Are information technology and cultural economy opportunities for rural areas? An assessment of a virtual community in Galicia-Spain

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Summary

Information and communication technologies (ICTs) enable diffusion and appreciation of local culture in the information society. With the emergence of ICTs, popular culture and community identity (local traditions, music, food and life style) may become digital products available in a global market, through the medium of web portals and electronic commerce systems developed as communication and place marketing strategies. In this way ICTs may become tools that facilitate communication and reinforce the cultural identity of peripheral and marginal areas. The theoretical and conceptual foundations that enable the establishment of relationships between ICTs and the shaping of cultural economies on a local scale are outlined in this paper. A pilot survey conducted in a rural Galician municipality, in North West Spain, illustrates the potential of such an approach.

Key-words:
ICTs;
Place marketing;
Cultural economy;
Peripheral areas;
Rural communities.

Resumo

As tecnologías de informação e comunicação (TIC) permitem a difusão e valorização da cultura local na sociedade da informação. Com o surgimento das TICs, a cultura popular e a identidade da comunidade (tradições locais, música, comida e estilo de vida) podem tornar-se produtos digitais disponíveis no mercado global, através de portais web e sistemas de comércio eletrónico desenvolvidas como estratégias de comunicação e de marketing de lugar. Desta forma as TICs podem tornar-se ferramentas que facilitam a comunicação e reforçam a identidade cultural das áreas periféricas e marginais. Os fundamentos teóricos e conceituais que permitem o estabelecimento de relações entre as TICs e a formação de economias culturais em escala local são descritas neste artigo. Um estudo-piloto realizado num município rural galego, no noroeste da Espanha, ilustra o potencial desta abordagem.

Palavras-chave:
TICs;
Marketing local;
Economia cultural;
Áreas periféricas;
Comunidades rurais.

I. Introducción

By employing techniques mentioned in specialized academic references and participant observation, the paper analyzes the impacts of information and communication technologies (ICTs) on the economy and local culture in peripheral areas. The study was conducted in Galicia, on the European Atlantic fringe (Fig. 1). The paper also deals with the potential arising from the emergence of ICTs applied to social sciences, humanities and the arts. This realization is based on the development of the so called "second generation Internet", an "Internet of ethnicities" that may enable minority ethnic groups overcome isolation by involvement in the global telecommunications network (Serra, 1999). The digitalization of daily life in villages, ethnic groups, communities, regions or municipalities in video, photographic or sound format may attract to the net people and areas that are not currently connected to the information society.

Modernization of telecommunications infrastructures and support for the social use of ICTs are necessary to overcome the disadvantages of peripheral countries and regions. Mindset change related to ICTs favouring the development of the new global economy in marginal areas involves entrepreneurship, creativity development and innovation culture, besides progress in governance (Siadas, 2007). The Digital Opportunity Index (DOI) of the International Telecommunications Union (ITU) provides evidence of the digital disconnection in developing countries. Data relating to Internet users per 100 inhabitants in 2006 speak for themselves: World average is 17.4 percent; developed countries amount to 58.6 per cent; Europe totals 37.6 per cent; while under-developed countries add up to 10.2 per cent and Africa just 4.8 per cent (ITU, 2008). Also, marginalization of rural population for access to and use of ICTs remains a worldwide problem. According to the International Telecommunications Union (ITU, 2008) fifty per cent of world population is rural and twenty-two per cent is to be found in developed countries. There are 3,059,000 rural settlements in the world with an average of 2,000 inhabitants experiencing serious problems of isolation and marginalization (ITU, 2008).

Aurigi (2006), from the viewpoint of the digital city, introduces the concept of "Augmented City", understood as a natural evolution. He argues that ICTs are simply considered as intangible virtual tools by policy makers and not as communication instruments that facilitate inclusion and social participation. He contends that holistic views that connect physical with virtual dynamics and also strategies based on knowledge and on social awareness are necessary to promote urban development. Is it possible to think of digital towns and villages or are they simply not viable constructs? We consider that it is necessary to overcome the romantic view of idyllic rural areas (Cloke, 1997). Problems of social exclusion, poverty, isolation and lack of communication in rural communities must be faced from a dynamic, complex and critical perspective. Rural communities develop nowadays within a post-productive context that has opened up new spaces for the expression of new identities (Halfacree, 1997).

