

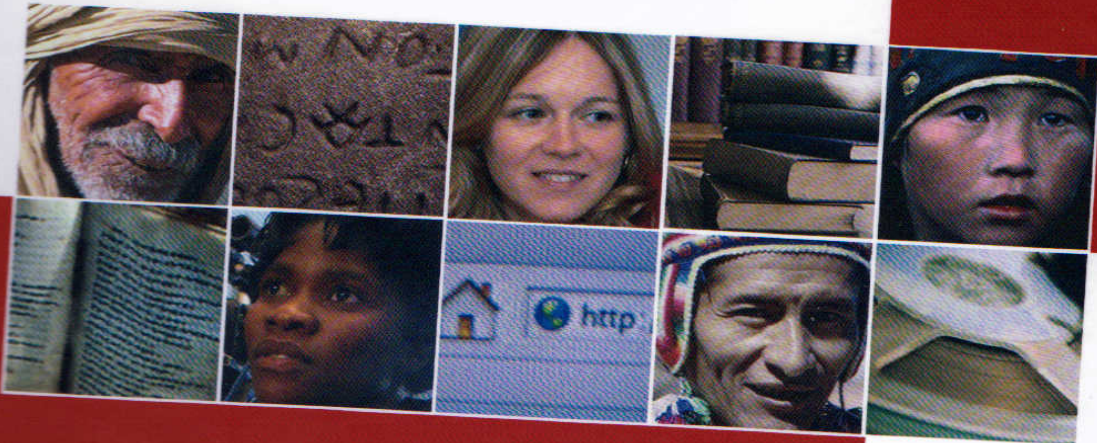


United Nations
Educational, Scientific and
Cultural Organization



IFAP
Information for All
Programme

Internet and Socio-Cultural Transformations in Information Society



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SECTION 3. TOWARDS KNOWLEDGE SOCIETIES

Digital Natives, Netizens, eCommunities. Civitas Solis¹⁰⁷ or a Nightmare?

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Abstract

ICT is stimulating changes in the way most people earn their incomes; altering the balance between our roles as consumer and producers; changing the way we educate succeeding generation and train ourselves; changing the fruition of world's cultural heritage; transforming the delivery of health care; altering the way we govern ourselves; changing the way we form communities; altering the way we obtain and communicate information; contributing to bridge some cultural or physical gaps; and modifying pattern of activity among the elderly.

This is not a complete list of changes, but highlights some of the most prominent and important effects of ICT on our society. We are witnessing relevant changes due both to technological enhancements and modification of user requirements/expectations. In recent times the digital domain, once strictly populated by professional users and computer scientists, has opened up to former digitally divided. Technology is evolving toward a mature "calm" phase, "users" are overlapping more and more "citizens" and they consider technology and eServices as an everyday commodity, to buy a ticket, to meet a medical doctor, to access weather forecast even to initiate "social" relation. It is a common understanding that recent generations represent a discontinuity if compared with the past ones. How do we identify digital natives? They are the "eCitizens".

This paper presents views of a society changing under the influence of advanced information technology. Computers have been around for about half a century and their social effects have been described under many headings.

¹⁰⁷ "Civitas Solis" (The City of the Sun) is a philosophical utopian work written in 1602 by the Italian philosopher Tommaso Campanella.

Introduction

"In conducting research four years ago online to determine people's uses for the global computer communications network, I became aware that there was a new social institution, an electronic commons, developing. It was exciting to explore this new social institution. Others online shared this excitement. I discovered from those who wrote me that the people I was writing about were citizens of the Net, or Netizens." (Michael and Ronda Hauben's "Netizens: On the History and Impact of Usenet and the Internet", 1995).

Computers have been around for about half a century and their social effects have been described under many headings. Society is changing under the influence of advanced information technology; we face fundamental transformations in social organization and structure, as it will be outlined in the next paragraphs. Such a change is much more evident in the recent period of time. This is because young citizens are changing and the change is not smooth it's a real discontinuity, young think different!

