e-mail client. He might come across the headlines in the highly-configurable Google News or through a TweetDeck alert, based upon the appearance of a keyword in a news story; he might passively listen to radio in the car or a news channel at the gym from the seat of a recumbent bike; he might e-mail with peers, or read blogs; or use any number of other suppliers of facts, including offline sources. The net effect of this pattern of grazing is that the Digital Native initially gets just the bare fact, or the headline, and perhaps a bit more (on the order of a paragraph).

But he probably lacks real context for that fact. The fact may not be verified and may prove to be false or misleading. In terms of the competition to provide this service, speed and relevance are the sole factors, driven by the information access patterns of the Digital Natives.

In some cases, he may decide that he wants to go beyond the headline, to learn more about a topic beyond the basic fact he's been exposed to. This is where he goes to dig for context for the fact that's been introduced. He might choose the "channel" for this information because of celebrity (he likes a certain news anchor's hair); politics (he likes a certain slant on the news); brand (a given source has a brand that appeals to him); or other reasons. The deep dive helps to make sense of the news, to put it into a frame, to offer an analysis of it, to introduce relevant other voices. This is where trust, branding, and credibility come in. This stage in the news-gathering process for a Digital Native is where news organizations, especially powerful and wealthy institutions —those able to afford bureaus and the like— can add the most value. Some blogs fill this role, too. An example is Global Voices Online, a global non-profit citizens' media organization that seeks to aggregate, curate, and amplify the global conversation online and to shine light on places and people other media often ignore. The key factor is not speed in this context, though timeliness is important; the key factors are accuracy, trustworthiness, insight, analysis, new angles, and relationships.

The third step of the information process is not for every Digital Native, and is the hardest for traditionalists to grapple with. An increasing number of Digital Natives want to take another step, to engage more meaningfully with the fact and the context. It might mean blogging something himself on his blog, creating his own podcast or video-log, or commenting on someone else's blog, wiki, or bulletin board. Or perhaps sending an e-mail to a listserv or to a network news program. The idea is to talk back —to act as an empowered citizen, able to have an impact on the way the story is told. This feedback loop may be taken seriously, or it may not, by others in the citizen generated media movement, by mainstream media, and by decision-makers. Generally speaking, this increased level of engagement with the world around him is good for his own

learning process. If we can encourage it, there's no doubt that this feedback loop will redound to the benefit of society at large over time. If Digital Natives are rewarded for leading a life more engaged in the civic sphere, we'll all be better off. It's a long-shot, but it's one worth taking– and one that won't happen unless we pay attention to fostering the positive behavior that it involves.

3. The Impact of Learning

Psychologists, neuroscientists, educational theorists, and many other academics agree on one thing: The changes in the ways in which Digital Natives interact with information and with each other will have a profound effect on learning. But we're not quite sure how yet how these effects will play out. How can we harness the potential of the digital technologies for learning while avoiding its pitfalls? Are young people changing as a result of digital media and learning? How should young people's learning environments change? How should learning institutions change? While we don't have final answers to these and many related questions yet, we're far enough along in this process to have a much better understanding of the types of shifts and, potentially, the kind of new opportunities the Internet brings for learning, both in the classic educational sense and in terms of learning about the world around them, and what we as parents and educators can —and should do— to embrace them. Consider the following real-world story.

Michelle is a twelve year old girl from the San Fernando Valley area in Los Angeles. Her mother immigrated from El Salvador, has an 8th grade education, and has limited fluency in English. Michelle has a learning disability, but is unique among her peers for her interest in pleasure reading. Also, Michelle likes to go online, mostly to browse information and play games related to her favorite TV shows and socialize with friends on sites like Facebook. Michelle has a computer at home, which her mother bought her so that she could do homework. Michelle also uses the computer to burn CDs of music for her friends. At school she is taking a class that uses programs like PowerPoint and iMovie. This is her favorite class, because, as she says, creating media projects helps her learn, and Michelle would like

to do more media production outside of class with her friends. However, Michelle is bored by some aspects of the media production projects, like doing research or writing scripts, probably because these assignments were given by teachers and designed to achieve goals set forth by the school curriculum. This set up contrasts how Michelle and her classmates typically engage in 'youth-driven' practices with media, where they define their own goals and content of media production work.

Michelle's story tells us a lot about the opportunities that digital technologies bring for learning. Its most encouraging point is that Digital Natives can acquire new skills or "literacies" when engaging with new media. She learns how to use digital technologies to express herself in creative ways and, in this process, improves her research and writing skills, the ability to craft narratives, and of course her computer skills. The literacies that youth develop through their use of digital technologies are not always identical to those taught in formal education, but are undoubtedly a form of learning and, in turn, likely to shape more traditional forms of learning as well. As in Michelle's story, many of the new learning opportunities presented by new literacies have to do with creative engagement with digital media. The cases of online communities for user-created writing, animation, or illustration of stories, such as manga, anime, and fanfiction, are great and well-studied cases in point. Kids are active participants in each of these communities, where they may create stories from scratch, remix found audio and video footage from across the web, or riff off each other's writings or comics.

Each of today's popular methods for content creation requires a user to imagine storylines and depict his creation textually or visually, which are important skills to develop. The online spaces for popular forms of content creation among Digital Natives are highly collaborative, especially in the evaluation process, providing feedback loops that are important for learning. For example, within online fanfiction communities, authors and editors (known as "beta-readers") collaborate on offering feedback and improving the quality of user-generated work. Users gain skills as they participate in the community, and they also learn the norms particular to that space, which govern how work is shared, evaluated, attributed, and so on.

The development of imagination, understanding of narrative, and technical and procedural skills required to create one's work, as well as the interpersonal exchange of positive feedback are all part of the new skills and literacies that a young person might acquire from participating in online content creation activities.

Yet new literacies are not found only in online communities; even Michelle, who preferred sharing burned CDs with friends at school over developing film scripts in class, developed important skills through her creative and social uses of technology. This leads to the second important point Michelle's story teaches us. In the digital age, much learning happens outside the classroom and without curriculum. Such learning is typically called informal learning. Of course, the door to the classroom has never truly marked where learning begins and ends —a young person might develop a keen sense of math or geometry by playing baseball or soccer, for instance, or become a history buff by spending time in a public library. But as networked technologies become a growing part of how youth spend their time outside of the classroom (and inside it, with —or often without— teachers' consent), they are not only changing how youth learn but providing more chances for young people to both pursue learning about their passions and develop their passions for learning. To briefly return to Trevor, our first case in point: Trevor serendipitously stumbled upon images of historical trapeze accidents while researching a different topic (Prohibition) for his homework, but quickly found himself fascinated with the trapeze accidents. Faced with a rich supply of images in the online research databases for him to browse through, Trevor quickly learned about a new subject, and more importantly, learned that he felt confident to return to those same online tools for fun browsing sessions later on.

The Internet is dissolving the dichotomy of formal and informal learning. As we've seen, the new forms of learning taking root are: both individually motivated as well as peer-driven; and, capable of enabling young person to both develop expertise in something they're passionate about, and in turn, develop a passion for learning. With such a dynamic feedback loop in place, learning is clearly not confined to the classroom, nor is it kept completely outside of it. Take the case of gaming, which has long been recognized as an important setting for

informal learning that schools have not fully appreciated. You might have heard the story of 14-year-old Laura McKnight, a middle schooler from Palm Beach, Florida, who ran for President of the city of Alphaville, a virtual city in the online game The Sims Online. As a first-time candidate, Laura's virtual self (an "avatar") ran against incumbent President Arthur Baynes, a 21-year-old airline ticket agent gaming in Alphaphille from Richmond, VA. Alphaville is one of the online gaming world's oldest cities, and the real-life lessons of muckraking, debate, and voter disenfranchisement all played a role in this election. There was even the possibility of mafia involvement and a "fixed" election. The election gained so much attention that both candidates were even invited to debate their platforms on NPR's Talk of the Nation while fielding questions from pundits.

While the outcome of the election may have been important to the "citisims" of Alphaville, simply participating in the election had meaningful implications for Laura. She gained important procedural knowledge related to democracy and citizenship, such as debate. Moreover, her virtual self adopted a powerful persona (a presidential nominee) rarely experienced by a 14-year-old girl. Experimenting with personalities and self-expression was a central part of Laura's Alphaville experience and strengthened her learning takeaways about decision-making and democracy. Although experimentation with role-play in games and virtual worlds doesn't necessarily vault all youth into the national limelight, it does underscore the acquisition of skills and knowledge in the new learning environment.

Gaming's value to learning, however, is not uncontroversial. Video games ignite serious concerns and misunderstandings among parents, educators, health professionals, and policy-makers. Much of this conflict arises from the nature of games as interactive and fun media with which youth engage largely outside of the purview of adult authorities. How and what youth learn through gaming is typically a function of gamers' interaction with the game (a commercial product of game development companies) and, oftentimes, other gamers. Educational gaming is a subset of gaming media that seeks to achieve express educational goals through a video game. However, most educational games to date have failed to achieve the cutting-edge interactivity and

freedom characteristic of their market-leading counterparts. That is, gamers must follow set guidelines to achieve predetermined goals. Once the goals are achieved, there is little room for creativity, exploration, or critical interaction with the game. These so-called "targeted" games have limited learning implications outside of the game itself. By comparison, open-ended video games have no single path to success, but rather encourage exploration and experimentation. These open-ended games include commercial massively multiplayer and simulation games, which afford players "possibility spaces" without linear rules or story lines. Open-ended video games allow for a diversity of learning that may exceed the imaginations of even the game developer. The trajectory that a player follows in an open-ended game reflects her own interests and skills. The challenge, then, is for educators and game developers to think strategically together in order to design open-ended games that allow for a multifinality of learning outcomes that both resonate with young gamers and have implications for their learning outside of the game world. Given these sorts of games, the objectives of formal learning could potentially be realized in one of young people's preferred modes of informal learning.

The question of video games' value to learning is illustrative of the broader conflict around informal and formal learning and digital technologies. While digital technologies create opportunities the challenge the dichotomy between informal and formal, they are not always harnessed optimally for desirable educational goals. But gaming is just one of cases in which we see the boundaries between formal and informal learning blurring; the potential of learning through online videos is another.

Imagine three first-year classrooms at universities —one in New York, Cape Town, and Rio de Janeiro, respectively. They may not have the most state of the art technology resources, or their resources might vary, but they can all let their students get online to connect to a private blog that their teachers have set up for exchange about news and government in other societies. Students are asked to post three times a week about international problems and news in their home countries, translating into English using Google Translate. They'll be asked to use the ongoing conversation to feed their final reports at the end of the semester. While discussion and intense debate does

surface on the blog, one student from Cape Town thinks the text-based conversation is somewhat boring and finds it hard to really imagine where her virtual peers are coming from. Curious about the elections in Brazil and the U.S., she asks her peers if they have any relevant YouTube suggestions, and receives several links to videos of social demonstrations and clips from political satire news shows. Alternatively, our student in Cape Town could also be an American community college student struggling in a chemistry course. The professor's lectures and the warmth of the classroom always make her sleepy, and the outdated edition of her textbook (which she got to save some money) is difficult to work with. A quick YouTube search for instructional videos on chemical bonding returns thousands of results of recorded lectures, animations, and catchy educational music videos, all of which allow her to move through the topic at her own pace and backtrack at any time to shore up on the details.

Clearly, much learning takes place among youth without formal curricula. Just as Alphaville boosted Laura's understanding of politics and government, so too do we see youth participating in new forms of democratic discourse online through political remix videos, well outside of the purview of their social studies teachers. Similarly, youth are telling stories, whether in fanfiction, manga, or anime communities for virtual peers and collaborators or in text messages to their friends. Online communities for DIY ("do-it-yourself") hacks and coding projects —including those developed specifically for youth, such as the Scratch project— invite peer collaboration and remixing. They are editing and adding to Wikipedia articles, microblogging, retweeting peers and politicians alike, and sharing enormously on Facebook and other social networks, crafting and curating their messages all the time. These activities and their associated forms of learning are not necessarily unique to youth, but they are often much more engaged in it as adults.

Acknowledging some of these shifts, some innovative educators have started to experiment with 'hybrid' teaching formats and strategies to integrate elements of informal learning into the classroom. The promise of such efforts is nicely illustrated by the story of a 10-year old boy in a California public elementary school. Matthew excels at inverse

trigonometry, a level of math beyond that of most high school students. Matthew's began racing ahead of the normal fifth grade math curriculum by leaps and bounds when his teacher started using Khan Academy to supplement the regular class work. The program was so successful that Matthew's teacher started assigning Khan Academy lessons for students to watch at home, where they could rewind and replay the videos as many times as they needed and then bring problem sets into class the next day for in-person help. Inverting the typical pattern of lectures followed by homework allows students to advance through lessons at their own pace and the teacher to respond to students individual progress as they work on problems. While Matthew is particularly advanced, all of his classmates have benefited from this new model, as his class' overall math scores have improved.

Matthew's success story is but one example of how growing numbers of educators are turning to new providers of open educational materials as they consider how best to leverage the comparative advantages of digital technologies —a topic we will revisit later in this chapter. While celebrating and embracing the new learning opportunities the Internet brings to us, it is important to acknowledge that there are also downsides we need to address as well. It's not as though new technologies will have only a salutary effect on learning. As we apply these new technologies in schools to achieve our affirmative pedagogical goals, we should pay attention to ways that we can correct for emerging problems, too, through the way we teach young Internet users.

4. Challenges

Parents, teachers, policy-makers, and Internet researchers alike share a series of important concerns, which we need to bear in mind when thinking about the widespread use of the Internet by youth and its impact on their education. The list of concerns covers wide ground and includes issues such as cyberbullying, privacy concerns, aggression, Internet addiction, social isolation, and obesity, to name just a few. All these phenomena are of great importance and similarly complex in their causes and often difficult to approach. From a learning perspective, we

would like to highlight three interrelated problems that, in the broadest sense, have to do with the massive amount of information that youth encounter in their digitally mediated lives and the limited information processing capacity we have.

One of the popular strategies among young users to deal with the unprecedented amount of digital information and the pressure to cope with that has with potentially negative effects on learning it is multi-tasking. Studies show that about 80% of young people spend some of their time with media multi-tasking. When doing homework on the computer, for instance, kids spend a fair amount of time switching between other computer activities, according to a leading study. Most likely to be paired with homework on the computer are music (15% of homework time), TV (12%), followed by Instant Messaging (IM) (8%), reading (6%) and looking at websites (5%). But multi-tasking also takes place in many classrooms in Europe and the U.S., where many students—depending on their age—have either a smartphone under the desk or a laptop in front of them, connected to the Internet, at all times. As teachers at the front of the room, we can tell that students are using the Internet during a seminar to text or IM one another, read news online, or even play games. There's an obvious concern about students not paying enough attention to the task at hand. With a world of information and connections to friends at their fingertips at all times, the temptation to stray from the course is great.

How shall we think about multi-tasking as educators? The short answer is: in a nuanced way. First, we have to accept it as a reality. Multi-tasking is so widespread among kids that it is unlikely to go away, especially since they perceive it as a helpful strategy when dealing with massive amounts of information and multiple communication channels. Second, we need to keep in mind that not all forms of "multi-tasking" are bad. It seems quite desirable, for instance, that an airline pilot is able to communicate with traffic control while activating the thrust-reverser when landing. Or it seems a good thing when we learn that some surgeons perform stressful tasks more quickly and with increased accuracy when listening to their preferred and self-selected music. Third, various studies suggest that multi-tasking and task-switching do not render learning impossible. Nor do they necessarily have a negative impact on the task accomplishment ("result") as such.

However, it is also safe to conclude that task-switching in particular increases the amount of time needed to finish a task and has an adverse effect on Digital Natives' ability to learn new facts and concepts. So the challenge is to "get multi-tasking right," which requires learning —learning about multi-tasking. We should engage in conversations with Digital Natives about "multi-tasking" as one strategy to cope with the sea of information, but also its limits and downsides. Ideally, such a conversation about the promises and limitations of multi-tasking would be an integrated part of information and media literacy programs at schools.

In addition to the potentially negative effects of multi-tasking on learning, parents and teachers are concerned about the short attention spans of their kids. It is certainly true that the dominant mode of interaction with digital information is through shorter works, everything seems reduced to the length of short YouTube videos. Many of the young people we interviewed stressed their preference for IM and texting, for instance, as a mode of communication with others. Much has been said of the increasingly short attention spans, not just of our youth but of anyone in society, rewarded in their flitting about with tighter and tighter sound-bites from more and more sources. For Digital Natives, the phenomenon is the same, only amplified. From an educational perspective, we should find ways to address the issue of short attention spans. But technology doesn't have to be part of the problem; it can be part of the solution. As the teacher and consultant Marc Prensky points out, "students certainly don't have short attention spans for their games, movies, music, and Internet surfing". Prensky is absolutely right. There's an enormous amount we can learn from what is engaging Digital Natives and applying that learning ourselves to our efforts to rethink curricula. One simple idea, for any class that involves writing of some sort, is to put digital technologies to work as a feedback loop for students to comment on the material they are studying or on the ideas of their peers. The technologies to do so are free or cheap, and students already know how to use them. Another idea is to facilitate online peer-to-peer 'study groups', which are designed to carry academic knowledge and skill development into collaborative online spaces. OpenStudy invites users to form groups on any academic questions and share questions on a

message board or in real-time through chat with other users. Over time, such experiments may converge into more sophisticated strategies to deal with the new realities.

Another main concern expressed by many parents and educators is the massive amounts of time kids spend online and the fear of Internet addiction. Psychologists distinguish between "specific" pathological use of the Internet and "generalized" pathological use. Specific pathological use refers to a fixation on a particular aspect of Internet use such as online gambling or pornography. Generalized pathological use, on the other hand, concerns a more general dependency or obsession with use of the Internet which may, however, manifest itself with respect to a particular function of the medium, such as chat rooms or e-mail or web-surfing in general.

The issue of gaming addiction is particularly acute in Asian countries, including China, Japan, and South Korea. Korea has over 40 game addiction counseling agencies registering thousands of cases per year. According to estimates, 2.4% of South Koreans aged 9 to 39 are addicts and 10.2% are borderline cases. The Chinese state media has reported that as many as 13%, or 2.6 million, of the 20 million Internet users under the age of 18 are addicted to the Internet, including online games. The education commission in Shanghai has organized patrols to stop kids from entering cybercafés, and a Chinese agency has organized an experimental camp to seek to wean addicted kids from the Internet. Likewise, the first in-patient clinic for computer game addicts opened in 2006 in Europe. According to a British study, 12% of gamers met the World Health Organization criteria for addictive behavior. In the U.S., research suggests that up to 8.5% of youth gamers could be classified as pathologically addicted to playing video games. Much work remains to be done to understand how Internet addiction works, how it can be prevented, and how to treat specific cases (according to one study that involved a systematic look at the treatment outcomes with Internet addicts, cognitive-behavioral therapy is the most promising kind of treatment). That said, the overuse of the Internet —despite important differences— isn't altogether different from some of the problems earlier generations dealt with in the context of now-older technologies. Take television, for instance. Too much viewing of TV, alongside with screen violence, has for a long

time been a feature of growing up with technology that has concerned parents, one which they've tried to correct by setting limits on TV usage. The same goes for the telephone, generations further back. Today, as in the past, parents can and should set rules and aspirational standards for how often and for how long kids ought to game or go online, although networked technologies may make control more challenging. Such guidelines should be developed in conversations with young people, but also with the help of teachers and educators, and focus more on prevention rather than punishment.

5. Institutional Responses

Among the biggest challenges before us as parents, teachers, and policy-makers who care about the future of education is to come up with adequate responses to the behavioral changes in how young people navigate today's information ecosystem and to develop forward-looking strategies that embrace the wonderful learning opportunities the Internet presents, while avoiding its pitfalls. Given the real life stories of Michelle and Laura and our hypothetical Trevor, it has become apparent that the current state of learning, never mind its future, challenges many of the traditional assumptions of what learning means, where it happens, and the like. We have seen, for example, how youth are participating in new forms of democratic discourse online through video remixes, well outside of the purview of their social studies teachers. Similarly, youth are constantly writing, whether on fanfiction forums for a community of strangers or in text message to their friends. Youth are learning to manage whole groups of people and 'work' collaboratively in online games. They are contributing to Wikipedia articles, microblogging, recording music, and sharing all of this on social networking sites.