We intend to critically demonstrate the challenges scientists and other stakeholders are faced with when it comes to defining

pluralistic and synergetic concepts arising from the development of information society, within a new economy based on information and knowledge production. Such reconsideration makes it necessary to revise, in a critical and innovative manner, the theoretical and methodological components of economic sciences in relation to humanities, culture, territory and the arts.

To round off the paper, we present an experimental virtual community. Daily life routines, culture and educational aspects in a small rural municipality in Galicia, with around 7,000 inhabitants, were systematically digitized during the 2003-2007 period. Its purpose is the promotion of local economic and social development and dissemination of ICTs to fight information isolation.

II. Cultural economy and information society

Quantitative analytical approaches attempting to measure economic costs and values of culture as goods or products that can be consumed or exchanged are relatively frequent. There is a certain academic tradition, informed by economics, concerned with the study of culture as an exclusively economic good. Scholars such as Bonet (2001) are interested in defining indicators and quantitative methods that permit us to measure the importance of cultural goods for the economy of nation states. They perceive culture as a strategic economic good that favours the attraction of tourists and creates large pockets of employment. Hutter (1996), from a positivist view, analyzes the impact of cultural economics on economic theory, trying to find the relationship between quantitative value and economic growth. Stigliz (2000, 2002) examines the impacts of information flows on the economies of states and establishes the foundations to recognize the value of culture as an information flow in the states' process of economic development. Other more detailed analytical approaches focus on examining specific cases, such as Alexander's (1994) on the music industry and its market, through the introduction of new technologies. He regards culture as a marketable, tangible good.

Another debate concerning the relationships between culture and economics arose in the nineties, flagged by sociologists with technological concerns. Castells (2000, 2002), for instance, argues that the concept of culture acquires new dimensions in the information society. He considers that the Internet is a cultural creation in itself. It generates new forms of social relationships as well as new productive activities related to the diffusion of cultural contents and it has an impact on all aspects of individuals' and groups' lives. He distinguishes four cultural layers interacting with the Internet and defining innovative and creative practices:

i) university culture; as an institution that promotes investigative culture through research, that is, generating new basic knowledge for scientific progress;
ii) hacker culture; identified by disinterested innovation and creation through the Internet;
iii) alternative culture; people who find on the Internet new forms of expression and life styles different from the prevailing ones; and finally,

iv) entrepreneurial culture; characterised by risk taking and significant innovation capacity.

We can add, nevertheless, a fifth layer designated regional culture, where a community culturally identifies itself with the space it inhabits and is able to promote its interests and communicate through the Net. All these cultural layers are seeds for profound changes in the new information society. Their interaction may give rise to new innovative and creative possibilities, resulting in employment niches and new cultural products that can be consumed or marketed through ICTs. They may also result in the promotion of the territory as an attractive area to visit, live or invest in. That is, tangible and intangible culture is tightly related to the process of economic development a community and/or territory may go through.

As for the theoretical definitions, economics can be considered as the social science that examines the best use of goods in order to obtain maximum yield. It analyses production, distribution, marketing and consumption processes of goods and services. Economists study how individuals, groups, companies or governments attain their objectives in this field. Culture can be considered as a compendium of scientific, literary, artistic and economic knowledge of an ethnic group or of a historic time. It comprises a set of distinctive traits, both spiritual and material, and both intellectual and affective, characterising a society or social group at a certain time. Its definition also includes life styles, ceremonies, art, inventions, technology, values, traditions, beliefs and fundamental rights of human beings. On the other hand, anthropology is premised on the fact that cultural economics reveals the main role humans play in the economic world. The concern for practice, humanity's creative dynamism throughout history, constitutes a primary reference to understand human behaviour. Means, relationships and work are not the only concerns. Anthropology is also concerned with humans' experience and ideas (Fernández, 2000). As far as place marketing is concerned, it is a business technique that promotes a territory, with the aim of meeting citizens, tourists and investors aspirations by generating advantages and benefits for the local society (Ferrás, 2005). It identifies landscape products and market niches (Kotler and Andreasen, 1996; Hall and Hubard, 1996). That is why, if theoretical and conceptual connections are established between these terms, cultural economics could be considered as the business administration of a compendium of scientific, literary, artistic and economic knowledge of an ethnic group or of a historic time.