ICT as a driver of change

We are witnessing relevant changes due both to technological enhancements and modification of user requirements/expectations. ICT is stimulating changes in the way most people earn their incomes; altering the balance between our roles as consumer and producers; changing the way we educate succeeding generation and train ourselves; changing the fruition of world's cultural heritage; transforming the delivery of health care; altering the way we govern ourselves; changing the way we activate social relations, form and manage communities; altering the way we obtain and communicate information; contributing to bridge some cultural or physical gaps; and modifying pattern of activity among the elderly, last but not least potentially contributing to a green world.

Moreover, the Internet has incredibly facilitated access to mass communication, the role of users changed from passive to active. It combines a worldwide bi-directional broadcasting capability with a mechanism for information dissemination, which offers us the opportunity to reach a wide audience with minimal effort. This is not a complete list of changes, but highlights some of the most prominent and important effects of ICT on our society.

No one of previous inventions, such as the telegraph, the telephone, the radio, the television and the computer itself, set the stage for this unprecedented integration of capabilities.

The social impact of ICT was significant and it was very clear that the information society was going to lead a significant re-shaping of the panorama. If on the one side, as usual, this technology cancelled entire branches of workers such as typists and assistants, on the other side it created a rich set of new working opportunities not only for system managers and programmes but experts in desktop publishing, web publisher, on line traders; the so called "digital opportunities"¹⁰⁸.

Everyone experienced in "ICT based innovation" knows that "it is not only a matter of technology". Different parameters are actively influencing Information Society success or failure: cultural aspects, organizational issues, bureaucracy and workflow, infrastructure and technology in general, user's habits, literacy, capacity, market models or merely interaction design.

From "vision" to reality

Thirty years ago information scientist and computer users witnessed the unprecedented revolution due to personal computing. They came from the bottom and started to "eat" the computer market piece by piece. From the "professional" Charlie Chaplin promoting the first generation of IBM PCs to the APPLE Macintosh revolution against the Big Brother in 1984 and later on again the soft rebellion of *Think different!*

In the middle of the 90s it was the time to break the walls of the professional market and try the assault to households. It was the time of "*Where to you want to go today?*" and "*Information at your fingertips*". Starting from '95 the focus of advertisement was enlarged to families and household customers. After the discontinuity due to the enlarged market focus we experienced a quite long period of time without major announcements, performance improvements, price reduction nothing more. Now some major trends are recognizable. Such trends are affecting technology, users and the market.

In the last twenty years we witnessed the progressive change of the audience attending major events. Traditional highly scientifically skilled ACM Siggraph attendees left the arena to artists, special effects supervisors, architects, and video clip and promo producers. The European twin, IMAGINA, is now domain

¹⁰⁸ On the occasion of the G8 Summit in Kyushu-Okinawa (2000), the Charter on Global Information Society was adopted. In the Okinawa Charter, the G8 leaders agreed to establish a Digital Opportunity Task Force (DOT Force) aimed at integrating efforts to bridge the digital divide into a broader international approach. DOT Force subsequently evolved into GAID (Global Alliance for ICT and Development).

of architects and dentists¹⁰⁹. The World Wide Web conferences did the same in favour of philosophers, writers, art historians, and civil servants.

The other side of the coin of such a renewed audience is the evolution from content consumer to content prosumer. Users are no more simply "consuming" content; they are even creating and sharing their own content many times facing drawbacks in a short time.

There is another significant trend directly addressing users: from *information provision* to *service provision*; this means in general a bidirectional flux of information and a higher level of interaction. As a tangible result a number of eServices appeared in already known or completely new sectors increasing the added value provided by technology.

One last comment on the evolution of technology: as it happens in the maturity phase of many sectors "performances are good by definition... users' choice is about appeal and perceived utility."

The human capital: the digital native generation

All these considerations are related to technologies and devices. What about the "human capital"? Of course even users are evolving, there are a number of capacity building initiatives, their own requirements and expectations are changing. New opportunities offered by emerging technologies generate new behaviours and new services – simply think about mobile phones and emails. It is evident that a new way to use or "consume" services, information & news is coming to the fore.

Technology is evolving toward a mature "calm"¹¹⁰ phase, "users" are overlapping more and more "citizens" and they consider technology and eServices as an everyday commodity, to buy a ticket, to meet a medical doctor, to pay taxes, to access weather forecast. The gap between *eCitizens* and *digitally divided citizens* has not disappeared yet but is becoming smaller every day. In the near future young generations will not figure out how their parents used to fulfil some tasks in the past. Museums will exhibit phone booths, travel agencies, yellow pages, geographical maps, and fax machines and may be even laptops as "relicts" from the pre-digital age.