While formal education does not as yet fully reflect youths' lived experiences and has not adapted to students' intrinsic motivations or taken advantage of their new media skills and new forms of cognitive development, many institutions have attempted to respond to the above challenges by incorporating Internet technologies into the conventional classroom. In the twilight of the last century, for instance,

Harvard Law School invested a lot of money to renovate some beautiful old classrooms and put an Ethernet jack at each student's seat, along with a place to plug in a laptop. But it was unclear what role these connections to the Internet should play in the law school classroom. The first act by faculty, once the Ethernet jacks were installed, was to turn them off so that students couldn't access the Internet during class and get distracted.

Harvard Law School is not alone in this respect. We've heard versions of this same story repeated over and over again. Schools at every level of education have done the same thing. Some have given every student a laptop, and then wondered what to tell them to do with it. Others have spent thousands to equip every classroom with SmartBoards, a terrific newfangled computerized chalkboard that sits at the front of the room. As the One Laptop Per Child initiative rolled out its $100 laptops to millions of children in the developing world, the stakes grow even higher. Educators' early optimism, however, subsequently mixed with frustration and the constraints of Internet usage within schools. Decades later, such ambivalence persists because we are not yet sure of the best way to bring the Internet into schools. At the same time, educational institutions have started to experiment with a number of different approaches to embrace digital technologies for the education of youth. They map on a continuum that extends from bringing technology into conventional classrooms, using digital technologies to extend the physical bounds of the classroom, and building a two-direction bridge between formal and informal learning spaces.

The more traditional efforts on one end of the spectrum use Internet technology —or more precisely: certain applications available over the Internet— to supplement or enhance conventional pedagogy. For example, some teachers are using blogging and microblogging with students. Blogging as part of class has been shown to enhance learning through feedback from peers and teachers, as participants are more individually engaged. In another example, a European primary school gave smartphones to each student in one class, which students could use inside and outside of the school. Researchers found that the students used the phones both for explicit, directed objectives (e.g., the teacher instructed

students to look something up online or use a calculator) and implicit, indirect applications (e.g., students used the phone's camera to take notes or demonstrate completion of a task). Not only did students gain the procedural knowledge about how to take advantage of this technology as a learning tool, they also learned the self-regulation necessary to deal with it as a distraction.

Such initiatives that bring technology into the classroom are commendable for many reasons, but they nevertheless narrowly conceive of the learning environment as the classroom itself. By comparison, other projects have used digital technologies by stretching, expanding, or creating new learning environments. Class discussions that occur online, for example, can equalize classroom dynamics, as shyer students may be more predisposed to participate in a text-based environment. Also, teachers' preferences for certain students based on visual or audible cues may be obviated in an online environment. These factors can create a learning environment more conducive to discussion, especially for women and girls, who are often subject to the influence of gender norms in the classroom. Online distance learning can also extend the physical boundaries of the classroom and create opportunities for students around the world to learn collaboratively and be exposed to other cultures and worldviews. One account describes the experience of a group of students from New York, Belarus, Moscow, and Australia participating in a distance-learning project. After one assignment to read about the other students' home countries, a discussion took place about the Chernobyl disaster. Students from Belarus posted their personal memories of the disaster and the direct impact it had on their lives. This led to a discussion about government oversight and regulations. By the end of the semester, many students reported feeling a personal connection to the other students in the class, even though most of them had never met, and felt they had learned things about another culture through a social experience they would never otherwise have.

An advanced example that illustrates the promise —as well as limitations— of online distance learning is MIT's OpenCourseWare initiative, which provides recordings of college lectures on the Internet on a permanent, free, and non-excludable format. OpenCourseWare started at MIT, but has

spread quickly to universities and colleges throughout the world. However, sustaining the mission to make education freely accessible to everyone is a costly enterprise for institutions, and in order to make such initiatives sustainable, they will have to move out from the auspices of formal institutions and become even more participatory and collectively-driven. Another interesting case study in the context of distance learning is Khan Academy, mentioned above, which some commentators see as the first step toward a new system of learning in which every student could have access to a great teacher. Arguably, new Internet-based educational providers such as Khan Academy can open up traditional classroom learning for students who are either more advanced than their classmates or need more time and the replayability of lectures– although the lecture model may not work for every student, as critics have pointed out.

Some formal institutions have taken radical approaches in their curricular and organizational structure in order to reflect new learning opportunities. The Quest to Learn (Q2L) school in New York City, designed by the Institute for Play, is perhaps among the most impressive examples. The idea behind the Q2L school is the acknowledgment that a school is "just one kind of learning space within a network of learning spaces that spans in school, out of school, local and global, physical and digital, teacher led and peer driven, individual and collaborative". Q2L's approach to pedagogy is based on school-based play and gaming with both digital and analog components and discovery missions and boss levels as its organizing principles, rather than traditional lectures and tests. Take for example the story of the 11-year-old Kai Goree, a student who is extremely passionate about video games. At Q2L, Kai develops his problem solving skills daily through game-based Missions that challenge him to develop problem solving strategies while integrating math, science, language, and health. Through these games, Kai and his peers not only learn new concepts in order to complete the problems, but also apply these concepts to relevant, immediate problems. For example, in one Choice class offering, students are presented with the challenge of developing a two-week school-wide lunch menu that uses local, in-season food and then actually purchase the food, cook the meals, and serve their peers for those two weeks. This kind of game-based opportunity

creates an environment in which students are challenged to develop solutions to real-life, engaging problems while creating an inherent demand for the knowledge required to complete each task. Although many educational initiatives have sought to use games for learning, Q2L is unique because the internal structure of the learning system —its entire architecture— is built as a game-like environment, whether the medium of learning is digital or analog. Q2L creates a highly interactive learning environment with multiple feedback loops and appropriate and adaptive levels of challenge.

Initiatives such as OpenCourseWare, Khan Academy, or Q2L are notable examples of how the formal education system tries to harness digital media for learning. We have gained many insights from them about what works and what doesn't. While in many respects they are wonderful starting points, it is unlikely whether these and similar initiatives are sufficient to meet the demands of the new information ecosystem and youths' changing information and learning behaviors. One of the key problems is what we might call the "participation gap": not all kids have equal access to digital technologies and the necessary skills to use it. The mere availability of digital technology is not enough to exploit its full potential, and it's very hard to capture —let alone level, where appropriate— the nuanced differences in youths' behaviors and skills online. Welcoming free digital technologies into classrooms of varying resources may even bring equally variable results, (counter-intuitively) benefiting those with greater resources more so than those with less. Similarly, the availability of the Internet in schools does not mean the gap between the conventions of formal education and the new learning behaviors of youth closes (quasi-)automatically. Another potential barrier concerns differing perspectives, norms, and expectations between adults and youth, which may result in conflicts about what literacies and skills are desirable learning outcomes. Parents, for instance, are often skeptical of the educational value of the Internet, which can undermine the possibility of self-driven learning online. In the same vein, youth norms around socializing and identity formation online are often foreign and strange to adults. Many adults struggle, for instance, to understand how or why youth develop so much of their personal identities in public spaces such as social networking sites.

Another manifestation that illustrates how adult norms may clash with youths' own values are strict regulations about what sites can be accessed in schools that have incorporated Internet technologies.

These examples, from smart phones in the classroom to distance learning to new educational intermediaries, lie along a spectrum if innovation. On the conservative end, formal educational institutions seek to incorporate new technologies into the existing learning models and environments. On the more innovative end, new intermediaries like Khan Academy challenge the assumption that learning must occur in any physical or static space whatsoever. What these examples share in common, however, is the belief a set of optimal learning outcomes exist and can be determined and facilitated by more or less formal educational authorities. However, reflecting a more radical critique, some people are concerned that formal education —despite its efforts to incorporate digital technologies— may not meet the demands of the information economy. The popular press has paid much attention to this issue, especially after Peter Thiel, co-founder and CEO of PayPal and an early investor in Facebook, started his Thiel Fellows program, which offers $100,000 and mentorship to selected college undergraduates willing to drop out and start a tech company. Thiel argues that the market for higher education is in the midst of a bubble, soon to burst. A New York Times editorial in 2011 similarly argues that the skills necessary to start a business, such as networking and creativity, are not taught in formal education. A less radical version addressing similar issues is the initiative "Imagination: Creating the Future of Education and Work", a web portal at the University of Louisiana at Lafayette which started in 2007 and has been used to share and co-create educational innovations designed to boost kids' imagination. The web portal features a variety of resources, such as curricula and videos, about using technology like social media to foster imagination. The approach taken is in sharp contrast to conventional wisdom that drilling and testing according to math and reading standards will prepare our students for the future workplace. The Imagination project is founded on the idea that, because youth will create the future, their education must foster creativity.

Whether or not one agrees with Thiel's position or the Immagination projects underlying assumption, much more groundwork needs to be done to rethink, redesign, and remake the educational system in ways such that we are not only responsive to the new information habits of Digital Natives who can't imagine a life without Facebook or YouTube, but more importantly, apply digital technology and hybrid models of teaching and learning in support of pedagogy. We have done a good job of getting the technology in the hands of kids. Now we need to figure out how to harness its potential for education in a more complex world where the boundaries between online and offline and between informal and formal learning are blurring. This is no small task and requires all parties involved to work together. Digital Natives may be able to lead us into these new environments and show us how they work, but parents, teachers, and even policy-makers still need to teach our children and students how to interpret the signals they pick up with thoughtfulness and care.

6. Ways Forward

Given what we know about how kids are learning in the digital age, there are many things that schools and teachers can do to harness what is great about how Digital Natives relate to information. There's also a lot we can do to address the challenges that are emerging. The approaches range from a redefinition of the role of school libraries to the enactment of adequate school-based social media policies to the education of teachers. However, the single biggest thing we can do to address many of the issues addressed in this chapter is to use technology in the curriculum more effectively.

Teachers and schools should continue to experiment with ways in which technology ought to be part of the everyday curricula in schools. As emphasized, the technology should only be applied in support of pedagogy, not for its own sake. This suggests that "computer classes," while possibly a sensible add-on to some curricula, is a less essential idea than the notion of building technology into the ordinary curriculum. Programs where students are doing applied work, research and writing,

arts and music, and problem-solving are obvious places to seek integration.

To achieve this goal, those who are leading schools should strive to make it easy for faculty to experiment with new technologies in support of their teaching. Teachers know best what problems they need to solve and what opportunities they want to seize. Most schools develop a mode of supporting modest use of modest tools by a handful of faculty. We have no chance of leading if we continue to pursue our current approach. We need to have enough vision and enough support for experimentation for creativity to take hold and flourish, in step with curricular reform.

We should deploy more of the digital curricular materials that pioneers in the field of education have developed. Experimental curricula for many subject areas, at many teaching levels, are under development across the world. Many of these tools are available for free reuse. The BBC launched a multi-year effort, BBC Jam, to develop interactive teaching materials for school-age children over several years. The MIT OpenCourseWare project mentioned before offers free access to the teaching materials related to nearly all MIT courses. More and more free teaching materials are posted to the web each year.

There are many new opportunities for enabling Digital Natives to learn by doing. As noted before, Digital Natives can learn by creating digital works that range from the dead-simple to highly elaborate. Music classes can be transformed by letting kids not just listen to Tchaikovsky, but to create their own masterwork (or maybe not) using inexpensive software on a computer. Writing, poetry, art in each instance a teacher can orient a Digital Native in a digital space and encourage him to build something new or improve on something old. In social studies or a class on politics, students could be prompted to take digital speeches of candidates for office and encouraged to remix them into contexts that make them meaningful to the student. In so doing, students could learn about copyrights —their own as well as the rights of others— in the process. This mode of teaching students by encouraging their talents for online creativity will no doubt present challenges for many teachers who are not comfortable in the digital world. But the payoff could be substantial, for student and teacher alike.

Schools can also create new online formats that enable students to work, and learn, in teams. Digital Natives are proving, all the time, that they build online communities around ideas. The work-world for which many of them are preparing will require them to collaborate in order to succeed, whether they are starting a new business or non-profit or taking a staff position in an existing one. Collaborative technologies, like wikis, are cheap and easy to use. As students research, write, and create collaboratively through online environments, they will be learning skills that will serve them well over time, even as digital economies evolve.

These few examples illustrate that teachers and schools can do a lot as we seek to embrace new opportunities for the education of youth in the Internet age. But make no mistake, parents and other caregivers play an important role, too. Whether or not kids are technology autodidacts, or the kind who learn best from peers or in school, parents can connect better with young people as they are learning, doing homework, and so forth if they share a common online experience. The digital environment is where a lot of learning is taking place. Digital Natives are learning online about what it means to be friends with people, what it means to be a consumer, what it means to experience and interact with music and movies, what it means to be an informed citizen, what it means to play. Parents ought to be involved in these processes as kids go through them, not detached from the environment and fearful of it, as too many are today.

If parents spend time with kids in the online environment, they will have a much better chance of helping their children through the problems associated with being born digital. Parents can help kids develop values and attitudes towards consumption and participation in media. For example, research shows that parents are key in teaching basic literacy skills to children, and that they improve children's motivation and success. Parents can also help children increase their voluntary reading. Students who practice reading at home and at school achieve at higher levels than students who practice reading only at school. Developing positive early associations with reading predisposes children to more frequent and broader reading in later years and has a subsequent benefit to reading achievement. Certainly, basic literacy is relevant to online

activity, as there is plenty of reading online. More specifically, enthusiasm for reading online is a critical variable for the effectiveness of online search and evaluation of information. While online searching and evaluating involve a number of other skills, such as selecting among search results, navigating between pages, clicking on links, and processing small pieces of information, the ability to read and process large amounts of text is still a necessity.

In the new environment with blurring boundaries between informal and formal learning, partents' involvement goes far beyond sitting down with their children and practicing reading. Increasingly, parents are also invited to participate in school-wide and Internet-based activities. An illustrative example is Community PlanIt, a web-based social network that turns planning —in this case, designing standards for gauging school performance— into a big game and has recently been adopted by the Boston Public School district. The game connects students, teachers, parents, and administrators alike, who are all encouraged to play and discuss what makes a quality school. Their participation is rewarded with virtual currency as an attempt to apply game dynamics to the world of public comment.

One of the biggest problems we encounter when we look at how parents could help their children with problems online is that parents often lack the credibility to give advice. The point is not that parents need to use every hot technology. But they do need to be digitally literate enough to enter into the conversation and to participate in the online part of kids' increasingly connected lives. This is an easy —and necessary— place to start.

Teachers and parents are at the front lines of creating the future learning environment for youth that takes into account and capitalizes on the shifts from an analog to a digital environment. But other stakeholders, including public policy-makers and technology companies, at least in part share this enormous responsibility. Policy-makers can shape the future of the learning environment in many different ways. Broadly speaking, they can enact policies —and more importantly: allocate tax dollars— that enable and support educational reform addressing some of the key challenges and opportunities in front of us. Such policies might enable schools to make

investments in digital infrastructure ranging from laptops to e-books, but also to invest in people. Few schools devote even a single full-time person to academic computing; even fewer provide something in the way of strategic guidance for their work. These operations ought be developed in such a way as to provide a key support system for teachers. Ideally, the information technology team would be fully connected to the work of those in the library focused on digital resources as well as those working on curricular reform.

Conversely, policy-makers and legislators at different levels have attempted to enact restrictive policies and laws that hinder the adoption and innovative use of digital technology in the context of formal education. An example in this category is the misguided attempt of some states and districts in the USA to ban the use of social networking sites such as Facebook and other social media platforms in schools. The state of Missouri, for instance, passed legislation that prohibits teacher-student relationships via social networking sites. Missouri is not the first state that tried to limit the interactions between teachers and their students online. In Virginia, the Board of Education proposed guidelines that would restrict teachers and all school employees from any electronic communications with students, via social networking sites and SMS. Such policies are not helpful and need to be avoided. It is telling that both students and teachers have protested against such policies, both in courts and the court of public opinion.

In between the two extremes, governments enact many specific policies that affect the use of digital technologies in schools. Textbook adoption policies are a good example. The U.S. Education Secretary Arne Duncan and Federal Communications Commission chairman Julius Genachowski, for instance, recently challenged schools and companies to get digital textbooks in students' hands within five years. E-books are viewed as a way to provide interactive learning, potentially save money, and deliver up-to-date material faster to students.

Whether policy-makers invest in generally enabling educational policies, enact specific laws and regulations, or consider restrictive approaches to Internet-based learning, they interact with private sector companies that play an increasingly important role in shaping the digital learning ecosystem. In some instances —for instance in Switzerland— it has been

private Internet companies (in the case of Switzerland the telecom provider Swisscom) that have either donated computers to schools or sponsored Internet access. But the private sector is not only important as a potential source of funding. Rather, the vast majority all of the popular platforms and applications that are used by Digital Natives —from Facebook to YouTube— and shape their learning experiences are owned and developed by private-sector enterprises. More recently, private sector players have entered the field of online education and are competing directly or indirectly against traditional educational institutions. We have already mentioned the success of the Khan Academy, which is illustrative in this respect. Another example is Apple's recently launched iOS application called iTunes U, which runs on iPhones, iPads, and iPods. The new application, together with other components of Apple's educational offerings, allows users to easily create books and textbooks. It allows teachers to create and manage courses and with components such as syllabuses, assignments, lectures, quizzes and the like. iTunes U is open to any K-12 school district, and partnering universities include leading universities such as Cambridge, Oxford, Harvard, Yale, Stanford, MIT, and others. It remains to be seen how such potentially powerful digital educational technologies owned by private companies will fit into —or further change— the emerging hybrid learning environment of Digital Natives.

In this chapter, we have highlighted how digital technologies shape the ways in which youth are interacting with information and with each other. These seismic shifts also have a direct impact on the question of how Digital Natives learn about the world around them, both in the personal and academic contexts. The fundamental changes in the information and learning ecosystem, in turn, challenge traditional models and institutions of formal education, which not only have to accept the new information habits of young people, but should harness the enormous potential of digital technologies for education while avoiding some of the possible downsides briefly discussed in this contribution.

Over the past few years, educational institutions have responded to these challenges in different ways and by applying different strategies, ranging from rather straightforward approaches such as bringing laptops and Internet connections

into the classroom to more advanced and sophisticated models of distance and hybrid learning. Many insights can be gained from these experiments, but much more work —including evaluation and analysis of the different approaches— needs to be done in the years to come. In particular, the importance of working digital literacy skills into curricula in schools grows every day. Our children experience information digitally, often with far less —or far more— context for that information than in the past. Our challenge is to help them make sense of these new contexts and meanings, and to think synthetically and critically, rather than letting them lose their way. Sometimes, that means teaching kids to use computers; sometimes computers have no place in the room.

From a larger societal perspective, the role of digital technologies in Digital Natives' learning gives reason to be optimistic. The primary reasons for hope are two-fold. Through their engagement with digital technologies, young people learn, and use, effective critical thinking skills in and out of the formal learning environment. Those youth with critical thinking and digital literacy skills can participate more directly in the collection, sorting, shaping, and dissemination of knowledge in their world. This semiotic democracy, where the locus of knowledge and meaning construction shifts from institutional media producers to a multitude of consumer-(co)producers, allows us to imagine a future where education is simultaneously personalized and collective, rich with information and creativity, and strategically responsive to young people's rapidly evolving learning habits and environments.

5
Communication, media and culture

Miquel de Moragas i Spà

Why talk about "communication and culture"?

This chapter focuses on the relationship between communication and culture from the perspective of the technological changes and globalization we are experiencing in the XXI Century, which render the boundaries between both phenomena more permeable than they have ever been before.

Communication and culture currently appear —though we could go back to the evolution of languages and the origins of art— as the two sides of the same coin, especially when we ask ourselves questions regarding the role of technologies and we interpret the term culture in its widest sense, as "symbolical meanings which are embodied in artefacts, practices and representations" (Burke, 2010: 66).

We propose to summarize the complexity of this relationship with three questions:

- What role should we assume the media and communication technologies have in the processes of production and in the use of cultural goods?
- Which is the role of the cultural system within the production of contents for the media?
- How do the media interact with other cultural institutions in the creation of modern culture?

1. Understanding culture, defining culture

In order to progress through this analysis we must begin by questioning the most restrictive conceptions of culture, conceptions that refer exclusively to the field of fine arts, literature, science and philosophy. According to this vision, cultured people are those who treasure more knowledge about the great topics of history, science or arts, and this would distinguish them socially from uncultured people.

In its widest sense —that which has been created by cultural anthropology, cultural research and the most modern cultural policies—, the term *culture* covers many other aspects. It relates both to the past and to the present, both to aboriginal cultures and to more developed urban cultures, both to inteligence and rationality and to emotions, both to its creative and innovative dimensions and to daily routines, both to classical artistic forms and to popular craftsmanship.