The Internet as a cultural product originates from a defence project (Arpanet) of the US' Pentagon. It was used for research in universities and laboratories, but the social diffusion of the Internet was due to the activities of economic agents that discovered large business opportunities in the "Net of nets", by trading in information and knowledge. On the Internet we now have a diverse supply of services and information –libraries, museums, music servers, socio-economic data bases, digital maps, literature and newspaper information– that are perceived as marketable products supplied by new companies. Besides, the prime financing source for web sites is publicity. Nowadays, the most expensive advertisement site in the world is not on the front pages of the main national or international newspapers, nor in publicity breaks of important television channels, but

is on banner headings on the most frequently visited web sites (Hervé, 2002). By way of contrast to the proliferation of commercial web sites, we frequently find cultural sites created as instruments for the diffusion of political ideas, as well as those that are used to get political or economic support from individuals, organizations or institutions (Zook, 2000). There is an extensive potential market for culture and for the development of cultural economy scenarios in specific territories (Gés, 1997; Kitchin and Neale, 2001). The purpose would be to encourage communication, collaboration and mutual understanding among local agents from culture, business and public administration, with the objective of developing commercial opportunities, exploring innovative possibilities and favouring a local cultural economy scenario.

Culture can be difussed in the "Net of nets", generating new opportunities for creative and innovative enterprises. Microsoft, an ICT company condemned for abusing its prevailing position in the international market, tries to trade indiscriminately multimedia artistic and cultural products in digital format through the Internet. At the same time, there is a rising international awareness that access to cultural information must be free, through the so called "open source" movement (Hervé, 2002). Accordingly, the sale of cultural products is restricted to the pay-off of production costs. Copy-right disappears and music, literature, films and other cultural products can be made more accessible for society. That is why a cultural economy connected to place marketing is not limited to the sale of cultural products. Its widest objective is the promotion of a territory to attract visitors, investment and people who could identify with it. That is, a territory can be "sold" through the creation of brand images associated with the local culture (Ferrás, 2005). The "open source" movement is an open issue that coexists and develops in parallel with the "pay per view" approach. Nevertheless, from the viewpoint of place marketing applied in rural areas, both approaches are feasible and positive, as they facilitate production, diffusion and marketing of local cultural products.

However, visiting a 3D virtual museum, learning about the latest UNESCO reports on cultural projects, accessing communication and interaction, avoiding geographical obstacles, or enjoying video conferences, electronic learning, or electronic commerce is not accessible to everybody. Nowadays, twenty per cent of the world's wealthiest population controls ninety-three per cent of the Internet access. In contrast, the poorest twenty per cent barely account for 0.2 per cent of the uptake; in Africa, 95.2 per cent of the population lives on the margin of the Internet (International Telecommunications Union, 2008). There are also huge differences relating to the access to digital information within each country, depending on income, age, gender, language or education (Kellerman, 2000; Sciadas, 2007). The problems of access are mainly related to the costs of computer equipment, income levels and the costs of telecommunications. One of the usual arguments to explain the advantage of North American society over the European one in the age of digital information is the existence of a low flat rate for local calls, resulting in a minimal Internet connection cost. Researchers such as Grimes (2000) or Richardson and Gillespie (2000) believe that rural areas have been isolated from information society due to lack of infrastructures and telecommunications training: consequently, their evident inequality

of opportunities in relation to urban areas. We can classify areas and communities as connected or unconnected in the information society.

In this context, we must reflect about the fact that ICTs in connected rural areas, that is, with accessible technology, enable the affirmation and diffusion of local culture, further bonding strong community identity (Ray and Talbot, 1999). Music, traditions, life styles and popular culture in general may become digital products supplied in the global market through electronic commerce. Besides, diffusion of local culture contributes enormously to reinforcing cultural identity and to slowing down emigration in peripheral or rural areas isolated from information flows. Spreading local culture through the Internet may contribute to an improvement of quality of life in local and regional communities that are far from large urban and developed areas. A cultural economy interacting with new technologies may facilitate communication and transform peripheral urban and rural areas, consolidating their cultural foundations and facilitating their connection and interaction with other areas by overcoming their isolation (Cairncross, 2001, Friedman, 2006, Toffler, 2006). Also, the image of a city, municipality, region, country or territory is gaining relevance in our global world. Its image and its characteristics denote its capacity to offer and attract economic resources and technological, financial or cultural services for its citizens, tourists, politicians and investors. Place marketing studies illustrate the most prominent characteristics of cultural heritage of cities, municipalities or territories, with the purpose of attracting investment, promoting and developing productive activities, strengthening the territorial identity of resident communities and improving their self-esteem and quality of life (Kotler and Andreasen, 1996). ICTs may facilitate diffusion of local brand images and reduce traditional isolation of marginal rural areas.