¹⁰⁹ Dentistry entering the 3d digital world, an international conference exploring 3D digital technologies in dentistry. www.imagina.mc.

¹¹⁰ Mark D. Weiser (July 23, 1952 – April 27, 1999) was a chief scientist at Xerox PARC.

It is a common understanding that recent generations represent a discontinuity if compared with the past ones. Such discontinuity or if preferred singularity is recognised both by adults complaining because their children do not pay attention or are getting bored by learning and by adults that discovered new skills and capabilities in young generations.

As a result of this environmental change, the combined action of long term exposure to TV programmes, video games, Internet browsing and more we face now a completely new generation, the digital natives¹¹¹. They are the eCitizens. How do we identify a digital native? Digital natives are used to receiving information really fast. Their brain seems to be able to work in parallel to receive multiple inputs and react in real time even using different “channels”. This of course applies from pupils to university students and more. So they prefer direct/random access to information and content. Graphic and video content are longer preferred than text. They use instant messaging and do not print email. They are used to looking for support on line and belong to one or more communities (users, supporters, owners). This is a side effect of their special skills acquired in hours and hours of digital tasks.

Is it really so evident a different mind-set? Some experts¹¹² call this “neuroplasticity”, the ability of our brain to re-shape accordingly with specific input patterns and reaction required. In addition to neuroplasticity, social psychology offers compelling proof that thinking patterns change depending on an individual’s experiences. A sufficiently long training may activate this phenomenon¹¹³. In fact, some researchers believe multi-sensory input helps kids learn, retain and use information better. Digital natives engage in this type of brain plasticity every day, they have acquired special skills thanks to the “involuntary” massive training due to TV, games and other digital devices. They have grown up paying close attention to the sensory input of MP3-players, smart phones, video games, tablets and computers. It is a common understanding that people who grow up in different cultures do not just think about different things, they actually think differently. The environment and culture in which people are raised affects and even determines many of their thought processes. So the Apple motto “Think different!” is much more than a motto.

¹¹¹ Marc Prensky, *Digital Natives, Digital Immigrants, On the Horizon* (NCB University Press, Vol. 9 No. 5, October 2001).

¹¹² Cathleen Richardson, *21st Century Learners: Research*, Hotchalk, <http://www.hotchalk.com/mydesk/index.php/editorial/54-students/66-21st-century-learners-research>; Marc Prensky, *Do They Really Think Differently? On the Horizon* (NCB University Press, Vol. 9 No. 6, December 2001), *The Partnership for 21st Century Skills* – <http://www.p21.org/>.

¹¹³ This period of time and the quality of the result depend on another factor termed “malleability”.

Young and kids are constantly feeding their own Facebook profiles or posting their own video clips on YouTube. Sometimes Facebook and YouTube seem to be much more "(Social)life-mediators" than Internet commodities. Young and kids are part of the digital community, they have a specific sense of belonging to the online community.

Is it true that pupils refer to the Web as their own memory and basic knowledge? We may say basically "Yes" even if this represents for many reasons a concern. Is information available online quality proof? And more and more they really think: why do I need to memorize when Napoleon surrendered at Waterloo if I can click on Wikipedia or "google" it?

If we refer to the educational system, a similar situation might lead to a somewhat different way to communicate and interact with new generations, the so-called "digital natives"; so curricula, formats and pedagogical approach must be reshaped. Humans have already faced similar revolutions even in the field of education and training. Simply think about the "classic" way to educate thanks to mentors and masters looking after single pupils or refer to training in workshops widely used to introduce newcomers in art and crafts learning by doing.

The potential "uniformity" and consistence of digital interfaces enabled by the virtualisation of physical interfaces unleashed incredible potentials; the magic feature of "undo" empowered users. In the digital domain "undo" and "redo" are the pillars of learning by doing. Virtual and enriched reality through different types of simulators strengthened the "historical" approach of learning by doing.