In fact, we can identify a few dozens of meanings for the concept of *culture*, all of which are necessary in order to understand the complexity of this fundamental phenomenon of society and human condition.

In short, culture is a lot more than the world of arts and literature (Zallo, 2011); culture must be related to activities as much as it is linked to symbolical systems. Art, music, cinema, drama, monuments, sports, forms of leisure… all of this is part of culture and is comparable to language, in the sense given to it by linguistics. Speaking is an individual action, but grammar and meaning are the result of social codes; they are, at the same time, individual and social abilities which are expressed through actions (communication practices) and which are interpreted through shared codes.

These new ways of interpreting culture have their precedents in the first steps of cultural anthropology, when towards the end of the XIX Century, Edward Burnett Taylor, who is considered to be one of the fathers of modern anthropology, defined it as that which "this whole entity that simultaneously includes science, arts, morals, laws, customs and other faculties and habits acquired by men as members of society"(1977 [1871]).

Thus the concept of culture became detached from the differentiating idea of social progress and referred to the collection of lifestyles and to the organization of all the multiple cultures.

This complex and non-restrictive understanding of cultural phenomena also had to face —and discard— the most aristocratic and colonialist concepts of culture, which understood it as being that which stemmed from metropolitan elites, linking culture (western culture, of course) to civilization. These homogenizing tendencies, imposed by colonialism, obstructed the acknowledgement of cultural diversity.

2. Evolution of the cultural studies on communication

From mass media to mass culture

In the years immediately before and after the Second World War, at the time when the period of mass communication research reached its peak in the USA, cultural studies and research on communication evolved independently or even in opposition to one another. On the one hand, the empirical sociology of mass media, with authors such as Lazarsfeld, Berelson y Lasswell, and on the other hand, the critical socio-philosophical vision, with authors such as Adorno and Horkheimer, founders of the Frankfurt School.

The emergence of media, press at first and then cinema, television and the advertising phenomena which emerged with them, determined the emergence of the so called "mass culture", inseperable from the big simultaneous audiences (radio and television) or cumulative audiences (press and cinema) that were enabled by media.

A social debate was arranged around these new phenomena, a debate that would not only question the nature of these new cultural phenomena, but also, through them appeared a proposal to interpret modern society in its entirety: some stances were for and some were against media among "apocalyptic and integrated intellecuals", terms which became popular thanks to a book written by Umberto Eco which bore that same title (1964).

Defending mass culture ("integrated intellectuals") also meant the conservative support of capitalist society. The

opposite approach ("apocalyptic intellectuals") based its critique and desperation on the loss of traditional cultural values, because they believed that enabling the popular classes to access culture implied a deplorable degradation of high culture.

In spite of the simplification of the title of his book, Umberto Eco sought to clarify this description, looking for an equidistant position between these two polarized positions; he criticized the integrated camp because they seldom considered that mass culture was produced by economically powerful groups who put economic laws before the production, distribution and consumption of cultural goods. But he also criticized the apocalyptic camp because they believed that mass culture was radically negative due to its industrial determinant, when it is precisely this factor —as many other authors would stress— that enables popular classes to access cultural goods, materializing their democratization.

On the other hand, the marxist-inspired critical authors (such as Adorno and Horkheimer) believed that the commercialization and industrialization which characterised mass culture were not only degrading, but also a source of manipulation and control of consciousness, that is to say, a source of alienation. For them, mass culture concealed the true nature of economic relations and domination, even enabling them to be accepted in a grateful and festive manner. With the new mass culture, the subjugated classes incorporated the values of the burgeois society into their own lives, failing to notice that these lifestyles and their corresponding forms of consumption were a response to the capitalist system's logic of production. In their *Dialectic of Enlightenment*, Adorno and Horkheimer came to the conclusion that cartoons, apparently so innocent, actually "hammer into every brain the old lesson that continuous friction, the breaking down of all individual resistence, is the condition of life in this society. Donald Duck in the cartoons and the unfortunate in real life get their thrashing so the audience can learn to take their own punishment" (1998 [1944]: 215).

These positions would end up in a pessimistic and deterministic vision of the relationships between technologies, media and contents. The critical cultural research would take some time to overcome this negative vision of the relationships between culture and industrialization, with authors such as

Jesús Martín-Barbero, who spoke of "settling old scores with Adorno" (1987).

Walter Benjamin, who died tragically while escaping from Nazi persecution, gave a cultural value, in contrast to Adorno, to the reproduction of the work of art as a democratizing element. The technical reproducibility liberates the work of art from its parasitic existence in an exclusivist ritual. Industrialization and technology were not necessarily enemies of popular culture: "Our taverns and our metropolitan streets, our offices and our furnished rooms, our railroad stations and our factories appeared to have us locked up hopelessly. Then came the film and burst this prison-world asunder by the dynamite of the tenth of a second" (Adorno; Benjamin, 1998: 47).

Mass culture as a narrative

Studies on culture then took a new direction with the spread of television and the diversification of advertising in the 1960s.

Two points of view or theoric traditions then merged in the development of these studies: on the one hand, the so-called cultural studies, developed in Great Britain, starting off from the marxist-inspired historical mould, and on the other hand, the structuralist analysis of culture, with the double mould of semiotics (*sémiologie*) and cultural anthropology, which was developed mainly in France.

The british cultural studies (Moragas, 2011) began with the compared study of the life and culture of the working class before and after the Second World War, with the spread of the new mass culture (Richard Hoggart, Raymond Williams y Edward Thompson). Subsequently, the research focused on culture understood as a way of granting and removing meaning, giving value to social realities, to everyday life itself (Stuart Hall y la Escuela de Birmingham). Cultural studies focused on everyday phenomena such as sports, feminism or television soaps, as benchmarks of the culture of their era. *Culture* was no longer a synonym for "the best things that have been said and thought" but referred to the forms of conferring and removing meaning to social realities.

Culture understood in such a way would become closely linked to ideology, but not only as an imposed strategy, but as

a system of meanings and practices that could also express the values of popular social groups.

At the same time, in France, coinciding with the linguistic change that was brought about by structuralism in the 60's and 70's, new forms of interpretating communication emerged which fully incorporated cultural phenomena, by then being called media, with authors such as Roland Barthes, Edgar Morin o Jean Baudrillard. Contemporary culture was analysed from the perspective of the "signs of the times", which had mistakingly been considered insignificant by the more rigid academic institutions. In his book titled *Mythologies*, Roland Barthes analysed "mass phenomena" such as the *Paris Match* magazine, cinema's cabaret stars, wrestling, the *Tour de France* as an epic, striptease, the Citroën car, etc., as symbols which transcend their apparent triviality to express the system of values of the culture of their times.

Similarly, in *The spirit of time* (1962) Edgar Morin analysed the logic of contemporary culture's discourses (love, happiness, youth, eroticism, comfort, violence, sympathy,..etc), which were determined, and also boosted, by industrialization. The significance that can be found in cultural goods (products) is the result of a complex interaction between creativity and industrialization.

Edgar Morin himself insisted, years later, on this dialectic: "I start from an idea which I developed in *The spirit of time* regarding cinema. To be precise, regarding Hollywood's cinema. How could such an industry, which devised its production in terms of economic gain, have produced high quality works that were seen all around the world? Simply because a film is not made the same way as a car is made. An element of individuality and creativity is always needed (…). The search for economic gain does not prevent originality and quality from appearing".[3]

Culture came to be understood as the historic construction of our system of values, within a process which was inseparable from the discursive construction of media. In *The spirit of time* Edgar Morin had already referred to culture as being a complex body of rules, symbols, myths and images

[3]Interviewing Edgar Morin, by Enric Saperas, *Quaderns del CAC*, nº 12, 2001.

which entered the intimacy of the individual, structuring its instincts, orienting its emotions. Fifty years later, Manuel Castells, in his reference book titled *Communicatioin and power*, retrieved these same concepts when describing culture as "the collection of values and beliefs which shape, guide and motivate the behaviour of people" (2009: 65).

Towards the end of the XX Century and beginning of the XXI Century, it is becoming more evident that communication and culture are moving closer together, accelerated by technologies, demanding new operational definitions and proposals which are applicable to new cultural policies.

3. Typologies and operational definitions of culture

In 1982, UNESCO passed a new declaration on cultural policies which included the following definition of culture: "In its widest sense, culture may now be said to be the whole complex of disctinctive spiritual, material, intellectual and emotional features that caracterize a society or social group. It includes not only the arts and letters, but also modes of life, the fundamental rights of human being, value systems, traditions and beliefs" (1982). This definition, which included a wide vision of the cultural phenomenon, was also a first acknowledgement of cultural rights as a part of human rights in the global society, against apartheid and discrimination.

The new cultural policies which were implemented in the 90s demanded a first distinction between those policies referred to specific activities and industrial sectors (such as grants given to theatre and cinema), that were implemented mainly in Europe, and cultural policies in favour of cultural dialogue, which propose more general strategies of compression of the contemporary world.

Regarding this second aspect, the aim is to promote a conceptualization of culture in *cultural* terms, of different cultures being understood in a context of equality as opposed to some being subordinate to others. This put an end, also politically, to the long confusion between (a) culture and civilization. Civilization is not a certain culture, it is rather a process which must be built within cultural dialogue, based on the recognition of the right to equality among cultures. The

concept of "culture of peace" promoted by Mayor Zaragoza during his time as the general director of UNESCO also refers to this challenge.

The intellectual debate on global society (Appadurai, Bauman, Burke, Beck, Canclini, Giddens, Martín-Barbero) has also contributed to this new vision, which conceptualizes identities as forms open to hybridization, in a cultural process that implies, at the same time, being able to lend and borrow.

This intercultural vision, more necessary now than it had ever been due to migration and the growth of big cities, must be completed by considering those cultural aspects which affect the quality of life, the development of communities. This is the goal of the programmes of "culture for development and social change", both in its dimensions of communities' development and international cooperation (Martinell, 2010).

Creative industries and cultural industries

Now that a consensus has been reached as regards the definition of culture, the task is to define and propose goals for the new policies of communication-culture. In order to achieve this, the bodies in charge will introduce their own thematic classifications of cultural activities and the corresponding indicators as measures to value the results or impact generated. UNESCO has contributed decisively to establishing these classifications and indicators, as a way to support the corresponding national policies and the programmes of culture for development.

It's not only about considering the economical aspects, such as exports and imports of cultural goods in each country, their impact on job creation, centralizing or concentrating its business and industry and its relation to GDP, or the uses and consumption of cultural offering, it's also about references to more immaterial issues, such as the degree of cultural diversity, social participation and access to these goods (according to gender, age, and social groups), the originality and creativity of cultural production, etc.

Adopting these classifying systems has been the subject of many controversies. Perhaps the most important of them is that which differentiates and brings into conflict "cultural industries" and "creative industries", a distinction which arises

within the context of british politics on information fostered by Tony Blair's government at the end of the 90s. In this new society of information, innovative ideas become economic boosters, which explains why there was a proposal to substitute the concept of "cultural industries" for "creative industries", that would encompass industrial design, touristic consumption, advertising and audiovisual production. This unifying conception of cultural content sparked an important criticism by culture's political economy (Bustamante, 2011), that rejected the commercial background of all cultural activities, proposing to distinguish clearly creative industries from cultural industries themselves (books, cinema, radio, television, recorded music, videos, etc.), not just because of their different contents and the different meanings produced by each of them, but also because of the different economic logic behind each of them. For instance, the fact that cultural industries are characterised by a high cost of production and low cost of reproduction and distribution, which favours an economy of scale, as becomes clear when we consider the comercial success of Hollywood's film industry, or the fact that they are goods which are not destroyed during their consumption, which gives rise to specific copyright conflicts.

However, the 2009 UNESCO *Framework for Cultural Statistics,* which had a great impact on national and local administrations, provided an integrated classification of all "cultural domains", grouping together industries, activities and cultural practices under the six following headings (2009a):

1. Cultural and natural heritage (museums, archaeological sites, natural landscapes).
2. Artistic presentations and celebrations (performing arts, music, festivities and fairs).
3. Visual arts and crafts (fine arts, crafts, photography).
4. Books and press (newspapapers, magazines, book fairs).
5. Audiovisual and interactive media (films, videos, radio, television, interactive games, phonograms).
6. Design and creative services (fashion, design, advertising).

These six domains converge in a cross-domain, the intangible cultural heritage, and have two related domains: tourism and sports, and recreation.

These classifications add certain elements to the domain of culture which had not been traditionally recognized as such by cultural policies, as the so-called creative industries (advertising, industrial and graphic design, fashion) but also folkloric activities and festivities, which are now conceived as intangible heritage.

Political economy proposes a clearer distinction between the different sectors of the cultural industries. Ramón Zallo, for instance, proposes to differentiate between three main sub-systems within the cultural domains: cultural heritage, artistic expressions and cultural industries. The latter sub-system is the place where the media play a bigger role, which now include the new digital media and (2011: 47).

The *Culture & médias 2030* report, commissioned by the Ministry of Culture and Communication of France to identify the potential platforms of cultural policies in the digital era (*Ministère de la Culture et de la Communication*, 2011), classifies eight big areas or domains for contemporary culture:

1. Books and press.
2. Heritage (libraries, archives, museums, monuments, archaeology).
3. Architecture.
4. Crafts.
5. Visual arts (plastic arts, photography, design).
6. Advertising.
7. Live performances (theatre, dance, music).
8. Audiovisual sector (radio, tv, recorded music, video, film).

Other classifications, such as Canada's North American Industry Classification System (NAICS),[4] distinguish between "cultural and information industries" and "art, entertainment and leisure industries". The former include: newspapers, books, films, radio, television, archives, telecommunications and other information services; the latter include: theatre, music, dance, sports, museums, zoos, botanical gardens, etc.

In any case, whether cultural industries and creative industries are integrated or not, the fact is that the media and

[4] http://www.statcan.gc.ca

the new roles played by information technologies are ocuppying a central position in the description of modern culture's domains.

But the issue is not only to consider if the cultural media industries occupy a bigger or smaller space among the cultural activities, but to consider the broadcasting role these industries play for the bulk of cultural dynamics. Because media are not only the main subjects of cultural practices, they are also their cultural driving forces. Abraham Morales had already expressed this several decades ago in his *Sociodynamique de la culture* (1967) when he conceived cultural dynamics as a cycle, from creation to consumption. And that is how it was interpreted again by UNESCO when they described the five phases of cultural cycles: creation, production, diffusion, exhibition/reception/broadcasting, consumption and participation, to begin again the cycle with creation (2009a: 18).

In this context, cultural policies are inseparable from communication policies and viceversa.

4. Communication policies and cultural policies. From convergence to new sinergies in the digital era

The history of communication policies has been characterised by agreements and misunderstandings with cultural policies, but towards the end of the XX Century, with the appearance of digitalization processes and globalization, a full integration or synergy between both policies emerges.

Precedents

The first (democratic) policies on communication go back to the 1948 Universal Declaration on Human Rights, which referred to freedom of expression and information as one of democracy's inviolable founding elements. During the 60s and 70s, the full implementation of radio and tv systems, and facing the evidence of important imbalance in the flow of information caused by the big news agencies (AP, UPI, Reuters, Tass, AFP), sparked the need to establish "national democratic communication policies" and a "new international information order". This process culminated in the approval of UNESCO's MacBride report in 1980 (*Many voices, one world),* which will

clearly stress the need to build a "new international information order", recognizing at the same time media's double aspect, both informational and cultural.

This convergence between communication and culture accelerated at the turn of the century with the development of informational technologies and cultural industries' competitive needs, especially, audiovisual industries.

Towards the end of the 80s, and despite the neoliberal sectors having questioned the philosophy of the MacBride report, European institutions, leaded by France, managed to reignite communication policies, but this time as cultural policies, especially focusing on films and television.

After the European Concil's pioneering programmes that gave support to the audiovisual industry (Euroimages, 1988), the approval of the first european Television wothout Frontiers Directive, took place in 1989 (updated in order to increase its liberalization in 1997 and 2007) and the EU's creation of the MEDIA Programme (Measures to Encourage the Development of the Audiovisual Industry). This programme has continued to this day (2011) with remarkable budget increases, which reached 755 million euros for the 2007-2013 period, with the following goals: to preserve cultural and linguistic diversity, to strengthen film heritage, to increase the distribution and audience of european works, within and outside the Union, and to favour competition in the audiovisual sector.[5]

In 1993 the white paper titled *Growth, employment and competition. The challenges and ways forward into the XXI Century* (European Commission, 1993) was published, also known as the Delors Report. The white paper clearly warned that culture had to be reinterpreted as an engine of economy and job creation and, therefore, had to be considered as a strategic factor in European politics. The media completed the environment in which audiovisual industry had been integrated along with other sectors such as tourism, entertainment and sport (Moragas, 2009).

This European debate on the role played by culture in modern economy sets the full convergence between cultural policies and communication policies, with the audiovisual

[5] UE, Audiovisual and Media Policies: http://ec.europa.eu/avpolicy/index_en.htm

industries conceived as an axis, now viewed within the context of a new dialectic between the private interests of the sector and the need to reformulate the public information services.

These political processes geared towards policies of culture and communication should have been carried out within the wider, more general (and more hostile), framework of international policies on competition and free commerce.

French cultural uniqueness and leadership

The debate took place within the World Trade Organization (WTO) and the framework of the General Agreement on Tariffs and Trade (GATT), between those who considered that the intellectual property services (cultural industries) had to be conceived as any other commodity and therefore subject to free commercial exchange (the USA was at the helm of this position), and those who considered that cultural goods, including films, had to be protected by the state (France led this doctrine of democratic legitimacy of the "cultural exception").

The United States clearly defended their film and entertainment industry, Hollywood's world domination, opposing any sort of protectionist stance. On the other hand, France, having a long tradition in cultural policies, since Malraux created the Ministry of Communication and Culture in 1955, argued that fils, books and music are art and are not a mere commodity, they are part of a country's cultural heritage and in their case are a part of European common heritage.

At the same time, a new range of arguments would emerge. Cultural policies recovered the path of social policies and policies on communication. The defensive demand for "cultural uniqueness" would be replaced by the demand for cultural diversity. This process would end in 2005 with the approval of UNESCO's Convention on the Protection and Promotion of Cultural Diversity.

The 2005 Convention. New meeting point between communication and culture

After the confrontation due to the new international order of information (Ronald Reagan left the UNESCO in 1983) and in order to achieve maximum consensus, UNESCO forgot about the MacBride Report, only to recover, years later, the references to media through its cultural policies.

Thus, the return of UNESCO to policies on communication was ushered by the international policies on culture and, more specifically, when the issue of cultural diversity and identity was considered in the new economy and in globalization's realm of communication.

In the year 2000, the Committee of Ministers of the Council of Europe had already adopted a declaration about cultural diversity in the preamble of which it became clear that, facing the phenomena of globalization, the democratic states had a new challenge: to ensure, through legislative provisions, the existing cultural diversity within its space of jurisdiction.[6]

In 2001, UNESCO approved the Universal Declaration on Cultural Diversity, as a step towards the approval in 2005 of the Convention on the Protection and Promotion of the Diversity of Cultural Expressions, although this approval had to be done again, with the United State's meaningful vote against.[7]

The Convention justified, to a certain extent, the legitimacy of the states to implement cultural policies aimed at preserving and developing all cultural expressions, indirectly from its cultural industries, thus escaping from the subordination to the stricter positions of the World Trade Organization.

The Convention recognized the democratic values of culture —equal dignity among them, links between culture and sustainable development, cultural activities' double nature (economic and cultural)—, but it also acknowledged its vulnerability, That is why it legitimised the democratic intervention in the communication and culture sector, recognizing the states' right to protect and promote diversity of cultural expressions.

After the approval of the Convention (between 2005 and 2011), the direction of UNESCO's cultural policy increased its focus on the media. Among the priorities for the 2010-2011 programme,[8] several goals which involve the media stand out: to promote cultural diversity and intercultural dialogue, culture's contribution to sustainable development, conflict mediation,

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[6].European Council: Declaration on Cultural Diversity. Commitee of Ministers, 7th December 2000

[7] See UNESCO's Culture portal: http://www.UNESCO.org/new/es/culture.

[8] Ibídem.

inter-religious dialogue, culture of peace or new conceptions of mankind's intangible (symbolic) heritage. Publishing, music, film, multimedia creation, craftsmanship, festive rituals and media are indispensible resources within the programmes for sustainable development.