Understanding cultural heritage as an economic good leads us to examine it also from an entrepreneurial perspective. It is an innovative approach that gets away from landscape definitions and their romantic and chorological traditions. Cultural heritage can be planned, rehabilitated and taken care of, but most importantly, it is also informational merchandise that can be marketed through different economic operations. Territorial products are images perceived and understood by social actors and agents and can be disseminated through mass media. Place marketing opens interesting professional paths to students of cultural heritage with knowledge of economics and business management. Paraphrasing Benco and Lipietz (1994), we must not forget that regions compete for development, social and economic progress in the third technological revolution and in the information society. Place marketing is a highly valuable tool for competing regions; not only for cities but also for rural areas. Marketing techniques have been used strategically by companies to promote consumption and attain personal enrichment. It is now time to apply them with the aim of attaining social enrichment, that is, to return to society the social benefits they can provide.

There is a line of argument in the literature that claims that we are now witnessing the end of cities with the Post-Fordist Era, the dispersion of production and even the dilution of peripheral marginalization in relation to

core areas (Copus, 2001; Toffler, 2006). New technologies and telematics may become development agents in rural peripheral areas, as they enable local companies to access global markets and attract companies that produce information and knowledge. Graphic design companies, management of telematic services, banks, leisure, cultural and educational services, Internet services, multimedia teaching resources, marketing of traditional music in digital format, telemarketing, teleworking and editing can all be mentioned as examples. Telematics and diffusion of ICTs may enable peripheral areas to overcome physical barriers that prevented them from developing and kept them isolated (Cairncross, 2001; Friedman, 2006). Off-shoring of production facilities towards periphery is not only favoured by low labour costs, but also by instant communication through e-mail and teleworking, which makes distances become relative and represents what is known as "the end of geography". It also represents an opportunity to overcome isolation and the peripheral nature of certain disconnected areas from the information society (Graham, 1998; Cairncross, 2001; Li, Waley and Williams, 2001). The universal use of ICTs in isolated communities would improve the distribution of public services such as health, education or administration: they reinforce the sense of community and may reduce emigration flows from peripheral areas (Ray and Talbot, 1999). Through telematics, communities traditionally marginalized by distance can access knowledge markets and information without having to move. They can plan efficiently their movements and contacts with other communities to communicate "face to face" for business or educational purposes, now not being forced to emigrate and leave their community as it happened in the past. However, training of human resources and marketing and organizational capabilities are still necessary, as specialized literature points out (Grimes, 2003, 2005).

III. Do virtual communities exist?

The definition of virtual community is a controversial issue in academic literature (Baym, 1998). This confusion stems not only for the intangible physical character of its virtual segments but also due to the lack of concreteness of the community concept, which has many meanings depending on different cultures or social or geographical contexts (Liepins, 2000; Pallí, 2003). Freenberg and Bakardjieva (2004, p. 37) consider that "online socializing is a fact of daily life". But, are all groups that communicate through the Internet or in the real world really communities? We can distinguish between group and community concepts; the latter being more complex for definitional purposes. A group can be considered a well or poorly structured set of people who interact, with common objectives or affinities, and who have no clear or deep links of propinquity (Pallí, 2003). Bateman and Lyon (2002) consider whether virtual communities are true communities and reach the conclusion that they are simply different from traditional ones. They do not question cohesion, links or values that develop between people who interact through the Net. Traditional communities consider their own values such as propinquity, emotions and holistic values. Such communities identify themselves with specific places or social

systems that share similar attitudes and even with common lifestyles. That is to say, members of traditional communities identify themselves with a physical place, with the area they inhabit and mature in and they interact socially through shared values. However, their holistic values are flexible and plural. That is why their members come from diverse social, cultural, educational, ideological or economic backgrounds. Let us think of a rural community where the sense of belonging is determined by the geographical space, which is common to rich and poor, educated and uneducated, women and men, liberals and conservatives.