These two pillars together with the de facto standardisation of interfaces and interaction enabled rapid application training and use. Nowadays digital devices, and not only them¹¹⁴, do not include users manuals, people use to learn by doing¹¹⁵. Only if they require special safety instructions there is an instruction sheet within the box. Digital natives prefer games to "serious" work; they prefer edutainment applications or serious games.

¹¹⁴ E.g. IKEA furniture kits use to provide a very basic instruction sheet.

¹¹⁵ In his work *The Design of Everyday Things*, Donald H. Norman defines mapping as "the self-explicative shape or behaviour of an object". Mapping implies that "...you always know which control does what (in the book, I call this a 'natural mapping')". When the designers fail to provide a conceptual model, we will be forced to make up our own..." Furthermore: "A good conceptual model can make the difference between successful and erroneous operation of the many devices in our lives." See Norman (1998).

Lost something, any concern and drawbacks?

Did we lose anything in the process? What about potential drawbacks and risks?

The idea, but it is more than a feeling, is that in such a process digital natives have lost some basic assets. Their own "culture" seems to be much more a set of bi-dimensional "tiles", sometimes interconnected. Direct access to information or even knowledge atoms may cause the lack of understanding of the whole rationale beyond including logical relations and links. So it becomes very difficult to build up a mental model or to activate reflection in order to evaluate and criticise what they learn. They miss the opportunity to elaborate what they learn by doing, their experience.

Learning and working at "warp speed" does not provide them the opportunity to "pause" and assimilate, reconsider, amend or criticise what they are learning or doing. This is many times one of the basic drawbacks due to technological enhancements. Since the introduction of fax messages the expectation for an immediate response was the rule, emails, mobile phones, sms and instant messaging did the rest. So the evolution of a romantic fountain pen hand-writer nowadays is playing a video game and at the same time Twitting and posting some content on Facebook while chatting on the smart phone thanks to WhatsApp.

All the above does not mean that young generation are skilled in digital technology; they are self-trained to use digital technology. This is to outline that they do not necessarily know and understand technology itself; sometimes people presume that a perfect ability to use digital media involves a deep knowledge in computer science and electronic engineering, that's not true.

Recent generations were left alone to face the "eruption" of digital technologies – no educators, no mentors, basically no critical analysis about the use, abuse or misuse of these new appealing instruments. As a consequence, as pupils dropped in the sea by parents, they developed their own "how to deal with" and "take advantage from", many times ignoring future effects and potential drawbacks of their actions.

Do they need to learn more about what was before the digital native generation? I think that it is embedded in the humankind to investigate and know from where we come and where are we going to. Unfortunately part of this knowledge lies in the gap between traditional "knowledge" and "innovation". One of the key roles of educators, we can term them "cultural mediators", is to bridge this gap trying to provide the best and most successful mix of the two "knowledge", on the one side taking advantage from the digital native innovative skills, on the other – stimulating the rise of relevant missing skills. This topic is relevant enough to deserve another full paper.

Social media: opportunities and threats

The idea to share something with someone else, a group of people, sometimes generates a sense of belonging to a "community". Memetics use to consider this "something" as the "meme". A meme is a cognitive or behavioural pattern that can be transmitted from one individual to another. Consider young people that wear clothes in an unconventional way or use signs and gestures that show that they belong to a particular community¹¹⁶.

Communities are integral part of the history of technology; in the specific field of communication we find "amateur radio" also called *ham radio* or OM (old man) and later on the citizens' band (CB) community. Of course technical communities are not limited to the field of communications, we have computer graphics, video games, and more such as the Manga Fandom¹¹⁷ but communication is the key player in the creation of communities and due to this communities directly dealing with communication means are facilitated.

As already outlined social media are one of the milestones recently introduced in the digital domain. Social media is the key of success of the digital domain, the reply to the Win '95 promo "Where do you want to go today?" The real mass use of digital resources, the one creating "addiction" is the social side. Since the creation of the first blogs opening the opportunity to share opinions and beliefs with a significant number of users the number of "social" applications grew up very quickly: Blogs ('90), Wikis ('95), Semantic Web ('97), Wikipedia ('01), Picasa ('02), My Space ('03), Facebook ('04), YouTube ('05), Twitter ('06), Social newspaper (e.g. YouReporter).