World report on cultural diversity

In 2009, according to the Convention's mandate, UNESCO published the *Investing in Cultural Diversity and Intercultural Dialogue* world report (2009b), which attempts to identify the challenges of cultural diversity and offer recommendations on identities and intercultural dialogue, the future of languages, medias' pluralism and cultural industries.

Among the main elements included in the report (languages, education, creativity and market), the "landscape" of communication and cultural contents, which encompasses the press, books, broadcasting, recorded media, motion pictures, and television, but also the new media (such as phonograms, videograms, online games, internet debate forums).

The report pointed out that this constellation of media, old and new, sets up modern identities and their values, questioning the old systems of formal education: "The cultural and communication products are becoming powerful instruments of non-formal education and cultural broadcasting, having enough potential to promote intercultural understanding, but only insofar as they display the reality, complexity and dynamics of cultural diversity" (UNESCO, 2009b: 155)

For its part, the main programmes managed by UNESCO's Communication and Information Sector, as is the case of the Information Society for All Programme and the International Programme for the Development of Comunication (IPDC), give priority to the creation of common media and the training for the production of information and culture, a distinction which is becoming more and more difficult to make.

5. *New concepts for interpreting culture in the digital age*

The relationships between communication and culture that are analysed here are subject to a fast evolution as a consequence of the changes produced by the digitalization of communicatios

systems and, closely connected to it, the globalization of our economy and our cultures.

In order to interpret such complexity, I propose to consider three great themes:

1. The new concepts that have been proposed to interpret identity in the context of the new intercultural flows and globalization.
2. The impact of technologies within this process.
3. The structural and economic changes experienced by the production, the distribution and the consumption of cultural goods in the digital age.

New concepts to interpret reality

One of the most remarkable aspects of the conceptual review of cultural studies is, without a doubt, that of its refrences to identity in the context of the new ecology of communication flows.

Thus, for instance, the historian Peter Burke rejects "the possibility of independent cultures. In our world, no culture is an island (…). In other words, all of today's cultural traditions are in touch, to a greater or lesser degree, with alternative traditions"(2010: 141).

Néstor Garcia Canclini argues that modern culture is a hybrid culture, insofar as it is not built from isolated identities, but is the result of crossbreeding and influences: "The hybrid sociability induced by contemporary cities makes us participate intermittently in educated and popular groups, traditional and modern groups. Regional or national affirmation has no sense or effectiveness as a general condemnation of the exogenous: it must now be conceived as the ability to interact with the many different international symbolic offers from one's own position" (1990: 332).

The media can facilitate this hybridization that mixes contents, genres and scenarios, adapting formats which have an international origin to local contents, de-territorializing symbolic processes.

But these processes aren't born spontaneaously. They can be affected by specific cultural policies and by the media, that continue to create the thematic agendas and influence the value systems. Cultural and political actors play a part in the

hybridization processes, they are capable of increasing the rejection, acceptance, adaptation or segregation, as we see on a daily basis in migration policies.

It is true that new technologies open new spaces for communication —Castells (2009) talks about the "self-communication of the masses"—, but it is also true that we are witnessing a strong concentration of media, which in turn are permeable to the big lobbies.

The new forms of concentration will drastically affect cultural practices. The world's communication power is being concentrated in the hands of a few big corporations of the media culture industry (CBS, Time Inc, Berstelsmann, MCA/Universal, Walt Disney, McGraw-Hill, Hachette), a group which also includes the old communication distributors (telecommunications) and the new operators that manage access to information (Microsoft, Apple, Amazon, Google, Yahoo!), companies that are also becoming producers of content.

William H. Sewell reminds us that "much cultural practice is concentrated in and around powerful institutional nodes (…). They are constantly engaged in efforts not only to normalize or homogenize, but also towards the hierarchize, encapsulate, exclude, criminalize, hegemonize or marginalize practices and populations that diverge from the sanctioned ideal. By such means, authoritative actors attempt —with varying degrees of success— to impose a certain coherence onto the field of cultural practices" (1999: 56).

That's the reason, for instance, behind the importance attributed to public media, not for them to continue doing what they have been doing for the past decades, but for them to adapt to the new needs of convergence between communication and culture. These institutional nodes, which are inseparable from the media, manage the consensus or rejection of cultural hybridizations.

The impact of technology on cultural spaces

The links between culture and communication become especially evident when we consider the role played by technologies in any form of expression (from painting to virtual animation or films), but also when we think about the influence technologies have in lifestyles and social organization.

Harold Innis and his disciple Marshall McLuhan were the first people to point out that the media, in turn determined by technology, had a structural influence on different key aspects of social organization: economy, society, politics, culture, work.

Their theories, which become popular through witty slogans and metaphors such as "the medium is the message", "the Gutenberg Galaxy" or "we are living in the global village", synthesised the influence of technological changes in human perception: the telephone was to speak without walls; the phonograph was the concert hall without walls; photography was the museum without walls; electric light, space without walls; radio and tv were the classrooms without walls in the new Marconi age (McLuhan, 1962, 1966, 1967).

In McLuhan's optimistic (integrated?) vision of history, the media's technologies liberated men from tha lack of space which was typical in past times, they widened horizons of space and time: "With telephone and tv, it's not so much the message but the sender that is being sent" or "When you are on the phone or on the air, you have no body".[9]

Towards the end of the XX Century, transformations were accelerated, first of all with the convergence between telecommunications and computing (telematics) and, more recently, with the digitalization processes which integrated writing, printing, sound and images (multimedia), creating new abilities and new ways for mankind to relate to symbols, new networked audiences.

Manuel Castells talks about new dynamics of communication in the "network society" in *Communication and power*, a model of society that has a profound influence on cultural forms, by redefining the ways of conceiving and living time and space: "There are citizens in the world who live in a space of flows, as opposed to the locals, who live in the space of places" (2009: 82).

The network also determines the cultural flows and the identity hybridations I previously mentioned, establishing new

[9] See other famous quotes from McLuhan at http://marshallmcluhan.com/mcluhanisms/.

relationships between local culture and globalization: "The network is global, but the contents which are adapted to the local culture and to the diversity of fragmented audiences are local" (Castells, 2009: 110).

The network facilitates contact between languages, identities and cultures, promoting interconnectivity: "The main characteristic of wireless communication is not mobility but perpetual communication" (Castells, 2009: 107), a connectivity which can link local to global at any given time.

Structural changes within the cultural industry

Digitalization affects all cultural sectors; it also affects, though to a lesser degree, the more handmade cultural domains (life entertainment, fine arts, heritage), which benefit from the new modes of production and online broadcasting. The new communication processes facilitate their presence in social networks and their finding on internet search engines, becoming tools of their notoriety.

But the place where digitalization exerts the biggest and deepest influence is in the traditional cultural industries inherited from industrial society (books, music, films) and in the media (press, radio, television), and also on the new media (video, gaming, multimedia). Producers and broadcasters of contents now converge on the internet using the same platforms, a fact that allows many relationships or synergies: films, books, music, press, radio, television, software.

It wasn't that long ago when communication analysts used to differentiate between: "continuous" and "intermittent": among the former, radio, tv, press amd magazines; among the latter, books, interactive games, phonograms, videos, etc. Digitalization, which also implies the capacity to store and retrieve information, has meant to overcome these differences. The idea of continuity and discontinuity loses part of its sense: everything is "part of a cloud", in a sort of world digital memory. We can watch a news bulletin whenever it is more convenient for us to do so, we no longer buy records in a specialized store, we "download" from new platforms instead, as happens with films, games, and exchanges in social networks or professional email adresses. Furthermore, digitalization has ignited two communicative phenomena of great cultural

importance: on the one hand, the distribution of communication (the control over channels) is no longer exclusively managed by big corporations, and on the other hand, the systems of production are being simplified in such a way that social and cultural institutions (NGOs, universities, clubs, political and religious groups, communities, etc) now have the chance to become media. This is what Castells has termed as "the self-communication of masses", that which gives a voice both to social alternatives and cultural institutions.

But this doesn't mean to say that the media which are centralized and controlled by the big corporations have lost, or are about to lose, their influence. The big groups (Time Warner, Bertelsmann, Viacom, Disney, News Corporation, Vivendi, Sony, Google or Microsoft, among the most prominent) have converged their businesses which until now had been independent: contents, distribution, networks, advertising. On the other hand, the big corporations seem to have an increasing tendency to interlink conventional media with new ways of communication and social networks. Social networks create multiple communication circuits —social, family, group—, but when we take a closer look at their subject matters we discover a considerable presence of content which is offered by conventional media.

The convergence and recycling of cultural goods are manifold. A novel can give rise to a film, a film can give rise to a phonogram, a football team can give rise to a great variety of consumer products (*merchandising,* theme parks, television rights, internet platforms, etc). The media interact with live entertainment, transforming unique representations into serial products for the media. Thus, for instance, the famous concerts featuring Pavorotti, Domingo and Carreras during the 90's, which were witnessed by a few thousand people, multiplied their profitability through their television broadcast, but also through the sales of records and souvenirs. The case of the film industry is a paradigmatic one, films are no longer produced exclusively to be shown within cinemas, but also to be distributed on television, on intermittent media such as DVD or on internet itself.

In such a context, internet plays the part of a "metamedia" which makes us rethink industrial organization and the patterns of consumption of cultural goods: "New

technologies —says cultural economist Françoise Benhamou— do not only provide new products, but also transform processes of production and contents (…). Once they have been codified, images can be modified, manipulated and broadcasted just as any other digital piece of information. This way the de-materialization of the work (which is substituted by digital files) affects the status of the authors, the methods of production and the buying and use patterns of cultural goods" (Benhamou, 2011: 66).

But digital transformation also has a widening effect and creates new media, beyond press, radio and tv, with a new convergence between information and education, but also between education and leisure. This is the case of videogames, which can now be accessed through many different platforms (mobile telephones, computers, games consoles, new platforms), which not only do they represent fantastic business figures in the oligopoly formed by Nintendo, Vivendi, Microsoft or Electronic Arts, but have already become the main part of the communication consumption of children and adolescents and, therefore, of their cultural practices.

6. The media and the broadcast of cultural activities

The relationship between communication and culture which we have explored in this chapter must be completed with a reference, albeit a brief one, to the media, not as producers and agents of cultural values, but as broadcasters of cultural activity.

The relations with the media are a key aspect of the modern cultural industries' strategies. It cannot be ignored that these activities depend on the media, because their broadcasting, their notoriety, in short, their leadership depends, to a great degree, on them.

It is a fact that in the digital age and with the resources provided by internet, cultural institutions, artists and writers have their own direct tools for communication which do not depend on conventional media. In this sense people say that in a certain way "we can all be reporters". However, it would be a mistake to assume that cultural activites do not depend on the media. As we mentioned above, a high percentage of the topics

discussed in social networks arise from the media. Social networks discuss, reinterpret or ridicule them, but they do talk about them. The media continue to be decisive in the configuration of the cultural agenda of our times.

How does journalism broadly deal with culture? The answer to this question demands a differentiation of the three biggest media: press, radio and television (Rodríguez, 2006).

In order to interpret these phenomena a distinction should be made between culture consumers and mass consumption. Culture journalism is not mass journalism, but a journalism which targets selective groups, which tend to have a medium/high purchasing power and, at the same time, are what we could call big small audiences, which correspond to the consumers of cultural activities.

The following chart, which is relative to cultural practices in Spain, also suggests the size of readers and audiences of cultural information in the media.

Table 1. Examples of cultural consumption in Spain

Attendance or visits in the last quarter (% of population)	
Museums	15,1
Exhibitions	14,2
Art galleries	6,9
Monuments	22,1
Concerts (classical music)	3,5
Concerts (contemporary music)	11,9
Libraries (includes internet access)	19,3
Books (professionals or otherwise)	51,1
Cinema	34,4
Theatre	8,6
Opera	0,9
Ballet	2,9
Press readers (in the last week)	66,4
Tv viewers (in the last week)	96,6

Newspapers regularly assign an important percentage of their editorial space to cultural activities. Most of them even publish extensive supplements (La Vanguardia's *Cultura/s*, El Pais' *Babelia*, El Mundo's *El Cultural*) in an attempt to emulate the models inspired by the big supplements of Anglo-Saxon press such as the *Times Literary Suplement*.

Cultural magazines (literary, artistic, cinematographical, etc) which are related or independent from media groups are also very numerous.

This attention paid by journalists reflects the offer and consumption of cultural activities in the developed western societies. Hundreds of proposals pertaining to these fields (books, awards, competitions, exhibitions, musical releases, shows) reach the newsrooms' tables of the different newspapers in order to be published. Cultural actors send pre-prepared information to the media (photographs, reports, interviews, videos) for them to be broadcast.

However, our goal is not to survey the quantity of cultural information that appears in the media, but rather to value their critical and analytical capacity.

The first journalistic challenge is to select this multiplicity of information according to independent criteria, escaping from the interests of the promoting groups. The incorporation of newspapers to the new big media groups, which are also engaged in cultural businesses, will make it even harder to achieve some sort of neutral position.

The second challenge is that of the availability of resources and spaces for an interpretation and criticism which is independent from the commercial (or political) interests of such cultural events. The acknowledged crisis of contents in the written press, which is a consequence (among other things) of its economic crisis (financial crisis, advertising crisis, and loss of readers), has had a special impact on cultural journalism.

In line with other general tendencies of journalism, the topics which borderline between the fields of entertainment and culture have progressively invaded the culture related newspaper pages, with wide references to famous people, travel, adventures, gastronomy, fashion and design… emerging as a new example of the mix which is taking place between cultural and entertaining industries. But this is not a phenomenon which belongs exclusively to cultural journalism,

because we can also appreciate it in the field of political information, which is progressively more invaded by entertainment.

As regards cultural programs on the radio, we should make a distinction between cultural proposals on public media and those on private media. Whereas there exists a long tradition of cultural programs (magazines) in the former, these programs seldom exist in the latter.

The radio, because of its obvious characteristics, plays a key cultural role in the dissemination of music. We should underline the role played by european public stations specialised in classical music, following the guidelines set by the BBC since the 1950's. Such examples include RNE (*Radio Clásica*) and *Catalunya Ràdio* (*Catalunya Música*). For its part, private stations, which follow the formats of northamerican commercial radio, have played a key role in the dissemination and popularization of modern music since the emergence, in the 1960's, of programs specialised in musical charts, as is the case of *Los 40 Principales* (still on the air), and the latest creation on FM, the so-called "musical radio formats", which have widened their offer making it available to both youngsters and adults (Pedrero, 2000); trends which are now being altered by youngsters' new management of musical consumption through new online platforms.

The problems of cultural dissemination multiply in the case of television, which is subject to the show-audience relationship that determines this medium. Three types of cultural television might be distinguished.

Firstly, the presence of cultural activities in the big general channels, with specialised programs during *prime time* on public television channels and coverage of cultural events on the most important news bulletins. This model took place before the emergence of the new platforms (during the 90's), which multiplied the available channels and, therefore, also fragmented the audiences. This is the time of emblematic programs such as Bernard Pivot's *Apostrophes* (1975–1990) in France (Antenne 2) and other similar programs broadcast on the public tv channels of Great Britain (BBC), Germany (ZDF), Italy (RAI) and Spain (TVE). Private televisions, guided by the logic of an audience-cost maximum performance, steered clear of these types of programs (Rodríguez, 2003 y 2006).

The mentioned segmentation of audiences and the emergence of more channels created a new tv cultural offer. The cultural dissemination to the general public, at its best, was shifted to the second or third channels, where a creative effort was made to try and fit in the cultural contents within new formats that sought to find a difficult balance with television's demands of spectacularity. When references to culture were made in the news bulletins of public European television channels, they were extraordinarily selective.

An employee of the Catalan public television (TV3) who was in charge of its cultural department told me she received hundreds of emails everyday with cultural proposals for tv broadcast. This confirms that despite the existence of multiple forms of broadcasting through internet, the cultural actors wish to expose their products in front of the big tv audiences. But, at the end of the day, news programmes can only cover a reduced number of activities (not more than four) per day. The journalistic challenge focuses on the election and thematic priority, which are now subject both to brevity and to the iconic nature of tv language. There is no place in television for information which cannot be "visualized".

As from the 1990's, cultural television took on a new dimension with the creation of specialized or thematic channels, which can be classified into two big types: general cultural channels (or to put it more accurately, multi-subject cultural channels) and new thematic channels (single-subject cultural channels). The former are mainly public; the latter are mainly private (Maluquer and Aymerich, 2007).

The big public channels (BBC, RAI, TVE) began diverting their programmes dedicated to intellectual or artistic subjects (aimed at minor audiences) towards their second or third channels. These channels evolved during the 90's, becoming channels of cultural broadcasting, the Franco-German channel ARTE being the main reference point.

But these channels no longer have a large audience. ARTE's audience in France, for instance, does not surpass 2%, although it is true that this audience is made up by people who have a medium or high purchasing power, and this represents an added value for these channels' commercial and advertising strategies.

Maluquer and Aymerich, in their analysis (2007) of the 49 channels which are broadcast in Europe through the big payment platforms such as Sky (News Corporation) or Digital+, stress the channels dedicated to science (Discovery Science), nature (National Geographic), history (History Channel), music (Mezzo), and also educational channels (Channel 4 Learning), the former undergoing a process of radical transformation due to the emergence of internet's online resources.

Channels which border between the fields of entertainment and culture, such as those dedicated to gastronomy, travel and adventures (hunting, fishing, tourism) are also flourishing widely.

With regard to the main genres of multi-subject cultural channels, such as ARTE, the above mentioned authors underlined the predominance of documentaries (which benefit from public tv's vast audiovisual archives), reports, fiction, films and magazines dedicated to art, music, theatre or literature, in whose programmes "quality television" finds a safe haven, not only as regards research and the handling of contents, but also in relation to its modes of expression, for they provide space for the innovation and experimentation of audiovisual languages.

These cultural channels are also beginning to act as broadcasters of musical and dramatic shows, thus widening the latter's economies of scale. But this trend, similarly to what occurs (as mentioned above) with radio and music, is diverted towards an online or on-demand consumption, through new (more customised) platforms.

7. Culture and communication. Paradigm shifts in the digital era

Having reached the end of this chapter, I propose to pick up the thread of some basic aspects of the previous observations on the influence of digitalization on the relationship between communication and culture.

Digitalization and the widespread use of internet have an impact on key aspects of the traditional paradigm of these relationships, and establish new convergences, shifting priorities. Examples of such a phenomenon are the convergences between systems of production and distribution of

contents (since they make concentration easier), between production and the access to contents (which can now be direct and without middle men) and, most importantly, the multimedia convergences, which transform the autonomy or isolation of "mass media" (press, tv, radio, cinema) and their relationship with group or interpersonal communication.

I will now highlight, briefly, three consequences which I consider to be particularly relevant for cultural and communication policies: the effect these innovations have had on the value of content production, on the forms of mediation and on the new dialectic between local and global.

The central role played by the production of content

In such a context, the production of contents occupies a central role in the paradigm of communication. The power of communication has been shifted from the ability to broadcast to the ability to produce. Thus, the functions of the old mass media and their regulatory systems have been transformed.

The channels of communication are no longer a scarce resource; now the main scarce resource is high-quality content. Within the current context of information oversupply, the main challenge which both policies of communication and cultural policies are now facing is to counteract the progressive loss of quality and credibility of information, which is restricted to formats of low cost journalism. As Unesco's World Report pointed out, "diminishing the digital divide is crucial, but not sufficient, because it is coupled with a much older and deeper knowledge divide".

The economic crisis in the first decade of the XXI Century seems to be widening and favouring the cultural and information impoverishment of the media, which have less information and more entertainment. As Adorno stressed many years ago, the production-consumption couple of cultural goods is highly conditioned by market logic. Two circumstances have become clear in this scene: the rapid sell-by date of cultural products and the concentration of consumption around big *bestsellers*. Culture is strongly marked by trends and temporary notoriety; books and films which are capable of sustaining a long record of sales are becoming exceptions.

This phenomenon is not only a question related to cultural products, it also affects information and journalism. The

fast spreading of the Twitter experience (140 characters) clearly highlights the way in which our cultural and informational practices are subject to the speed and brevity imposed by the world of communication.

In the digital era, the defence of cultral and communication spaces cannot be carried out in the same way as it used to in the age of broadcasting. The power of communication, with a fully operative internet, does not lie so much in the ability to set channels but in the ability to produce, the ability to store knowledge, the ability to make it accessible to autonomous users in their search for information.