Wellman et al. (2003) regard a community as a net of interpersonal links that facilitates socializing, exchange of information, development of sense of belonging and social identity, not limited to neighbourhoods or villages. From the work of these authors, we can interpret that virtual communities share specific values in contrast to the holistic ones shared by traditional communities. That is why identification with a place is not a determining factor any more, as it fades out in social interaction processes through communication and through the common values of its members.

Rheingold (1993) argues that a virtual community is an ecosystem of spontaneously made up sub-cultures and groups. He compares them with micro-organisms growing in a laboratory with no sort of planning having occurred. He states that they are social aggregates emerging in the Internet when a sufficient number of people generate public discussions for long enough and with sufficient human feeling to form liaisons in the cyber-space. The drawback of such statement can be noted because of the lack of definition of terms such as “sufficient people and time”.

Spatial dimensions, such as place, seem to loose prominence in virtual communities in contrast to real ones. However, close linkages may exist and the feeling of belongingness to a town, region, suburb or local culture may be the main socializing link in virtual communities. Let us think of national communities whose members are scattered around cities and countries. Their original links are precisely the cultural affinities with their geographical roots. In their forums they debate common values, with special interest in their place of origin as a physical, cultural, economic and political entity. On the other hand, the existence of virtual communities without any clear spatial links is also frequent. Diverse communities have developed based on affinities related to recreation, sex or ecology.

IV. An experimental case. ICTs and economic development in a rural municipality

Within a theoretical framework arising from the theoretical-conceptual relationships between cultural economics, place marketing and information technologies, a pilot project was conducted in a Galician rural community of around 7,000 inhabitants. A virtual local community, specialized in digital production and management of cultural and educational aspects of daily life, was designed and programmed, one that is able to overcome physical barriers and isolation through telecommunications and

the Internet. It was a rewarding experience whose qualitative and quantitative results are now presented.

Brión is a municipality with a marked rural character located in the province of Corunna, Galicia (Fig. 1). In recent years and due to its proximity to the city of Santiago de Compostela, some of its parishes and settlements are now acquiring sub-urban or peri-urban characteristics, with the construction of housing estates and one-off houses. It is made up of nine parishes and supports a population of nearly 7,000 inhabitants. The more upland parishes are characterized by their more rugged landscape and are organized into rural settlements whose main income source is livestock farming. Conversely, lowland parishes are situated in a valley where the main road runs to Santiago de Compostela, the capital of Galicia. The new inhabitants in these parishes live in housing estates; they are mainly involved in trade or in public administration in Santiago de Compostela and spend much of their leisure time in the city. There is a dichotomy between rural and urban populations, making it an interesting social laboratory for other parts of Galicia.

Infobrion.com has been created as a social intervention strategy to bridge the "digital divide". It attempts to promote social, economic and cultural development in the municipality of Brión by difussing the new ICTs. It also tries to boost the recovery of its cultural memory and reaffirm the values of popular culture within the information society, by creating a local virtual community and by encouraging the use and diffusion of new technologies as knowledge, information and learning tools. Its main objective is to establish a communication and learning space targeted on the entire local population and within an environment of a cultural economy.

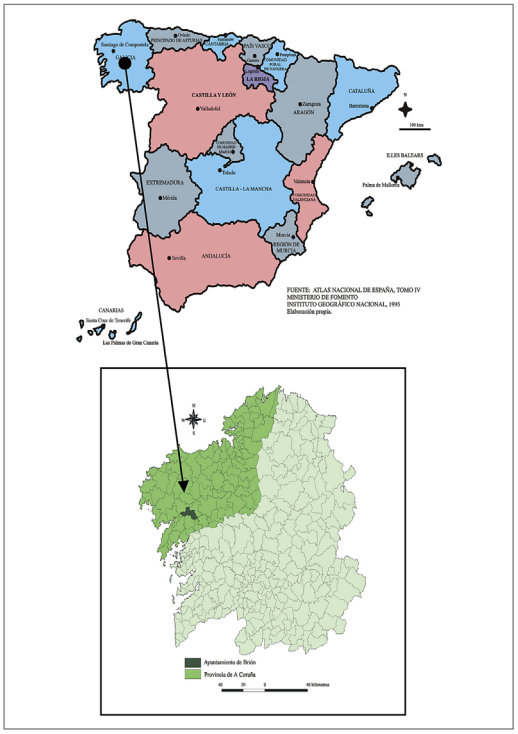

Figure 1. Location of the municipality of Brión in Galicia (Spain)

Infobrion.com is the result of the joint effort of researchers, technicians and professionals from the University of Santiago de Compostela, from Brión Town Council, from Pedrouzos Pre-Primary and Primary School and from Viceso Secondary School, in collaboration with the rest of the local community. The functional and operational organization chart is a network-type structure of scientific and technical nature that generates continuous feedback among all its components. Researchers from the University of Santiago de Compostela are

in charge of its scientific aspects, while the technical ones are covered by technicians from the local administration – Brión Town Council – and by local school teachers. The start up of *Infobrion.com* involved the design, architecture, programming and promotion of a multimedia and interactive web portal (Fig. 2).