In the early stage of the Internet communication was based on the so-called "netiquette", a kind of Galateo or Bon Ton of Internet users. The advent of Web X.0 and the social web requires the will to share more specific rules addressing first of all the field of ethics. Of course freedom of expression is one of the most appreciated opportunities offered by the network and it is already evident that any kind of top down censorship or control does not succeed.

Anyway on the reverse there is a real risk of misuse and misinformation thanks to these technologies both due to the lack of up to date global regulations and the potential anonymity of authors. The movie "Citizen Kane"¹¹⁸ directed and

¹¹⁶ Refer to Dawkins 1976; Moritz 1990.

¹¹⁷ Manga fandom is a worldwide community of fans of Japanese cartoons manga.

¹¹⁸ Citizen Kane directed by Orson Welles (RKO Pictures, 1941).

interpreted by Orson Welles in 1941 outlined the relevant “power” of journalism¹¹⁹, the movie “Network¹²⁰” directed by Sydney Lumet outlined the power of television in 1996 and perhaps “The Net¹²¹” and “S.Y.N.A.P.S.E.¹²²” together with “The Social Network¹²³” started to outline the power of the Internet.

News and Media are key elements in the global society. CNN, BBC, Al Jazeera¹²⁴, Al Arabiya¹²⁵ are writing the history of the planet 24x7, and on the grassroots side YouReporter¹²⁶, YouTube and Tweeter are complementing this effort. The risk of misuse of such technologies and misinformation today is probably higher than in the past. So it might happen that we will watch an updated version of the movie “Wag the dog¹²⁷” in the near future.

In June 1993 The New Yorker published a cartoon by Peter Steiner. The cartoon features two dogs: one sitting on a chair in front of a computer, speaking the caption to a second dog sitting on the floor: “On the Internet, nobody knows you’re a dog”. Right or wrong, that’s one of the features of the Internet. That’s the story of the Syrian “lady” blogging in 2011, the starting point for the “dark power” of the Internet, the realm of hackers and cheaters. The key point is: what is written or anyway appears on the Internet is news by itself. There is no more time in order to check everything, the Internet provides real time news.

The evolution of online news due to the social web and the birth of “prosumers” did the rest. Twitter, YouTube, Facebook and blogs represent a real revolution in the domain of news.

As already stated the Internet is much more a counter-power than a power, the common idea about the Internet is the network as a powerful tool of freedom and direct democracy. This is probably true but the opposite is even more true – a misuse of the network and misinformation disseminated and empowered by the Internet and its powerful mechanism.

¹¹⁹ The Italian title of the movie was “The Forth Power” in analogy with the third “The workers” depicted in the extraordinary paint by Pellizza da Volpedo.

¹²⁰ “Network”, directed by Sydney Lumet (Metro-Goldwyn-Mayer United Artists, 1976).

¹²¹ “The Net” directed by Irwin Winkler (Columbia Pictures Industries Inc., 1995).

¹²² “S.Y.N.A.P.S.E. (Antitrust)” directed by Peter Howitt (Metro-Goldwyn-Mayer, 2001).

¹²³ “The Social Network” directed by David Fincher (Columbia Pictures, 2010).

¹²⁴ www.aljazeera.com/.

¹²⁵ www.alarabiya.net.

¹²⁶ A recent event in the field of newspapers is the birth of The Huffington Post, inventing a completely new approach to newspapers. Bambuser (<http://bambuser.com>), Tackler (<http://www.teckler.com/it/home>) and other news services are now part of the scenario.

¹²⁷ “Wag the Dog” (1997) with Dustin Hoffman, Robert De Niro and Anne Heche, directed by Barry Levinson.

Cyber IDs allow multiple identities and, potentially, Dr Jekyll and Mr Hide. We are flooded¹²⁸ by user-generated content (UGC) largely without any qualification and certification of the source. Many times the drawback attributed to the amanuenses is affecting even web publishers: information and content is re-used and re-published adding or replicating errors and bugs. The short content production chain, sometimes even limited to a one-stop shop, does not include an editor-in-chief or a supervisor; so far the overall quality of prosumer content and information is quite low.

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