This entails important changes in cultural and communication policies, which will need to be more focused on the production of contents for internet (books, music, information, entertaining, training, historical archives, new tv formats) in accordance with the new modes of on-demand consumption (on-demand video, podcasting, streaming,…). All of which takes place amid the fragility of public radio and tv corporations in Europe, and the role of public news services in the digital era has not yet even been oulined.

New forms of mediation

Today the media share their influence with other cultural institutions. Cultrual production is no longer distributed only through the conventional media channels, but also through many other platforms. The same thing happens with news, which is spread through many different channels, and not exclusively through channels controled by the big news corporations.

This forces us to reinterpret the relationship between culture and communication within a new system, which includes mass media in a more general framework of new forms of mediation in current society.

Martín-Barbero, in the 80's, warned us about the need to stop focusing on media and direct our attention towards mediation, that is to say, shift from media to multiple forms of communicative mediation. This approach, which was then directed to the analysis of different forms of mediation such as popular communication in streets and markets, cordel literature, popular films, conversations, rituals and festivities, can now be

applied to the new mediations of information and communication technologies.

Because technologies have indeed opened new forms of cultural mediation, connecting interpersonal communications, redefining group communication, resetting their relationships with the media.

Cultural institutions must exploit these opportunities so that they can become media themselves. The dissemination of their activities does not depend exclusively on the priorities, which are always restrictive, of mass media's news agendas anymore; they also depend on —if they make this their goal— their own communicative resources.

Changes in spaces: between local and global

Finally, we must also consider an issue of greater significance: the transformation of the spaces of communication and culture, between that which is local and that which is global.

The new central role played by the production of contents and the creation of new channels of communication influences the creation of spaces which had been, until now, greatly conditioned by the "territories" of dissemination (broadcasting age) and, therefore, were subject to the states' control or regulatory activity.

This has, undoubtedly, a political importance, because it means that states lose part of their old influence, based on control or regulation of channels, understood as scarce goods.

The network society is not, or at least it is not only, a society of global logics, but a system in which these logics are balanced with new local logics. The network society is, at the same time, local and global. The culture of our time cannot be fully understood if we reject considering this double and complex reality: "The network is global, but the contents, which are adapted to local culture and to the diversity of fragmented audiences, are local" (Castells, 2009: 110).

This shall be the future context for cultural and democratic communication policies, which can stimulate (or fail to do so) local cultural projects, thus managing to overcome the competition of world cultural industries, which take advantage of economies of scale.

In his analysis on globalization, Peter Burke warned us that "we should not underestimate the power of resistance of local traditional mentalities" (2010: 146).

UNESCO has also stressed these possibilities, by pointing out that we should not assume the idea that globalization has only had a negative effect on the diversity of cultural contents because, in fact, globalization has also ushered the empowerment and increased the chances of expression and communication of local and minority groups" (2009: 162).

In contrast, there are also processes that favour or give priority to globalization. The media cultural industries are now applying new strategies geared towards controlling or having an influence on social networks. The big news corporations are trying to control the nodes which connect the sphere of the media with the sphere of online communication: "(…) they are trying to figure out how to re-commercialize the crossroads of networks and mediums, independent networks of "mass self-communication", corporate interests (advertisers) and political actors" (Castells, 2009: 141). This trend seems to have been confirmed when we take a look at the progressive integration of the mass media (radio, tv, press) in this network of networks.

The new global-local dialectic is not an alternative, but an addition. That which is local is not alien to that which is global, and viceversa. On this issue, but having a different approach to it, Martín-Barbero and Manuel Castells agree when they highlight the cultural significance of connectivity within the context of globalization.

Castells believes that "the common culture of the global network society is a culture of protocols which allows the communication between different cultures, a relationship which is not necessarily grounded on shared values but on sharing the value of communication" (2009: 67).

Martín-Barbero believes that "communication in the field of culture ceases to be a movement which is external to cultural processes —as used to happen when technology was excluded from the field of culture and was conceived as being something merely instrumental— to become a movement between cultures: a movement of exposure and opening among cultures, which will always imply its own transformation/recreation. Communication in the "age of information" implies the difficult

and creative experience of appropriation and invention" (2007: 255).

To speak about identity no longer means referring to one's own roots and territory, but to speak about relationships, networks, flows and migrations, attachment and detachment.

This explains the alternation between local and global in modern culture, between globalization and fragmentation, between relocation and regeneration of that which is local: "Even those cultures which are locally stronger undergo changes that affect the ways of experimenting belonging to the territory and the ways of experiencing identity. These are the same movements that shift the old borders between traditional and modern, popular and large-scale, local and global. These changes and movements are now crucial in order to understand how the traditional, national and urban communities survive, how they are dismantled and recreated" (Martín-Barbero, 2007: 259).

Are these issues of communication policy or cultural policy?

It is a challenge that tends to bring both policies closer to each other, and also educational policies, towards the new scene of politics within the society of information.

6
From State Media to Worldwide Networks

Ashley Beale

The building of homogeneous cultural nations within clearly bounded territories was an essential element of the process of building centralized, sovereign states. The recent development of new communication technologies, however, has eroded cultural boundaries and, in parallel with the development of transnational movements of capitals and trade of commodities and of broad security and political unions, has crucially contributed to make the project of cultural and political sovereignty obsolete.

This chapter will first review some forms of organization for communication and information devices, specifically the press, radio and television, all of which were used by modern states to try to build culturally unified communities. Then, it will analyze new structures of communication, particularly those involving broad flows of cultural goods and information exchanges, such as linguas francas, book translations, films and social networks, with innovative data in order to assess the degree of transnational relations among human beings in the current world.

The main hypothesis driving this exploration is that while culturally homogeneous, unilingual nations synchronized with sovereign states, (which were attempted to be built for decades), seem nowadays generally an unviable concept, the term "Globalization" understood in the sense of a single communication field all across the world, is not a workable representation of reality either. In the current configuration of communication networks, the dominance of the English

language, in both printed and audiovisual cultural goods, goes together with the restructuring of multiple areas of communication at local, state and "neo-imperial" levels.

1. Building culturally unified nations

Since the late 17th century, the project of creating a culturally unified "nation" first developed in Europe, as certain great kingdoms, most notably England, France, Spain and Sweden, asserted their sovereignty. New large states were also created in the late 19th century in Germany and Italy. The collapse of the Spanish colonial empire in the 19th and 20th centuries, the fall of the Austrian, Ottoman and Russian empires, the dismantling of the other European colonial empires, especially the British and the French (but also the Belgian, Dutch, German and Portuguese), and the dissolution of the Soviet Union, led to other numerous attempts to create new nations and states.

The notion of state sovereignty implies both internal monopoly of violence and external independence regarding other states. State building has been typically associated with attempts to establish linguistic, ethnic and religious unity among the population of diverse local units and disparate territories within well-defined borders, as well as with clear-cut differences with neighboring states. In short, each state typically attempts to create a linguistically and culturally, internal unified "nation".

Cultural unification requires, first of all, the adoption of a single common language. New standard language grammars and rules were defined from the sixteenth century onward by each would-be sovereign-state in order to delimit a communication area. But the process of cultural unification of the population within some state borders also implied additional efforts involving the use of the state administration, the expansion of schooling, instruction during military service, the admission of only one language in mail and telephony, and several forms of coercion, persecution and repression of other languages.

For example, at the time of the French revolution in the late 18th century many people living in the territory of France spoke Breton, Catalan, Occitan or Provencal as their first

languages, while hardly half of them could speak standard French. The generalization of the single official language was achieved only by the end of the 19th century, largely by the action of the centralized, compulsory public school.

Other countries followed the same model. Not so long ago, pupils not only in France, but in Spain or Sweden, for instance, could be physically punished if they spoke their parents' language rather than the official state language during when school was not in session. However, as the levels of school attendance and literacy were relatively low in many countries for a long time, the effectiveness of these and similar means of linguistic and cultural unification was limited.

More important to the building of culturally unified nations has been the role of audiovisual media. Take Italy as an example. For, when the Italian state was created in the 19th century, less than three percent of Italian citizens could actually speak standard Italian, while lively local languages such as Corsican, Piedmontese, Sicilian and Tuscan, as well as numerous dialects, were the preferred "parlances". It was only by the mid-20th century that a common parlance was reached, largely due to the role of state–controlled radio and television.

Likewise, most people in the Basque Country, Catalonia and Galicia, each with their own language, barely spoke standard Spanish, even by the beginning of the 20th century. A common parlance was more broadly diffused since the mid-20th century, especially by the action of state-owned audiovisual media.

These types of experiences have been reproduced in many states. Nevertheless, many local languages have survived. In the European Union, while 23 languages are recognized as official, there are 40 languages that are spoken by more people than the smallest official language (Maltese), aside from about one dozen smaller languages. Most people in Southern Asia, Africa, Central America and the Andean region still speak any one of the many languages that existed before the arrival of Europeans; the official state languages, which were imposed by the colonial metropolis, are regularly spoken in private conversations by only parts of the population.

On the external side, internal language standardization and unification made each official language sharply differentiated from neighboring state languages with the same

origin. As the process of nation-building advanced, neighboring people living on either side of state borders became increasingly unable to understand each other. In general, state borders, distance and isolation, together with the ambition of holding mutually exclusive sovereignties, increase the differences between languages of the same origin. For instance, Swedes and Norwegians, subjects of the same kingdom still at the beginning of the 20th century, understand each other well and usually maintain bilingual conversations. They only established their ways of speaking as different languages when they formed separate states. As another instance, Serbs and Croats believed they spoke different, the same, and again different languages at different moments during the 20th century, respectively before, during and after the existence of multinational Yugoslavia. Nowadays, even a typical East Londoner could hardly understand a fellow from Texas; as George Bernard Shaw put it, "England and America are two countries separated by the same language". (Fishman 1999, Janson 2002, Colomer 2007).

2. National media

As apparatuses subject to strict control or sometimes even ownership by the state, the press, radio and television were crucial in the processes of building modern nation-states. As just reviewed, they served a unifying role which promoted a common language, including widespread accent and expressions. But they also provided a sense of cultural membership. Mass media offer representations and interpretations as genuine components of a national culture. By consuming media, people who are situated in distant locales, having different experiences with human relationships, can feel as if they are sharing mediated experiences and can develop a sense of proximity and coordination.

The rise of mass newspapers, as well as books, magazines and even novels in the first decades of the 19th century played a significant role in the shaping of groups whose members, in addition to acquiring a common language, could feel to share the fate of a common community. People who would never meet were able to share information, stories, references and values. As put by historian Benedict Anderson,

"a source of imagined linkage lies in the relationship between the newspaper, as a form of book, and the market". To Anderson, the newspaper can be considered "an extreme form" of the book, a book sold on a colossal scale, a one-day best-seller. By reading the morning newspaper "each communicant is well aware that the ceremony he performs is being replicated simultaneously by thousands (or millions) of others whose existence he is confident, yet of whose identity he has not the slightest notion". By the work of the press, an early sense of "community in anonymity" becomes the hallmark of the modern nation (Anderson 2006). The American playwright Arthur Miller, too, encapsulates, this shared experience when he speculated: "A good newspaper, I suppose, is a nation talking to itself" (*The Observer*, 26 November 1961).

In contrast to printed goods that required the physical distribution of copies within a territory, the emergence of radio technology in the early 20th century was essentially non-national. Almost by definition, radio waves do not respect national boundaries. Radio could have been a mechanism precisely to cut across state lines; yet states struggled to contain radio waves within borders, first and foremost by regulating the language uses in broadcast. Remarkably, the diffusion of radio expanded the media resources for shaping national cultures and overcoming literacy obstacles. Radio broadcast diffused a common language within a territory and formed habits of speech. It also became instrumental to shape and develop sentiments of patriotism and mobilization, to instill loyalty to the state. Consistently, the states also imposed strong limits on the intrusion of signals from one country to another.

The states did the same, of course, for television since the mid-20th century. Television was typically initiated by state-owned or strongly regulated stations which made few channels available. For most people, listening to daily radio news or watching TV evening news soon became a substitute for reading the morning newspaper, with similar but more a widely diffused influence in promoting a common language and shaping a sense of national, anonymous community. Nation-building also requires its own fiction in order to create a self-image. Radio and TV series replaced the role of 19th century novels in promoting referential elements: language and forms of speech, representations of territory, interpretations of history, cultural

patterns, customs and values have been very widely and effectively diffused by audiovisual media. (Price 1995, Waisbord 2004).

In the 20th century powerful rulers could use radio and television to broadcast unilateral messages calling for national unity and reinforcing their own power and support. Famous cases can be identified not only in totalitarian states, such as Stalin's cult of personality or Hitler's inflammatory speeches. Democratically elected politicians also made methodical use of the media for their own purposes, as with the United States president Franklin D. Roosevelt's fireside chats, the United Kingdom prime minister Winston Churchill's wartime radio addresses, French president general De Gaulle's patriotic appeals, and further national holiday, Christmas or New Year addresses by other numerous leaders.

More generally, the states have used a number of instruments to try to make the media loudspeakers of the rulers. They include ownership, control, censorship, and policy incentives. Virtually all existing states by the turn of the 20th century played a central role in the funding, construction and development of communication networks, such as telegraph, telephone and information roads that were needed for the functioning and distribution of the press, radio and television. Dictatorships typically monopolized the ownership of radio and television since the beginning, whether in the communist totalitarian Soviet Union or in the military-ruled authoritarian Spain, just to mention two diverse cases. However, also more liberal states established, took over or heavily funded press agencies with the mission to filter and select information and provide official interpretation, as was the case, for example, of the Agence France Press (AFP) and the Deutsche Presse-Agentur (DPA) after World War II.

Most of the few democratic states existing during the first decades of the 20th century maintained a monopoly or a majoritarian influence over audiovisual media until the 1980s, as for British Broadcasting Corporation (BBC), Radiodiffusion-Television Française (RTF), Radio-Televisione Italiana (RAI), or Radio-Television Espanola (RTVE). Still nowadays, most states reserve for themselves the right to give legal permits to private communication companies to exist and broadcast. States typically aim at regulating entry in the market of

communications by licensing radio and television stations, managing the radio frequency spectrum, limiting competition, imposing legal obligations on the press and audiovisual networks, and detecting or jamming radio or TV interferences. In many cases, control of media networks by foreign citizens or companies is forbidden. These, among others, have been the responsibilities of the Federal Communications Commission in the United States, the Office of Communications in the United Kingdom, or the Autorité de Régulation des Communications Électroniques et des Postes in France, just to mention a few outstanding institutions that have been imitated or replicated in many other countries.

Beyond direct ownership or control, also tight regulations and major incentives have constrained the activities of state- and private-owned media. In most countries, the state can impose penalties for libel, offenses, the violation of privacy or of state secrets. Positive incentives include public subsidies to the press, up to the point to make some newspapers viable or not, and the opportunity to benefit from favorable tax, postal and advertising rates.

For many decades, many governments included a minister of "Information" in charge of controlling the media closely and by the minute. The memoirs of one of them, the French Alain Peyrefitte, offers a vivid report of their mission and activity. At the time of Pevrefitte's appointment, he talked of his predecessor as having:

> "show[ed] me on the minister's desk a whole range of push-buttons. 'This one is to call the usher, and those ones the director of television, the head of the news service, the director of TV programming, the director of radio programming… Each day at five o'clock you will call them to decide on the headlines of the evening news bulletin on TV and radio. At any time you also can give them instructions by the internal phone network. Never leave your office before 1:30 and 8:30 pm! After the TV news, your ministerial colleagues will call you to object to anything of which they disapprove'." (Peyreffite 1976, Neveu 2004).

3. Transnational information networks

The state's capacity to control the diffusion of media messages within previously established territorial limits began to be challenged by the development and availability of new information technologies since the late 1980s. Satellite signals became available with small dishes that anybody could install at home. Pioneering, Astra, the first satellite launched and operated by Société Européenne des Satellites, provided open television coverage to Western Europe since 1989. Among the most popular channels carried in the first years were the entire four channel Sky Television package, including Eurosport, the entertaining Radio Television Luxembourg, and the pop and early interactive Music Television (MTV). Soon multiple satellite emissions were channeled through cable TV providers, which implied an effort by state regulators to circumscribe receptors within the territorial limits of every significant political unit. However, the multiplication of channels, the broad circulation of American programming, including international news, films and TV series, blurred any sense of national communitarism among consumers.

During the last few decades, technological changes have disrupted more strongly the previous relationships between states and the media. State-owned press agencies, radio and television stations have been privatized almost everywhere. The markets for communications have experienced broad liberalization. Although these processes have implied the formation of some big multimedia corporations, the scope of their activities and the goods they provide tend to be transnational, while competition for markets is open and often vigorous. Local communication companies and creative private initiatives can also thrive in the new technological and economic environment.

These processes have run in parallel to the expansion of transnational trade, which includes liberalization of commerce for culture and communication goods, such as books, films, compact discs, and video discs. Cultural and creative industries alone are estimated to account for over 7 percent of the world's domestic product. The trade of cultural goods has increased at a rate of almost 100 percent every ten years since the mid-1990s, according to data collected byu UNESCO (UNESCO,

2005). In recent times, the World Trade Organization, which strongly favors open trade, has become an important actor for the promotion of communication and cultural exchanges, at the expense of previous state-centered controls and regulations.

The next step was generated, of course, by the generalization of internet domestic connections during the 1990s. Traditional newspapers, new information websites for news, sports and finances, became the most popular spots. The fragmentation of transmitters, media and channels generated the fragmentation of audiences. Neither the morning newspaper nor evening TV news programs survived as the basic and most common reference for large sectors of the population. Some newspapers and magazines in English became available everywhere online, including *The New York Times, The Wall Street Journal, Financial Times, The Economist*, while certain sites like CNN.com, Google News or iReport draw sources from around the world. Digital satellite radio and television became broadly accessible through the web, including international channels such as CNN, Bloomberg, Fox News, Euronews, BBC International, France 24, Al Jazeera, Univision, and many others. News organizations are not defined by territory. This is in contrast to newspapers, which were circumscribed to the area covered by trucks delivering papers in the morning, or radio and TV programs which reached only the limits of their licenses.

Further on, the expansion of social networks, such as Twitter, Facebook and Linkedin, have facilitated the expansion of personal communications all across the world, on a much larger scale than the post, the telegraph or the telephone had done before. Even television newscasts now include information provided by private messengers through networks such as Twitter and videos posted on You Tube. New information technologies have dismantled previous barriers to cross-border flows of information. Media spillovers and trade across state boundaries make maintaining or erecting and patroling media borders impossible.

In particular, rulers' messages and media events have lost their nation-building capacity that they had in the past. When most audiences had a choice of only one or two channels and governments could mandate all radio or television stations to broadcast simultaneously, state chief's messages and media events could pull a nation together. Nowadays, audiences are

scattered across multiple media and channels that undermine the nation-state project aiming to achieve a solid alignment of politics and culture.

Media markets have eroded political and cultural borders. Multiple languages and cultures exist within each community, typically with overlapping references of different territorial scope. The mere notion of cultural sovereignty has become outdated. As put by *The Economist*, the nation-based, state-controlled "mass-media era now looks like a relatively brief and anomalous period that is coming to an end". (Economist 2011).

For some people, sharing information and access to non-territorially based cultural goods and communication flows can afford a sense of belonging to new imagined communities on the worldwide or "global" scale. As the classical media in the 19th and early 20th centuries contributed to fortifying national cultures, the new media and information technologies, by eliminating distances, effectively serve cosmopolitanism. However, culturally homogeneous community-building is no longer viable, especially on a worldwide scale, precisely because of the great dimension and high complexity of potential human exchanges. In fact, transnational flows of information reflect and stimulate the cultural diversity of the world. For many people, having feelings of belonging to supranational or worldwide communities does not exclude having simultaneous feelings of belonging to local or national groups.

Diverse sets of multilevel cultural networks and references develop for different purposes, in much the same way as large political unions and federations tend to arrange multiple levels of government of different sizes for the provision of public goods with different territorial scales of efficiency. Specifically, large scales can be identified and promoted for public goods such as currency and trade, large distance transports, security or human rights, while state or regional scales can be efficient for managing natural resources and certain economic activities, and local governments focus on the provision of schools, parks, museums or garbage collection. Likewise, different scales can be appropriate for the diffusion and consumption of different cultural goods. For instance, certain books, films and certain types of music works can be successful at a global scale, while some forms of literary or artistic creation, certain TV shows, the arts of cooking or the

sport practice can find fitting environments in settings at smaller scales.