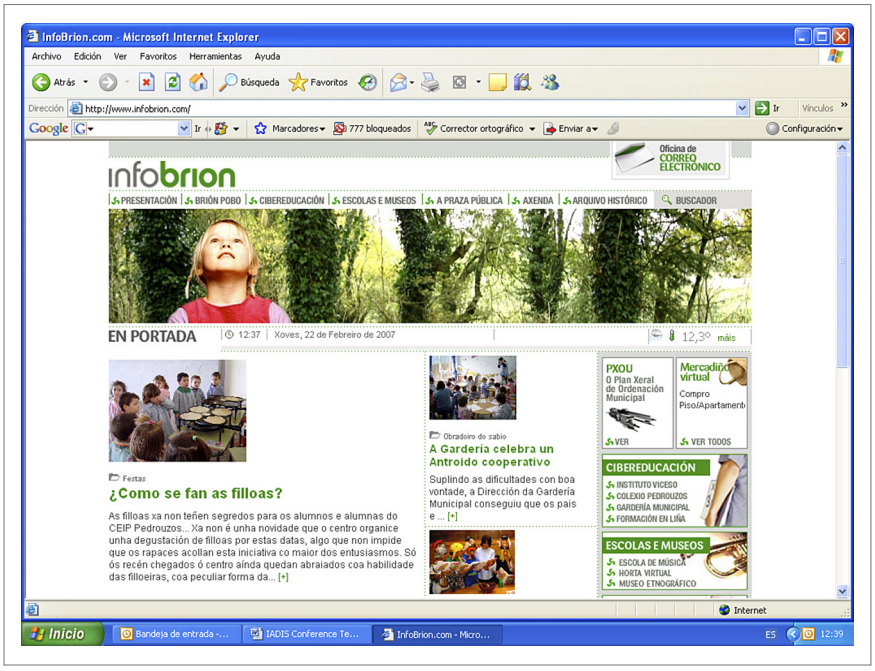

Figure 2. Home page of the virtual community www.infobrion.com [Source: www.infobrion.com]

1. *Brión Pobo* (Brion Community)

Brión Pobo is a scheme to boost local development. It attempts to encourage research on the popular and geographical culture of Brión, through the community's participation and effort. It consists of image, sound and video files, with a collection of historical material related to elderly peoples' lives, local traditions and customs, folklore, music and festivals. Its web address is:

http://www.infobrion.com/brionpobo/musica_sons.php?id=40

Brión Pobo promotes training and education within the community itself. It is formulated as a promotor of initiatives for local employment, by creating an environment of cultural economy. It involves voluntary work of civic organizations in the municipality, such as the local band,

the environmental resources group, cultural associations and parish associations. All in all, it enhances the organization of the local society and promotes social and community development by stressing the value of the resources offered by the information society and by ICTs. Between December 2003 and March 2007, local civic organizations produced a volume of multi-media resources of around 3,200 images, 760 sounds, 200 video-films and 500 reports (see Tables 1 and 2). Such material is offered through the Internet in *Infobrión* web page. Videos, photographs and sounds may be obtained free, in a low resolution format. In a high-quality format, they can be obtained by applying for them by e-mail or telephone and a previous payment for the production and management costs. This multi-media material covers a diverse range of cultural topics, with a prevalence of views of local landscapes, scenes of peoples' daily lives, social, cultural, sport and musical events and festivals. Popular culture arouses special interest among net navigators. Most multi-media resources are recordings of testimonies given by the elderly, businessmen, teachers and musicians in digital video, sound and photographic format. Children and young people showed special interest in the recordings about their grandparents' lives, with the purpose of recovering the historic memories. Children and youngsters asked the technicians and researchers to interview their grandparents and make recordings. The local community got to produce, generate and request such information through the web page. Between December 2003 and March 2007, around 800 multi-media reports were produced, with digital texts, photographs, sounds and videos focused on the local culture and education, within a municipality of only 7,000 inhabitants (see Table 2).

2. *Cíber Educación* (Cyber Education)

Cíber Educación is a scheme attempting to develop a virtual environment to promote the use of new technologies in the primary and secondary schools in Brión. The purpose is to motivate the school community (teachers, students and parents) in the preparation of teaching materials and other elements of interest for such a virtual environment. It aims to improve the relationship between the school community and the new technologies and to offer information of interest to all its members through the portal www.infobrion.com.

To co-ordinate the work with schools, several teachers were assigned the task of energizing the project in their respective schools. Computer resources were purchased by the regional educational authorities and negotiations with telecommunication companies took place to provide those schools with a better Internet connection. Teacher training courses were an important first step to initiate the *Cíber Educación* section. The degree of participation was moderate, although meaningful. In total, fifteen teachers attended the training courses, that is, twenty per cent of the teachers.

The students from Brión insert their daily activities on the Internet, with special emphasis on the activities carried out in class. Young people, thanks to their innovation, creativity and motivation in the use of new communication technologies, enhance

relations between generations and with teachers and families within the community. They have accumulated a wide range of digital resources and reports that can be used as teaching materials (Fig. 3). *Cíber Educación* offers digital images, sound and video films, opinions, information on activities and communication channels, as well as documents of interest for teaching purposes. It is available at:

http://www.infobrion. com/ciber educacion/i_relacions.php?id=1191

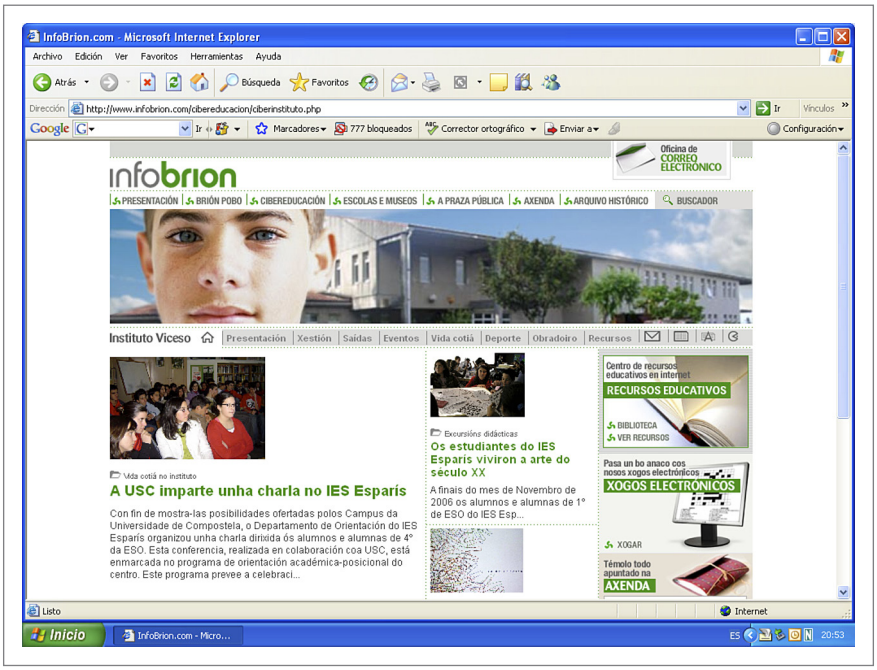

Figure 3. Home page of *Cíber Educación* [Source: www.infobrion.com]

The *Infobrion.com* portal has a monitored and quality-controlled editing system that enables participants to edit their own projects, news and formulate questions and opinions. Approximately 300 reports, 2,600 images, 260 sound files and 100 videos were available in *Cíber Educación* from December 2003 to March 2007 (Tables 1 and 2; Fig. 4). These digital resources became first class teaching tools (see http://www.infobrion.com/arquivohistorico.php). Prevailing topics are those related to daily life at school, festivals and celebrations, journeys, trips, visits to museums, companies and institutions and students' field work. At present, the use of digital recorders for videos, photographs and sound is now common among the school community; the multi-media material produced is used in class and at home. Web resources are employed at the local crèche to reinforce observation and memory skills in two to five-year old children; teachers and

carers use the web page to keep in touch with parents. In primary and secondary schools, the community involvement becomes more complex.