Most prominently, the standardization, imposition and exclusiveness of national languages have been replaced with broadly diffused individual multilingualism. English is certainly the most successful transnational language in the current world, as will be documented below. Its wide reach has made English a de-ethnicized and culturally unbounded language allowing many of its speakers to use it freely without identifying with one particular culture. Even in America, and in contrast to state languages in Europe, English never achieved the mythic category of the "official" or "national" language (as it is not enshrined in the constitution, nor is German in Germany, by the way). For those speaking English as a foreign language, it works in a similar way to how Latin worked as the lingua franca for the learned community for many centuries. English has become the worldwide lingua franca not only in higher education and academic publications and conferences; it is dominant in science, technology and medicine, in international business, finance and commerce, and in diplomacy. It is also the language of airports, pop music, and advertising.

Yet, English is not the only language used in daily interactions by most people in the present world. It is not the only large-area lingua franca either. French, German, Spanish, Chinese, Hindi, Arabic and Swahili are also common languages for speakers of multiple local languages with related origins. Most people of the world are bilingual or multilingual. A few large linguas francas supersede but do not eliminate the multiple local languages. This is a far cry from the monopolistic ambition of sovereign states to impose one single "national" language within a given territory. But it is also away from the dream of a single global community with homogeneous cultural references.

4. Measuring some media exchanges

Following up from some of the questions, suggestions and insights presented in the previous pages, provided are some quantitative measurements of communication flows, the scope

of cultural exchanges and the degrees of cultural heterogeneity in the current world.

Let us start with books. There is a strong correlation between a country's level of per capita income and its level of per capita publication of books. The wealthiest countries, such as the United States, the United Kingdom, Sweden and Finland (with annual incomes above 40,000 dollars per capita), are also among those with the highest levels of book publication (around 3 titles per thousand inhabitants every year). Likewise, countries with relatively low levels of per capita income, such as China, India, and Brazil in our sample (below 5,000 dollars per capita) tend also to publish very few books (around 0.1 per thousand inhabitants). Writing, editing, publishing and reading seem, thus, to be activities highly with levels of economic well-being. The basic data and calculations are shown in Table 1.

More than 83,000 books were translated worldwide in 2010 from up to about 200 languages. There is also a significant correlation between absolute size and external dependence. The higher the absolute number of books published in a country is, the lower the number of translations from other languages tends to be. This holds for countries with very different levels of per capita income and per capita book publication. Not only do the English-language publishing companies in large, wealthy countries, such as the United States and the United Kingdom, tend to translate very few books from other languages, but also the publishing companies in large countries with relatively low levels of per capita income and per capita publication, such as India and Brazil, and to some extent China or Russia, are very largely based on their own domestic authors (in proportions between 93 and 99 percent, as shown in Figure 1).

Likewise, relatively small countries tend to have a greater dependence on translations from other languages, not only if they have relatively low levels of income and publications, (such as the instance of Greece in our sample) but also if they are relatively small and rich countries with high numbers of books published, such as Finland or Israel.

This correlation is analogous to the one usually observed between the size of the country, as measured by its area or its population (not by its level of income), and its level of economic openness –as is usually measured by the proportion of foreign

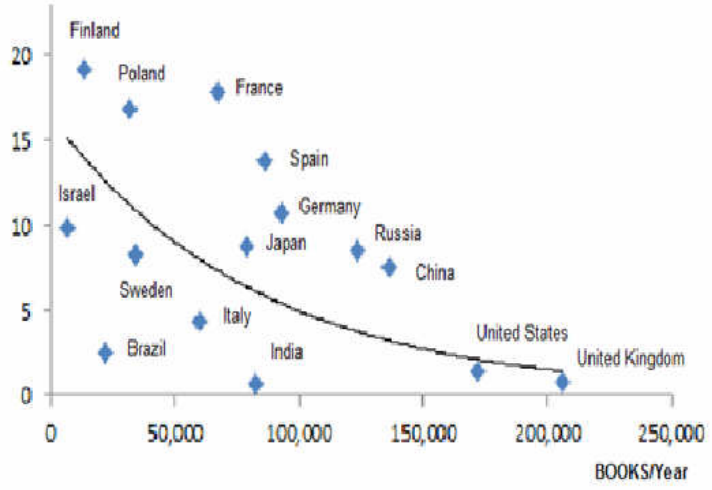
trade regarding its domestic product. Similarly to what can be observed for the trade of commodities, within a very large country, a high variety of writers and cultural products can be the result of the activity of people located in different and distant yet "internal" territories; whereas achieving comparable levels of cultural production for people and publishing companies located within a small state may require more translations from authors located perhaps at similar distances, but across borders and using different languages.

Table 1. Book Production and Translations, per Country

Country	Books published PUB	Books/ 1,000 h	Books translated TR	Dependence TR/PUBx100
Un.Kingdom	206,000	3.32	1,585	0.77
Un. States	172,000	2.76	2,288	1.33
China	136,226	0.1	10,169	7.46
Russia	123,336	0.86	10,455	8.48
Germany	93,124	1.14	9,932	10.67
Spain	86,300	1.87	11,838	13.72
India	82,537	0.07	548	0.66
Japan	78,555	0.62	6,860	8.73
France	67,278	1.02	11,958	17.77
Italy	59,743	0.98	2,567	4.3
Sweden	34,320	3.63	2,845	8.29
Poland	31,500	0.83	5,315	16.87
Brazil	22,027	0.12	554	2.52
Finland	13,656	2.53	2,622	19.2
Israel	6,866	0.88	676	9.85
Greece	6,826	0.63	2,856	41.84

Sources: Author's elaboration with data from
http://en.wikipedia.org/wiki/Books_published_per_country_per_year
(updated 26 Oct. 2011)
http://www.unesco.org/xtrans

Figure 1. Book Production and Translations



The available data permits us to expand this type of observation and discussion about the translations of books in different countries to books published in different languages. This is relevant because several large-area languages are used in multiple countries, as was previously emphasized in this chapter. In particular, while the total number of translated books accounts for about 7 percent of all the books published in the world, the dominance of English language versions implies a large circulation of many books across very large areas beyond state borders. Also, to some extent, a few other large-area languages achieve this same kind of multi-state diffusion. The data and innovative calculations are presented in Table 2 (they include more than 90 percent of all books published, even if certain smaller languages are not included). (See also comments by Heibron, 2010).

As can be observed from the data, the dominance of the English language is prominent, as 35 percent of total books in the world are published in this language. But more than 62 percent of translations are made from English (while the share was about 40 percent in 1980). English is also almost the only

language with high surplus in language exchanges, as the number of translations from English to other languages is almost ten times higher than the number of translations from other languages into English.

Table 2. Books Production and Translations, per Languages

Books published languages	Production PROD	Original language EXP	Target language IMP	Balance EXP-IMP	Openness EXP+IMP/ PROD
English	557,927	62295	7090	55205	12.44
Chinese	178,284	644	10090	-9446	6.02
Spanish	131,965	2736	10111	-7375	9.74
Russian	123,336	2021	11267	-9246	10.77
German	113,477	9316	10733	-1417	17.67
French	88,558	9057	14980	-5923	27.14
Japanese	78,555	2919	6771	-3852	12.33
Italian	59,743	3434	1694	1740	8.58
Turkish	34,863	169	33	136	0.58
Swedish	34,320	1608	2783	-1175	12.79
Dutch	34,067	864	6695	-5831	22.19
Polish	31,500	552	5264	-4712	18.46
Portugues	29,895	576	815	-239	4.65
Arabic	24,870	525	770	-245	5.21
Romanian	14,984	161	1406	-1245	10.46
Finnish	13,656	473	2439	-1966	21.32
Danish	12,352	1229	3065	-1836	34.76
Czech	10,244	696	4505	-3809	50.77
Hungarian	9,193	239	3614	-3375	41.91
Catalan	7,758	603	903	-300	19.41
Hebrew	6,866	398	660	-262	15,41
Greek	6,826	380	2677	-2297	44.78
Gallegan	2,070	139	208	-69	16.76
Basque	1,186	77	224	-147	25.38
Total	1,606,495				

Other large-area languages previously mentioned have different levels of external openness to translations with other languages (as measured by the total number of translations from and into each language out of the total number of books published in that language). French and German are relatively open and have moderate deficits, since many books are translated —especially from English— into French or German, a substantial numbers of books initially published in these two languages are also translated into others. Other large-area languages are relatively more closed to translations, such as Chinese and Spanish both with high deficits because many more books published in these languages are translations than are being translated. Additionally, Turkish, an extreme case, is almost completely isolated from published exchanges with other languages.

As it should also be expected, smaller-scale languages are relatively more open. The degree of external openness (again, as proportion of translations both ways out of total number of books published) is between 20 and 50 percent for books published in Czech, Danish, Dutch, Finnish, Greek, Hungarian. It is also high for certain non state languages included in our analysis —Basque, Catalan and Gallegan— which also confirms in another way that language transferrence does not always coincide with state border crossing. In all these cases the number of translations from other languages (most significantly English, followed by French and German) is more than ten times higher than the number of translations into other languages. A particularly interesting case is Italian. It is a relatively closed language regarding its level of production (with less than 9 percent of openness), but it has about double the number of translations into other languages than of translations into Italian. This is probably due to the enduring and broad popularity of a high number of fundamental works originally published in Latin, as well as some in Renaissance Italian, that can still keep translators busy all around the world. All in all, there has been an increase in the diversity of languages, as books are nowadays translated from more languages than ever before.

Comparable tendencies can be observed for production, transnational exchanges and external dependence on films. Foreign sales accounted for about 70 percent of total receipts in

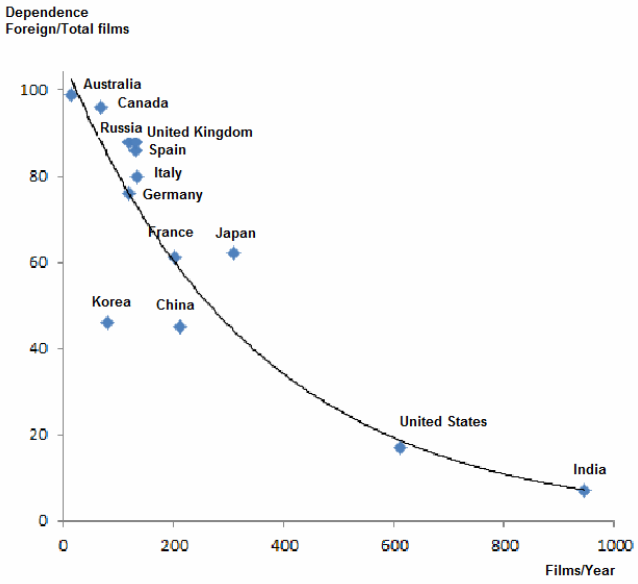
2010 —both for the industry at large and for some of the biggest American studio productions— after several years of higher increases for international box offices than for domestic sales. Elsewhere, in contrast to classical Hollywood awards, in the 21st century a number of consecutive Oscars for best picture have gone to films that use globe-spanning financial networks to create stories aimed at global audiences. (Kanzler, 2010; Kulish and Cieply, 2011).

Relevant data, although only for a lower number of countries, are presented in Table 3 and Figure 2. Again, the higher the absolute number of films produced in a country are the lower the number of imports of foreign films tends to be. Most countries have relatively low levels of domestic production and are highly dependent on imports. A few countries, nevertheless, are relatively more closed to foreign films than others, as can be patently observed for the cases of China and South Korea. Of course, the general relation is truncated by the extraordinary levels of film production in the United States and India. Bollywood largely surpasses Hollywood nowadays in the number of films per year. The two centers together can account for nearly half the total production of films in the world. Yet, while American movies spread all across the globe, most productions from India stay in the country of its origin.

Table 3. Film Production and Imports

	Films/year	**Foreign/total films**
India	946	7
USA	611	17
Japan	310	62
China	212	45
France	203	61
Italy	134	80
Spain	133	86
UK	132	88
Germany	121	76
Russia	120	88
Korea S.	82	46
Canada	69	96
Australia	16	99

Figure 2. Film Production and Imports



5. Towards cultural cosmopolitanism?

In the following section some data will be presented on internet and social network users. An implication of the technological changes of media and communication technologies previously reviewed is that nowadays statistical data centered on the number of communication devices or users can have a different and even opposite significance from previous periods with respect to the basic question of community membership addressed in this chapter. Whilst in previous historical periods the number of newspapers, radios or TV sets in a country could be taken as indices of success of the state in its endeavor to instill cultural homogeneity and national cohesion in the population, nowadays, the numbers of users of technological devices implying transnational, trans-language and transcultural

communications can be, on the contrary, indices of cosmopolitanism.

More than anything else, Internet has contributed to make English the dominant language for trans-border communication. It has been estimated that the presence of English on the Web is around 80 percent (Pimienta et al. 2009). Proportions of internet users out of total population for a number of countries are shown in Table 4. Again, as for book and film exchanges, a positive correlation with per capita income levels can be observed for the proportions of internet users in a country. The relations with country sizes require some additional discussion. For the largest countries, the proportions are very high for the United States (78 percent of total population use internet), intermediate for India (at 52 percent) and low for Brazil (37 percent), China and Russia (both at about 29 percent), that is, in correlation with their respective levels of per capita income. But in all of these cases the size of the country also matters, as their proportions of internet users are relatively lower than for countries with similar levels of per capita income but are of a smaller size. It can be presumed that the larger the country is the higher the frequency by which internet users can access websites or communicate with people located at long distances still within the same borders. For smaller countries, the use of internet should imply more frequent transnational exchanges, as the higher proportions of internet users in countries such as Sweden and Finland suggest.

Data for users of social networks may give a better ground to these hypotheses, as shown in Table 4. Facebook is a social networking service and website launched in 2004 that, despite having less than one hundred thousand users in 2008, has reached to nearly one million in 2012. The proportion of Facebook users out of total population in each country is strongly correlated to the level of per capita income. English-speaking countries —including the United States, the United Kingdom and Canada— are at the top, while Russia, India and China are at the bottom. As has happened with other internet networks, Facebook has been blocked intermittently in several countries, including China and a number of Muslim-dominated states. In such cases, the number of users within a country is very strongly correlated with the size of the country (for the countries in our sample). People in small countries may use this

network to communicate much more frequently with people at long distances that lie beyond their state borders.

Table 4. Internet, Facebook and Linkedin Users as Percentage of Total Population (selected countries)

Internet		**Facebook**		**Linkedin**	
Sweden	89	Uni. States	50	Uni. States	18
Un.Kingdom	82	Un.Kingdom	49	Un.Kingdom	13
Finland	81	Sweden	48	Sweden	9
Germany	80	Israel	44	Israel	7
Uni. States	78	Finland	38	Finland	6
Japan	78	France	35	Spain	5
France	69	Italy	34	France	5
Spain	61	Spain	33	Italy	4
Poland	59	Greece	32	Brazil	3
Israel	58	Germany	26	Greece	3
India	51	Poland	18	Germany	2
Italy	48	Brazil	16	Poland	1
Greece	46	Japan	4	India	1
Brazil	40	Russia	4	Russia	0,4
China	29	India	3	Japan	0,4
Russia	29	China	0,04	China	0,1

Sources:
www.cia.gov/library/publications/the-world-factbook
www.socialbakers.com/facebook-statistics/
www.socialbakers.com/linkedin-statistics

Finally, we will take a professional and business-related social networking site such as Linkedin, which was launched in 2003 and attained more than 120 million registered users in 2011. The site is available in English, French, German, Italian, Portuguese, Spanish, Romanian, Russian, Turkish and Japanese. But the dominance of the United States and the English

language is very strong: Linkedin has 21.4 million monthly unique U.S. visitors and 47.6 million globally. Although somewhat weakly, data for linkedin users show similar correlations with levels of per capita income and country sizes as for the other media and networks reported above.

6. Concluding comments

In contrast to typical processes of nation-state building, in which the audiovisual media played a very significant role in favor of language and cultural homogenization, open trade has favored not only transnational commodity exchanges, but also information and cultural exchanges in large scale areas and even on a worldwide level. In parallel to the consolidation of the English language as the predominant lingua franca and the main source of translations, in today's world there has been an increase in the diversity of languages. English serves as more of a touchstone of communication amongst diverse populations that opens up communities to the international context rather than a replacement for more local parlances.

With the onset of new information technologies, communication and cultural exchanges began to defy traditional state and national borders. Nowadays states cannot maintain tight control or ownership of media. Communication is not territorially-based, as their diffusion no longer depends on delivery trucks and state-given licenses, but waves and signals are able to cross borders. The old project of cultural unity of a population within a well-bounded territory, which implied clear-cut differences between people living on opposite borders of neighboring states, has been critically impaired.

7
The Evolving Media Landscape and Political Participation

Peter Dahlgren

Introduction: The Ambivalent Web Environment

Today, party politics seem stagnant, reactive, uninspiring; many citizens feel that they are not offered real choices. From the standpoint of political participation, we have been witnessing a steady decline in voting, in party loyalties, and even in civil society activities. There is a growing skepticism, frustration, indeed, even cynicism towards the political class. Democracy is being transformed as its social, cultural, and political foundations evolve; in this evolution, the dramatic changes in the media are a central feature. Particularly since the mid-1990's, with the rise of the internet, the media landscape has been in rapid transition.

Some argue that in the long-term perspective, the growth of the internet is offering an enhanced environment for individual and collective creation ('peer production') and dissemination of information and culture. The internet can clearly make a difference: in contributing to massive transformations of contemporary society at all levels, it has also dramatically altered the premises and infrastructure of the public sphere in a variety of ways. We see emerging a heterogeneous universe comprising the blogosphere, social networks, individual and group productions, including efforts by social movements and activists of every imaginable persuasion. In making available vast amounts of information, fostering decentralization and diversity, facilitating interactivity and

individual communication, it has redefined the premises and character of civic engagement and political participation. There is much here that is encouraging from a democratic horizon.

Yet while media culture generates new practices and modes of expression, it seems to be moving further away from the ideals of the traditional notions of the public sphere. For democracy there is a danger: public mini-spheres tend to isolate its members from larger discursive flows within political society. They may also reduce the participants' experiences with confronting alternative points of view, as well as their competence in engaging in argument.

Since its emergence as a mass phenomenon in the mid-1990s, the internet has been incorporated into the ongoing research, reflections, and debates about democracy. This focus has grown in intensity as democracy's dilemmas have seemingly deepened. In particular, the theme of the net's use for political participation by citizens has been a major concern, since civic engagement —and the lack of it— has been identified as one of the key problems facing democracy. I will be exploring that theme in this chapter, attempting to pull together a coherent view without glossing over the difficulties and uncertainties involved. In particular I will highlight a number of the debates and around the issues at hand. I use the term internet in a broad sense, to include a range of technologies, platforms and tools, increasingly defined by mobile attributes through high-tech telephony. My terminology is non-technical, and I have not particular distinction in mind when refer to the net or the web. I find that it important to situate the internet within the larger media landscape, that also includes the traditional mass media, even if the distinction between them is diminishing.

In the first section I set the scene, addressing the basic issues about democracy, citizen involvement, and the role of the media. The second section takes up the transformation of the overall media landscape, with an emphasis on the web environment. The evolution of journalism, and its implications for democracy, including the growth of participatory journalism, is the focus of the third section. Section four looks at the notion of networks —central for participation— and revisits the framework of the public sphere, from the horizons of the web environment. Throughout these discussions we will encounter optimistic and pessimistic perspectives. My view is not that we

should necessarily choose sides (although a modicum of optimist is useful), but rather that we try to remain analytical.

1. Democracy, media, and participation

History not only has its ups and downs, it also has a capacity to surprise us as to when an 'up' or a 'down' is coming —scientific prognoses and futurology notwithstanding. Thus, just over two decades, the collapse of the communist regimes of the Soviet Union and Eastern Europe took everyone by surprise. In the Western democracies, following the Fall of the Wall, the self-assuredness about the political system was running high; "We won!" was a widespread sentiment. It was a bit ironic that only a few short years later, in the early and mid-1990s, there emerged a growing international awareness that not only is the transition to democracy —in Eastern Europe and elsewhere— a difficult process, but also that the established Western democracies had hit upon disturbing times.

Dilemmas of democracy

There are many problems facing democracy, among them the tendency for power in the formal political system to diminish, while the democratically unaccountable power of the corporate sector grows, in the wake of neoliberal models of societal development (see, for example, Harvey, 2006 and Harvey, 2011; Fisher, 2009.) These patterns not only erode the legitimacy of democratic systems, they also result in decreasing margins of maneuverability for governments, in the context of increasingly global economic forces.

This narrative of declining political participation is countered, however, by other trends, mostly beyond formal party politics. We see the emergence of a very political active extreme Right in many European countries, movements that not only mobilize against immigration, but also express the frustrations and sense of disempowerment that many people at the lower end of the socio-economic hierarchy experience. Yet, we also witness a re-emergence of political engagement on the Left, often in the form of non-traditional social movements. The large umbrella organization World Social Forum, for example, together with its regional and national spinoffs, has been

coordinating vast numbers of groups active in the broad alterglobalisation movement. Further, as the contemporary economic and financial crises lead to yet more social devastation, oppositional movements are appearing on various fronts; the Occupy Wall Street movement, launched in New York City in the autumn of 2011, has spread to hundreds of cities in the US and around the world, while militant manifestations especially in southern Europe are a response to the deep crisis of the EU.

Democracy is not a universal or static phenomenon; its specific character varies under different and evolving circumstances. Its vitality and even its very survival cannot be taken for granted. It is an historical project, crisscrossed by contestations between those forces that would in various ways constrict it and those who seek to broaden and deepen it, not least by enhancing the participation of citizens. Democracy emerges, at best, unevenly across the world, through political struggles; it rarely comes as a gift to the people from the powerful circles. Today, scholars, journalists, politicians, and citizens are asking themselves if and how the democratic quality of their societies can be maintained and strengthened, and in what ways our democratic deficits can be addressed. A core theme in this regard is the question of political engagement: without a minimal level of involvement from its citizens, democracy loses legitimacy, and may cease to function in a genuine way.

Problems of participation

We must acknowledge that there can be —from the standpoint of citizens themselves— many good reasons for not participating politically, ranging from a sense of personal powerlessness and despair over one's life circumstances, to bitterness of having been abandoned or betrayed by no responsive political elites, or simply not having enough time and energy, given the difficulties of everyday life. Today many citizens see few options for meaningful intervention, and find that the formal structures of democracy at local, national and regional (EU) levels offer few viable alternatives. The lack of citizen participation should not be seen simply as a failure of civic virtue, to be rectified by promotional appeals to moral uplift. Rather, it can derive from rather objective appraisals of

power relations, which become intricately interwoven into the fabric of people's socio-cultural worlds and their personal horizons. At the same time, we can sociologically understand citizens who engage in the more explosive forms of participation —for examples militant demonstrations and riots— that derive from a frustration with the standard 'politics as usual' that seemingly never redress the issues that concern them.

From the standpoint of democratic systems, citizens are not always automatically guaranteed universal and extensive civic participation, either in parliamentarian or extra-parliamentarian contexts. Various mechanisms, including corruption, the social closure of power circles, and the manipulation of information, can delimit participation. Access to and impact within public spheres can vary a good deal between different groups of citizens. For example, non-voters tend to belong to the lower socio-economic strata of society —precisely because they feel the most excluded from the political system. Yet even other citizens can feel excluded: a recent study in the UK found that even among those citizens who keep up with the news and are well-infomed about politics, the majority still do not feel that there is a clear link between such attention and any opportunities for any civic action. The authors found "little evidence of UK citizens having had access to 'communities of practice…through which they could act together in the public world' (Couldry, Livingstone and Markham, 2007: 188).

Trajectories: consumption, civil society, politics

To talk about the problems of participation in the context of democracy is on one level simple enough, but for the discussion at hand we will benefit by probing just a bit deeper to clarify what is meant by 'participation', especially in regard to the digital media (which is our perspective here). Thus, for example, the issue of whether people are participating mainly 'in the media' or in society more broadly 'via the media' can probably never be conceptually or even empirically fully established, given the media's entwinement with social worlds beyond themselves. The media mediate, and via them we are linked to social realities beyond our immediate here and/or now. The extent to which people valorize the media experience itself in relation to that which it connects them will remain a somewhat open question, but certainly elucidating the

motivations and intentions of participants will usually give some indication of what they experience as primary.

More significantly, we can raise the issue of which social arena participation is directed towards, what we might call its trajectory, since most societal participation via the media is in fact not directed at politics. For our purposes here, it will suffice to use three basic categories, which are, not surprisingly, often mutually entangled: consumption, civil society, and political participation. In this scheme 'consumption' is a vast, almost catch-all category that comprises societal participation via commercial logics. This trajectory is intended to point to participation through market relations that offer us that which we need to survive and that which we might desire: the promise of satisfaction and pleasure. It is most commonly exemplified by the many forms of shopping and the commercial variants of popular culture and entertainment. Together this accounts for a vast majority of online participation, for example. While my concern in this presentation lies largely with civil society and politics, it should be understood that consumption is always embedded in an array of macro- and micro-power relations, and that there are democratic horizons present even in this trajectory, even if they often remain at a distance. Thus, poverty, for example, can at some point be seen as an exclusionary mechanism against consumption that raises democratic issues. Also, politically motivated consumption is certainly on the rise (see, for example, Micheletti, et al, 2003; Barnett et al, 2010) even if it remains a minority phenomenon.

Popular culture, for its part, cannot always be dismissed simply as 'mere consumption': it increasingly overlaps with public spheres (see, e.g., Street, 1997; van Zoonen, 2006; Riegert, 2007). It usually has an accessible, welcoming character that can express significant democratic values; it invites participation, offering easy access to symbolic communities, to a world of belonging beyond oneself. This can at times be preparatory for civic participation by offering what Hermes (2005) calls 'cultural citizenship'. Also, popular culture invites us to engage —with both our hearts and minds— in many questions having to do with how we should live and what kind of society we want. It allows us to process, to work through positions having to do with contested values, norms, and identities in a turbulent late modern socio-cultural milieu,

even at times actualizing conflicts where a 'we' and a 'they' can be identified.

With 'civil society' I signal a trajectory that in some or other involves free association for common purpose outside both the market and the private sphere of the home. There are undeniably some unresolved issues with the concept, but the idea of civil society emphasizes that in a democracy people can exercise the freedom to interact in pursuit of their shared interests (see Edwards, 2009, for a handy starting place on this topic). For example, dealing with friends, colleagues, communities, associations, and social networks for non-commercial purposes are all a part of civil society. There is an almost infinite realm of participation in meaningful and pleasurable activities around sports, music (e.g. amateur contributions on YouTube), fandom, wikis, and so forth —though it is often not possible to completely keep market logics out.

As indicated, the boundaries with consumption can at times be problematic. While the political conflicts may emerge within any such constellation (as in all social entities), the idea of civil society suggests that the purposes and goals of such groups need not by definition be directed at politics, and most often are not. However, as with consumption, the political is always potentially present in civil society, an angle that is emphasized for example, by Cohen and Arato (1992). In their classic study, they see civil society as inherently contested terrain and as a foundation for the political public sphere.

Politics, our third trajectory of participation, is at least relatively clear in signifying involvement in public conflicts over resources or other interests, and it no doubt remains a minority trajectory in the media landscape —seen in statistical terms. In this trajectory we find all kinds of politics, the formal electoral arena as well as the many versions of alternative, extra-parliamentarian politics. However, there is still the issue of specifying at what point participation should in fact be called political; this can at times be empirically challenging. The political, in the sense of contestation over issues that are publically visible, may in principle arise at any time anywhere on the social terrain (Mouffe, 2005). Thus, the political should be understood as something that emerges among people, through discursive interaction —i.e., talk, (see Dahlgren, 2009).

The extent to which specific political contestation enters the public sphere, is turned into politics —becomes part of the public agenda— depends on the openness of the system, the control of the agenda, and ultimately, the constellations of power.

Yet it also depends on the engagement and motivation of citizens. For most people most of the time, politics and the problems of democracy are not uppermost in their minds; a quick look at statistics on net traffic suggests that this pattern is merely reproduced on the web: Hindman (2009) finds that in the US, one tenth of one percent of internet users goes to political websites (compared to 10 percent that goes to porn sites). Also, traffic to political websites is hardly spread evenly across the board: of 770,000 political websites, 41 percent went to the top 50 sites.

The web as a daily terrain

The trajectories of participation must be understood against the backdrop of the ubiquitous web environment, where more and more people spend much of their time for an array of purposes. Especially young people are using the various affordances not just to send written and spoken words, but also to upload, remix, link and share, in increasingly complex and developed ways. For many young people, the net is not just something they 'visit' on occasion in order to seek something special, it is increasingly the terrain of their daily lives. From social interaction with friends to gossip blogging, from music perusals to news, from shopping to finding a partner, the web environment is becoming the taken-for-granted site where the lives of people live are increasingly embedded. These media offer possibilities that are harnessed and mobilised in varying ways across the societal landscape, and thus impact on the strategies and tactics of everyday life and the frames of reference that provide them with meaning. The net is of course a part of the larger social and cultural world, intertwined with the offline lives of individuals as well as with the functioning of groups, organizations, and institutions. This is the setting for participation, and plays an important role in shaping people's relationship to democracy and politics.

Democracy is being transformed as its social, cultural, and political foundations evolve; in this evolution, the dramatic

changes in the media are a central feature. Particularly since the mid-1990's, with the rise of the internet, the media landscape has been in rapid transition; let us take a closer look at these developments.

2. The evolving media landscape

The media are a prerequisite —though by no means a guarantee— for shaping the democratic character of society; they are the bearers of democracy's political communication beyond face-to-face settings. In the modern era, their role as public spheres in making politics (and society) visible, in providing information, analysis, forums for debate, and a shared democratic culture, is beyond dispute. We should not lapse into a media-centric view of society and democracy, but it is indisputable that the modern world would be unrecognizable without the media. However, the term 'the media' is deceptively simple; it actually embodies an array of complex social institutions and practices. The media —both the traditional mass media and the newer online communication technologies— do not function as a unified societal force, but are diverse in the way that they operate and in the representations and communicative opportunities that they provide.

The media landscape in transition

Regardless of how one evaluates the performance of the media, these institutions have become the major sites, the privileged scenes, of politics in late modern society. The media are transforming democracy because political life itself today has become so extensively situated within the domain of the media, as Castells (1998) and others argue, from a variety of perspectives. This view does not mean that politics does not exist outside the media, or that politics has been reduced to a mere media spectacle. It does, however, posit that political actors who want to accomplish things requiring public visibility will always turn to the media (Thompson, 1995). Political and economic elites make use of the media for the daily routines of governing, for opinion and image-management, as well as for major initiatives or trouble-shooting in times of crises. Increasingly, citizens are using (the newer) media for

democratic purposes. Seen in this light, media scholarship has an extremely important role to play in the service of democracy (McChesney, 1997). The media today are in a profoundly turbulent period, and to begin understand their present role in democracy, as well as to begin to grasp future possibilities, it is imperative that we have a basic orientation in these processes. The key contemporary developments are of course closely woven together; in summary form, they are as follows.

Proliferation

We have a whole lot of more mediated communication today than we had forty or even twenty years ago. Cable and satellite television offers packages with ever-growing numbers of channels. If the number of daily newspapers is contracting somewhat, the growth in magazines has been explosive over the past two decades. And the internet offers not only a seemingly endless supply of information on its own, but is also increasingly relaying and repackaging the output of traditional mass media. We are awash in media, and most of it is obviously not overtly civic or politically oriented: even if various forms of journalism have also increased in recent years, the growth in the realm of consumption, advertising and popular culture is much larger. Thus a definitive aspect of the contemporary media world is the intensifying competition for attention –between genres (e.g., sports or news), between media forms (e.g., broadcast radio or the internet), and ultimately between the three trajectories of participation that I mentioned above. Indeed, as the culture of self-promotion becomes the norm for more and more organizational and individual actors, even within any given domain, be it academic publishing or celebrity gossip, the battle for visibility is becoming a definitive feature of the present media landscape.

At the same time, this abundance easily becomes disorienting; Gitlinn (2001) speaks of 'media torrents' and 'supersaturation' and reminds us that under such circumstances, we must devise strategies for navigating the flood, for sorting and selecting from an output infinitely larger than we can meaningfully deal with. Poster (2006) argues that particularly now, with the digital media, the deluge of information that pours across geographic borders and cultural contexts can paradoxically give rise to a decrease in meaning.

People can experience the difficulties of making sense of media worlds that bear no obvious relationship to their own established frames of reference. Other critics argue that much of the media abundance lacks diversity and is merely "more of the same." Yet, as our symbolic environments become denser, and the accessibility of information mushrooms, the degree of available choice, for those who actively seek it, is still enormous.

Concentration

The media industries are following the general patterns found in the economy. Massive media empires have emerged on a global scale, concentrating ownership in the hands of a decreasing number of megacorporations. Such giants as AOL Time Warner, Disney, Rupert Murdoch's News Corporation, Google, and Microsoft are among the ten or so leading global media corporations, followed by another several dozen somewhat smaller corporate actors. Together these giants, each very diversified in its activities, dominate the media landscape of the modern world. The holdings of these corporations encompass all phases of media activity, from production to distribution, hardware and software, across virtually all media forms and technologies.

These trends and their implications for democracy are analyzed in a growing critical literature that affirms the dangers and the need for reform (e.g., McChesney REF). As the commercial imperatives of the media have hardened over the past few decades, the balance between public responsibility and private profit has been steadily tipping in favor of the latter; normative goals are increasingly giving way to economic calculation. The drive to maximize profits continues to shape the social relations between technical innovators, corporate owners, government, and citizens in ways that are detrimental to democratic ideals.

Deregulation

Deregulation can be seen as midwife of concentration. Deregulation is the policy process whereby the various laws, rules, and codes that governments use to shape media ownership, financing, and ongoing activities are withdrawn or weakened, opening up the doors to more market mechanisms.

Regulation and deregulation can be understood as policy outcomes reflecting the power and interests of various constellations of stakeholders, including transnational corporations, political parties, public officials, interest associations, and advocacy organizations. In a period of extensive institutional and technological restructuring of the media landscape, media policy is of course an area of intense concern, since it is a decisive agency and site for the processes of transformation. Many critics argue that relying on market forces in the media industries is turning into a disaster for democracy; other debates focus on the degree of freedom of expression that is suitable, especially on the internet.

Deregulation has been most strongly manifested in the area of broadcasting, and this has had impact not least on the public service tradition of Western Europe. Public service broadcasting was in need of institutional renewal in the 1970s and 1980s. Virtually all such broadcasting organizations were facing financial difficulties, and charges of paternalism and stagnation, as well as in some countries a too close relationship with the state, were not without validity. However, in the new media environment, excessive deregulation has contributed to the erosion of the public service mission. While public service in most countries has restructured and streamlined itself, it is often torn between competing with popular commercial channels on their own terms while yet maintaining a specific identity and profile.

Globalization

Globalization has many dimensions, and has generated a vast literature of both support and critique. The media can be understood as both an expression of globalization and as forces that drive it forward. They are inexorably connected to the globalization of culture in the modern world; media infrastructures, products and messages weave the world together in dense yet uneven and unequal ways. While the implications of globalization are complex and at times ambivalent, we should emphatically not ignore their positive sides, such as enlarging citizens' global frames of reference and social engagement. Thus, political issues increasingly take on a transnational character, and global media in turn can impact on the political agenda of specific nation-states. Public engagement

with many international issues —political repression, environmental disasters, famine, and so on— has been made possible by globalized media coverage, especially on television. This remains true even while much criticism is justifiably aimed at the nature of the coverage and the vast black holes of non-coverage of much of the world. Moreover, if we look at the extra-parliamentarian arena, many of the actors —social movements, nongovernmental organizations, activist groups, and so on— work explicitly in transnational contexts, a development enormously facilitated by the Internet.

Digitalization

Digitalization is unquestionably the major technological trend in the media today; the past two decades have seen a profound technological transformation of the media that continues to accelerate. In simple terms, a common electronic language, based on the 'bits' of the computer, is emerging for all mediated communication. Thus, text, sound, voice, as well as still and moving images are taking on a common digital form, with analog formats rapidly disappearing. The traditional mass media are all using digital technologies in various phases of their activities, and we see now in Europe, for example, the ongoing transition from analogue to digital terrestrial television transmission.

The internet has been leading a media revolution since the mid-1990s, first as a phenomenon in itself, then as the terrain into which the traditional mass media moved. The advent of online versions of print newspapers by the end of the 1990s changed the way newspapers operated (e.g., enhanced interactivity with readers, altered periodicity of production, emergence of multimedia formats), even if many of the online versions are still not making much profit. Then broadcasting began to move online in various forms, while other services and communicative forms specific to the web were also rapidly developing. Today the emblem of Web 2.0 is often used to signal the more recent internet era, which is characterized by the large array of new and relatively inexpensive user-friendly multimedia platforms and applications that are available. Here we find not least for many kinds of interaction typical of social media such as YouTube and Facebook. That many applications within digital media —such as portable computers and smart

phones— readily link up to the internet suggests that we should understand the term "internet" as a broader phenomenon that emerges precisely through these convergences. The classic distinction between 'mass' and 'interactive' media is thereby becoming less and less meaningful

High expectations – and skepticism

The emergence of the web in the mid-1990s gave rise to wave of optimism in regard to its democratic potential –a sentiment often built more on enthusiasm than evidence. Yet even today there are grounds for guarded optimism in this regard; some scholars argue that the social affordances of the new digital media counteract in part the strong structural tendencies toward media conglomeration. A number of legal scholars, especially Benkler (2006), argue that in the long-term perspective, the growth of the internet —despite the obvious commercial colonization— is offering an enhanced environment for individual and collective creation ('peer production') and dissemination of information and culture. Benkler makes the further argument that the global information economy itself, given such factors as the dispersal of capital investment via individual ownership of computers is drifting further and further toward a civic-based 'network model', a view also strongly affirmed by Castells (2010).

These developments erode the industrial information economy based on private proprietary and profit. This directs our vision to an increasingly robust nonmarket sector for information and culture via digital networks, undermining the traditional model of industrial mass media and opening up the cyber world for all the more civic activity. Other authors, such as Strangelove (2005) are encouraged by the growing inability of the corporate sector to maintain firm control over digital property rights in the face of massive illegal downloading. His optimism is especially nourished by the growth in open source software sharing (e.g., the Linux system), which is predicated on collaboration rather than profits —and can thus be seen as a growing ideological threat to capitalist values and ethics.

Others analysts, however, such as Lessig (2006) are troubled by what they see as the shrinking domain of the shared, public commons via private, corporate copyrights. For them, the neoliberal growth in corporate power at the expense

of democratic development clearly carries over into the domain of the digital media. There is also a serious literature that is generally skeptical about the democratic visions of the internet (eg. Hindman, 2009; Margolis and Moreno-Riano, 2009). Such authors point to the problem of developing the alternative institutions necessary for significant societal realignments, and stress the capacity for traditional centres of power and vested interests to maintain control and influence on and through the web.

At present we cannot predict how these issues will be resolved, but we would do well to be aware of the conflict of interpretation among leading scholars; we will carry this ambivalent picture with us is the sections that follow. Let us now turn to a particular dimension of the turbulent media alterations, namely journalism, whose functioning is absolutely essential for the life of democracy. It has reached a troubling historical juncture —while yet holding out some democratic promise.

3. The twilight of journalism?

At bottom, journalism's fundamental raison d'être is to facilitate and enhance democracy. Democracy, however, is not just an abstract or formal system, but must also embody a way of life, whose norms, values and practices impact on everyday contexts. From that perspective, the role of journalism extends beyond the basic goals of providing correct and relevant information: it must also touch us, inspire us, provoke us, and nourish our daily democratic horizons. For the sake of democracy, journalism needs to promote political participation. This is of course a tall order —especially in those societies where such traditions have historically been weak— but nothing less will do. In the current development, we see the transition from traditional, or classic, liberal models of journalism, a transition that began prior to the digital media, but is fuelled by their emergence.

The fading of classical journalism

As an institutionalized set of practices located within the media, journalism evolves with the transformation of society, culture,

and media institutions. Its traditions are not just predicated on professional practices, but also on the institutional and material circumstances that frame them. Already two decades ago authors were asserting that the 'high modern' or 'classical' paradigm of Anglo-American journalism was waning. (Altheide and Snow, 1991). This historical mode took shape early in the previous century and based itself on traditional liberal ideals about democracy and citizenship. In this framework, mass media journalism is seen as providing reports and analyses of real events and processes, and contributing to defining the public agenda. It is aimed at a heterogeneous citizenry that basically shares the same public culture, and citizens use journalism as a resource for participation in the politics and culture of society. Journalism in this mode serves as an integrative force and as a common forum for debate. Even if journalism in the real world has never fully operated in this way, this normative model of how it should be has guided our understanding and expectations of it, and provided criteria on which to base criticism. Today this is changing.

The motors of change

Journalism is embedded in the media industries, and today these industries are following the general patterns found in the global economy. As the commercial imperatives of the media have hardened over the past few decades, the delicate balance between public responsibility and private profit has been steadily tipping in favour of the latter. Within journalism and its media environment we have by now become familiar with the harsh market imperatives that increasingly bulldoze over journalistic values, and what this means in terms of allocation of resources, staffing, news values, and so forth. Hard news gives way to celebrity gossip. The rise of an array of new genres in the media, such as 'reality shows', that in various ways compete with journalism, also contributes to putting mainstream journalism in a defensive position.

Today an increasing portion of journalism actually originates with non-journalists: an emerging stratum of professional communication mediators is altering the way journalism gets done and the way political communication takes place. An expanding occupational group of spin doctors, PR experts, media advisors, and political consultants using the

techniques of advertising, market research, public relations and opinion analysis have entered the fray to help political actors and economic elites shape their communication strategies. They shower journalists with press releases, information packages, and other ready-to-use materials of many kinds, thus eroding the very definition of journalism (as well as who is and is not a journalist). Journalism's boundaries also become challenged on other fronts by citizen journalism, user-generated content, and not least various strands of popular culture (many young Americans viewers, for example, treat the US television satire program *The Daily Show* as a source of news) This leads to difficulties even within journalism education: what profession and job market are they preparing students for, what are the suitable qualifications, and professional identity?

It is often noted that the crisis of journalism in the Western world is most pronounced in the US. The American situation is of great interest, not only because of the US position in the world, but also because there has long been a strong tradition of journalistic professionalism there. Thus, the response of concerned members of the profession can be edifying for European observers. The most ambitious effort in this regard is found in the annual reports on *The State of the News Media* (www.stateofthemedia.org). They offer a detailed annual online report; the current one, for 2011, is its eighth. The seriousness of the situation is reflected on the first page of the first report: 'Journalism finds itself in the middle of an epochal transformation, as momentous as the invention of the telegraph or television.'

The internet and other digital technologies have, as in so many sectors, revolutionized the way journalism gets done, altering the processes of newsgathering, production, storage, editing, and distribution. Certainly the gains in this regard are immense, yet there are also problematic sides: the new technologies are also often used by management at traditional news organizations to cut production costs and rationalize labor, which can, among other things, undermine the status and independence of the journalistic profession (Deuze, 2007). Also, while these news organizations have been developing their online presence, a host of newer, 'non-press' actors such Yahoo and Google, also compete for the attention of news audiences. This serves to further erode the news values of classical

journalism. From another horizon we see alternative news organizations, such as Indymedia (www.indymedia.org), now operating in over 150 countries; it, as well as some less prominent versions of alternative journalism, is guided by professional ideals but grounded in a critical, oppositional view of prevailing power relations and social arrangements, challenging the ideological horizons of mainstream media. Not least, advocacy groups offer online services with a quasi-journalistic character. In short, journalism on the net has become a sprawling and confusing phenomenon, where the definition of journalism itself has become increasingly destabilized, and the criteria for its evaluation less certain.

Enter the amateurs – with professional tools

Yet in this tumultuous domain we can also observe the growth of what one might call, as a general rubric, participatory journalism, where citizens, as non-professions, are involved in various ways in the production of journalism. Participatory journalism has grown markedly in the past few years, as the news industry undergoes serious transformation, not least in regard to its use of social media. One specific form of this, termed citizen-assisted journalism, is encouraged by mainstream media institutions, especially when their own journalists do not have direct access to unfolding events: 'Are you at the scene of the disaster? Contact us!'.

With non-journalists using platforms such as Facebook, Twitter, and blogs to generate and share journalistic material, journalism is gradually becoming more interactive, collaborative, diverse, partisan, and immediate.

This has unquestionably deepened and broadened the public spheres of democratic societies –and help challenge the power structure in authoritarian ones, as witnessed during the Arab Spring of 2011, for example. It has of course also rendered yet more problematic the question of who is and who is not a journalist. Some efforts of participatory journalism such as Wikinews (wikinews.org) adapt a modified identity of professional journalism, while other groups and individuals operate with other guiding norms. Wikileaks (wikileaks.org) for example, is an explicitly political activist whistleblower in its releases of classified information, and has recently generated world-wide attention with its massive releases of documents.

In terms of civic participation in journalism online, what we see emerging is a heterogeneous universe comprising the blogosphere, social media such as Facebook and Twitter, individual and group productions, including efforts by social movements and activists of every imaginable persuasion –political and religious groups, life style advocates, hobbyists, and much more. This is an intensely stirred brew consisting of facts and opinions, debates, gossip, nonsense, misinformation, the insightful, the deceptive, the poetic, all mixed together, scrambling the traditional boundaries between public and private. There is much here that is encouraging from a democratic horizon, and the celebratory tone in much of the discussions about participatory journalism is often justified.

However, we should try to keep a sober sociological eye on these developments. For example, it is perhaps easy to lose sight of just how prominent mainstream reporting still remains for the general public, not least in foreign coverage. Also, much citizen-generated journalism operates symbiotically with mainstream material, even if commenting or contesting it.

Looking at journalism in the blogosphere, Campbell et. al. (2010) found that non-professional journalistic bloggers only very rarely generate original news; this happens mostly when the blogger has some kind specialized knowledge or an unusual access to unfolding events. On the other hand, bloggers do have the capacity to impact on the news agenda by reactivating or reframing news stories.

Basically, however, the popular image of the vast and robust blogosphere as an unfettered public arena of diverse voices expressing all manner of views, is somewhat misleading. For one thing, most bloggers not political; much of it is personal, social, or identity-based. And political blogs generally have small readerships. In a US study, it was found that only 16 percent of blogs actually have some connection with news and politics; (Caslon Analytics, 2011). In the US, there is a top-10 'A-list' of political bloggers; these turn out to be quite privileged, mainstream people who have symbiotic relationships with journalistic and political elites (Davis, 2009). Thus, the dominant blogs extend the political mainstream. Further, there is also a rather ephemeral quality to the blogosphere; most blogs are abandoned soon after creation (ca. 70 percent within

the first month Caslon Analytics, 2011) and few are regularly updated.

These developments of course give rise to many questions (see, for example, Papacharissi, 2009; Rosenberry and Burston St. John III, 2010; Tunney and Monaghan, 2010), not least among the defenders of traditional journalism. When the boundaries of journalism become unclear, the norms of its practices and the criteria for its evaluation in turn become slippery. For participatory journalism, often fueled more by the ideals of citizen-driven democracy than by traditional professional values, this means that time-worn issues such as veracity, transparency, fairness, and accountability, often hover close at hand. The key question often remains: who can you trust?

4. Networks and public spheres

If we switch analytic lenses for a moment, we can say that political participation, as a collective rather than purely individual phenomenon, on the one hand requires social networks, on the other hand contributes to the vitality of the public sphere. Moreover, the conceptual framework of the public sphere can be seen as a framework for looking at factors that promote or deflect political participation.

In regard to networks, societal development over the past decade or two has to a significant degree felt the impact of new informational and communication technologies. The idea of social networks is hardly a new one in the social sciences, though in recent decades the notion has explicitly become the focus of much research; in internet contexts, the work of Castells (see, for ex., Castells 2000) from the 1990's has of course plays an important role here (see also Cardosa, 2006, for another contribution in this tradition). He claims that the 'space of flows' of the emerging network society is replacing the spatial organization that has previously shaped our experience, the 'space of places', and that this logic now permeates many sectors, including urban architecture. Most emblematic of this development is of course the internet. Place as such does not become eradicated, and we still live our lives with reference to specific geographic sites, but the functionality of network-based,

mediated social relations becomes ever more central. In his recent work, Castells (2010) offers a conceptual update, not least in regard to his more extensive use of research literature from the field of media and communication studies.

One could in principle simply see all forms of social relations as networks, though such a rewriting of sociology would probably not offer much of a payoff. Instead, if we think in terms of modern social networks, at least beyond the primary and formative relations of family and clan, they manifest forms of communication that are relatively stable and recurring, even if the codes and conventions may evolve. At the same time, they are often characterised by loose social bonds, relatively easy to establish and understood to have definite limits in terms of obligation. Such bonds are an asset for democratic culture, since they mirror very well the relationships between citizens in public spheres, i.e. trust-based cooperation for common purposes, but without the demands and expectations of primary relationships. The idea of networks as a dominant social morphology has been gaining ground as a useful perspective for understanding the modern world. For example, I would note that Habermas (1996, 2006) in his updates of his public sphere perspective, now stresses complexity, overlapping spaces, and criss-crossing media and interaction; that is, while he does not make much of the internet per se in his analysis, he is basically now working with a network model.

It is important to underscore the social benefits of networks: they help to avoid the debilitating consequences of isolation, promote social (and political) capital, forges collective identities, inspire and generates visions of alternatives. In her recent book, Baym (2010) offers a detailed analysis of how digital media's reach and capacities for interaction, their modes of social cues, their temporal structures, their mobility, and other features serve to facilitate social connections. This is of major significance in itself, but I would also highlight that this digital lubrication of the social is also essential for the emergence of the political within social networks. In short, one could say that the digital media in particular can very good in helping to promote a subjective sense empowerment, an enhanced sense of agency based in horizontal network communication.

Multi-domain online public spheres

Switching lenses now to the public sphere, it must be said that for all the debates around it (see Calhoun, 1992, for the most-cited set of commentaries), this term, as conceived by Habermas (1989) has inspired countless research efforts and analyses of the media, framed by a vision of democracy. It retains its relevance today, as we still grapple with the core idea: that a functioning democracy requires a viable the public sphere, or more accurately, plural public spheres, that constitute the communicative spaces required for the circulation of information, ideas, and debates that are necessary for the unfettered formation of opinion and political will formation. Many issues remain, but this perspective offers a critical tool of analysis for looking at the media, power relations, and the communication processes of democracy.

The advent of the internet radically transformed the character and possibilities of public spheres, and analytically grasping the contemporary situation can at times seem daunting.

Online public spheres take many forms and can be shaped by many factors. Though there is a considerable degree of fluidity online, we might —with all suitable caution about porous boundaries and no claim for being all-inclusive— attempt to schematically specify a number of different domains of net-based public spheres. These would include:

- The pre- or proto-political domain, which can focus on just about any topic or theme, but gives expression to common interests, social relations, or identities. In this domain, consisting of different kinds of self-publications such as personal and organizational websites, blogs, webcasting, as well as discussion/chat, and so on, politics is not explicit, but always remains a potential. Consumption and civil society elements have not yet transformed themselves into political ones. Clearly there is no absolute way in which the boundary between the para-political and the political domains can be drawn, since it is always in part discursively constructed and changeable; with just a few words, the border can be crossed, and the political can manifest itself.
- The journalism domain: I use 'journalism' broadly here, to include editorial and opinion material, and we have seen from

the discussion above just how heterogeneous journalism has become. Some expressions of journalism lean more toward activism (and thus straddle the boundary with the alternative activist domain; see below), while others tilt more toward personal opinion and commentary. These tensions raise fundamental questions about journalistic criteria.

- The traditional advocacy domain, where political communication is generated by generally well-established organizations and groups that promote political values and goals geared toward shaping public opinion and influencing decision-makers. This domain includes traditional parliamentarian political parties, corporate and other organized interest groups, such as unions, as well as major NGOs. Temporary issue groups and mobilization campaigns that nonetheless emanate from, or have strong links to, the established power centers are also a part of this domain.
- The alternative activist domain; what I am pointing to is less established, extra-parliamentarian civic networks with more grassroots foundations and less hierarchical structures. In this public sphere domain we find political expression that is more interventionist, at times more militant (from both sides of the political spectrum). The new social movements and single-issue activist groups are typical of this domain. However, this domain may be difficult at times to distinguish from traditional advocacy.
- Manifestations of e-government, where governments at any level and in any context interact with citizens via their representatives or information services. This may take the form of civic discussion sites or actual e-voting, but more common are sites that simply offer information about social services and governmental administration. While interaction in this domain may be relatively constricted and may often simply involve information for citizens in their roles as individual clients or consumers of services, it can still at times serve as a domain of the public sphere.
- Civic forums, where views are exchanged among citizens, where civic talk, including more formalized deliberation, can take place, are often seen as the paradigmatic model of the online public sphere. It should be understood, however, that such forums rarely exist in isolation, but rather

can be found on websites that belong to all of the domains (and hence, I do not specify such forums as a separate domain).

This list can of course be made more elaborate, but the point here is simply to highlight the very diverse character of online public spheres, and offer a rough structural map. There are still many themes about online public spheres that can be illuminates, and in the following sections I will address a few attributes regarding the web environment and how citizens use it for purposes of participating in the public sphere.

The dynamic – and messy – web environment

Habermas has often been charged with asserting an all too rationalistic view f how communication should in the public sphere should take place; his notion of deliberative democracy has seen by some as constrictive. In fairness, he has modified his views considerably (cf. Habermas, 1996), acknowledging the messiness of the public sphere. I think we can and should go further: media culture generally seems to be moving every further away from the ideals of the traditional notions of the public sphere, while at the same time generating new practices and modes of expression that we must take into account. As Lievrouw aptly describes the situation:

> "Media culture in the digital age has become more personal, skeptical, ironic, perishable, idiosyncratic, collaborative, and almost inconceivably diversified, even as established industries and institutions seek to maintain their grip on stable messages and audiences and to extend their business models online" (p. 214)

What she captures here in fact is some of the definitive textures of the late modern situation, with their cross-currents of power relations and their particular sensibilities as well as the structural tensions. It is against these historical backdrops, as I indicated earlier, that we have to understand participation, politics and mediated citizenship. Her analysis underscores the interplay between the affordances of communication technologies and the practices by which people utilize them for their own purposes. In this interface,

> "people adapt, reinvent, reorganize, or rebuild media technologies as needed to suit their various purposes or interests, As they

> innovate, users combine new and old techniques, or adapt combinations of familiar technologies in new ways.. New media are recombinant, the product of the hybridization of existing technologies and innovative technique" (Lievrouw, 2011, p. 216)

This allows people to 'construct new meanings and expressions out of existing and novel forms of interaction, social and institutional relationships, and cultural works' (Lievrouw, 2011, p. 216). This perspective helps us to understand more concretely the relevance of civic practices in these participatory contexts. Moreover, such practices in turn result in the progressive evolution of civic cultures themselves; new practices become established as resources that future participation can draw upon.

Social media: homogenized public mini-spheres?

Despite the generally low presence of politics on the web, the significance of online media for participation in political life is clearly growing. Especially when young people do turn to the political, the net environment has a central position. At the same time, there usually needs to be links between the on- and offline experiences; at some point political participation via the web needs to be complemented with other forms of connection to the political world. The web environment needs to help connect them to the political world beyond the screen itself. Yet it appears be the case that the daily habits of online life are making the connections beyond the net less likely to take place. For example, much social life takes place online; it has become an important platform for social life for millions of people around the world. In the context of late modern individualization and neoliberal privatization, the intensity of identity work and the self as a reflexive project, there is a massive amount of online presentation of self-going on, via Facebook and other locations. In short, social media have become sites for extensive interaction that does not necessarily aim for face-to-face encounters beyond the screen.

Commentators of the web's role in politics early on coined the terms 'cocoons' and 'echo chambers' to signify the tendency for people to group themselves into networks of like-mindedness. This is an understandable human behavior pattern —one avoids conflicts and gets one's one world views and values reinforced. Socially it makes a lot of sense. But for

democracy there is a danger: these public mini-spheres tend to isolate its members from larger discursive flows within political society. Moreover, they also serve to reduce their participants' experiences with confronting alternative points of view, as well as their competence in engaging in argument. The dialogic quality of the public sphere erodes, as political groups shout invectives at each other, but never really engage in discussion or develop a capacity for civic deliberation.

This trend is enhanced with social media, where the definitive logic is 'to like': you 'click' on people that you 'like', i.e. that are 'like' yourself. Difference gets filtered out. The same logic appears even in commercial contexts: if I buy a book on Amazon, I get a message to the effect: "If you bought book X, you might also like book Z". In fact, democracy would be better served if (as Benjamin Barber recently said), they would instead say "If you liked book X, you should encounter the alternative views found in book Z". But that's expecting too much of market mechanisms…

In the shadow of the solo sphere

A further pattern that seems to be emerging and which is worrisome in regard to participation and the culture of democracy is what we can call personalized visibility, which includes self-promotion and self-revelation. When (especially) younger people do turn to politics, it seems that the patterns of digital social interaction increasingly carry over into the digital. Papacharissi (2010) argues that while digitally enabled citizens may be skilled and reflexive in many ways, they are also generally removed from civic habits of the past. For example, it is not so obvious among the young citizens of some democracies that demonstrations in the street are necessarily an appealing or effective form of civic practice. They may well be right about that in some cases, but certainly this not the case in the current insurrections in the Arab world. On the other hand, the impact of the Occupy Wall Street movements and the demonstrations across southern Europe in the present crisis remain to be fully evaluated.

Thus, according to Papacharissi, much civic behavior today has its origins in private environments, which she suggests is giving rise to a new 'civic vernacular'. I think this analysis is definitely on the right track, but while she labels this

setting for political engagement as the private sphere, it seems to me that this may term may be misleading. It readily evokes the traditional, cozy family or home milieu. This is no doubt a part of the setting, but I would call it instead the solo sphere, to indicate its historically new character. The solo sphere can be seen as a historically new habitus for online political participation, a new platform for civic agency.

From the networked and often mobile enclosures of this personalized space, the individual engages with a vast variety of contexts in the outside world. We need not launch into any discussion about essentialist distinctions between on- and offline realities; it suffices to simply indicate that they have to some extent different affordances, cue some different kinds of social skills, and most importantly offer differing spaces of social interaction, with often differing implications. These contrasts can be significant for political participation. It may well be that the online setting, with its powerful technical affordances, discourages engagement beyond itself. Papacharissi (2010) suggests that it fosters a retreat into an environment that many people feel they have more control over; a networked yet 'privé sociality' emerges. To the extent that this is true, it is understandable, yet also introduces an historically new contingency for participation —which may in turn signal a historically new kind of democratic system. Yet we need not spend too much time with the crystal ball, trying to predict the future; there is plenty to do in the present.

5. Lingering ambivalence, modest hopes

As can be seen from this discussion, the seemingly simple question of whether and how the web facilitates participation among citizens does not have a clear-cut answer; we are left with some ambiguity. Research has been quite unanimous in suggesting that while the net is an impressive tool of historic dimensions, it does not, by itself, push citizens into political participation. There is no direct cause-and-effect relationship here, few today are of the view 'the net will save democracy'. Yet, if research generally has been cautionary in the sense of not offering any neat technological solutions to democracy's difficulties, it has at the same time continued to underscore the

idea that the internet can clearly make a difference: in contributing to massive transformations of contemporary society at all levels, it has also dramatically altered the premises and infrastructure of the public sphere in a variety of ways. In making available vast amounts of information, fostering decentralisation and diversity, facilitating interactivity and individual communication, while not least also providing seemingly limitless communicative space for whoever wants it, at speeds that are instantaneous, it has redefined the premises and character of civic engagement and political participation. We would seem to be justified in retaining modest hopes.

The force-field of optimism and pessimism remains very visible in discussions and research about the role of the digital media in democracy. While some observers, like Benkler (2006) and Castells (2010) underscore the positive impact of the web on democracy, authors like Morozov (2011) argue that the idea has been seriously oversold, and that internet technology is not only failing to democratize the world, but is used by authoritarian regimes to control its citizens and suppress dissent. From a cognitive angle, Carr (2010) argues that the digital media are undermining our capacity to think, read and remember, thereby problematizing the very foundations of our civilization. If many analysts side with Sunstein (2008) in regard to how the participatory 'wisdom of the many' (as manifested, for example in Wikipedia and the blogosphere) is producing new and better forms of knowledge, other such as Keen (2008) warn of the dangers of participatory Web 2.0, arguing that it erodes our values, standards, and creativity, as well as erodes cultural institutions. The debates will continue, which is not a bad thing: they help enhance the clarity of our thinking. This is something we genuinely need our historically precarious circumstances.

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