Resources	Image	Sound	Video
Culture	3183	756	177
Education	2557	263	98
Total	5740	1019	275

Table 1. Multimedia resources in www.infobrion.com (Data updated until March 2007) [Source: GIS-T IDEGA, 2007.]

Infobrion Themes	Reports
Landscape and daily life	121
Architecture	16
Popular culture	151
Festivals and traditions	51
Historical events	93
Celebrities	2
Our elderly	30
Sports	30
Music and sounds	33
Ciberescola	145
Ciberinstituto	123
Total	795

Table 2. Themes and number of reports on www.infobrion.com (Data updated until March 2007)

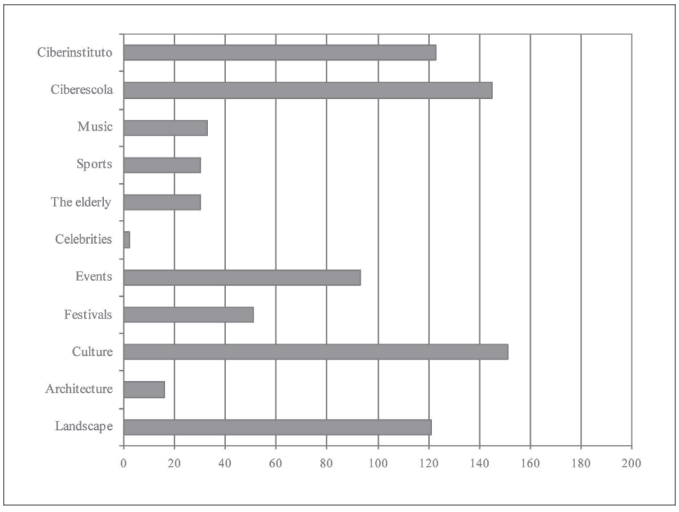

Figure 4. Themes and number of reports on www.infobrion.com (Data until March 2007)

[Note: *Ciberescola* and *Ciberinstituto* include the following topics: presentation, management, field trips, events, daily life, sports and the wise man workshop. Source: GIS-T IDEGA, 2007.]

3. "Immersion in the Information Society"

The "Immersion in the Information Society" unit became a programme complementary to Brión Pobo and Cíber Educación. It is designed as a strategy of community intervention. Firstly, to bridge the "digital divide", which is profound in Spain (Table 3, Fig. 5). Homes with Internet access in 2007 were forty-five per cent in Spain, much lower than the United Kingdom with sixty-seven per cent, Holland with eighty-three per cent or Germany with seventy-one per cent. As for people who normally use the Internet, the backward Spanish position is also obvious, only forty-four per cent of its total population. Far from eighty-one per cent in Holland, sixty-five per cent in the United Kingdom or sixty-four per cent in Germany. Secondly, to make the municipality of Brión visible on the Internet, where its residents may access and benefit from the use of ICTs. In 2004, only forty per cent of the people in Brión used computers at home, twenty-nine per cent of the total population had access to Internet from home and only six per cent had broadband (see Table 4). At present, the situation in Brión has changed substantially. In 2007, forty-seven per cent of homes had access to the Internet, thirty-three per cent through the broad band and ninety per cent have a computer at home (see Table 4). Data however reflect greater isolation on a regional level: only twenty-five per cent of homes in Galicia had access to Internet in 2007.

	Percentage of homes with access to Internet	Percentage of population using Internet
Holland	83	81
Sweden	79	75
Denmark	78	76
Germany	71	64
Finland	69	75
U.K.	67	65
Ireland	57	51
France	49	57
Spain	45	44
Italy	43	34
Poland	41	39
Portugal	40	35
Hungary	38	49
Greece	25	28
Romania	22	22
European Union 25	56	53

Table 3. Homes with Internet access and population using Internet in the European Union in 2007 [Source: Eurostat. EU 2008.]

	Percentage 2004	Percentage 2007	Change 2004-2007
Population using computers at home	39,9	56,3	+16,4
Population not using computers at home	30,7	34,0	+3,3
Population with no computer at home	29,4	9,7	-19,7
Homes with Internet access	29,2	46,8	+17,6
Homes with DSL Internet access	6,5	33,3	+26,8

Table 4. Computer usage at home in the municipality of Brión, 2004 and 2007 [Source: GIS-T IDEGA, 2004, 2007.]

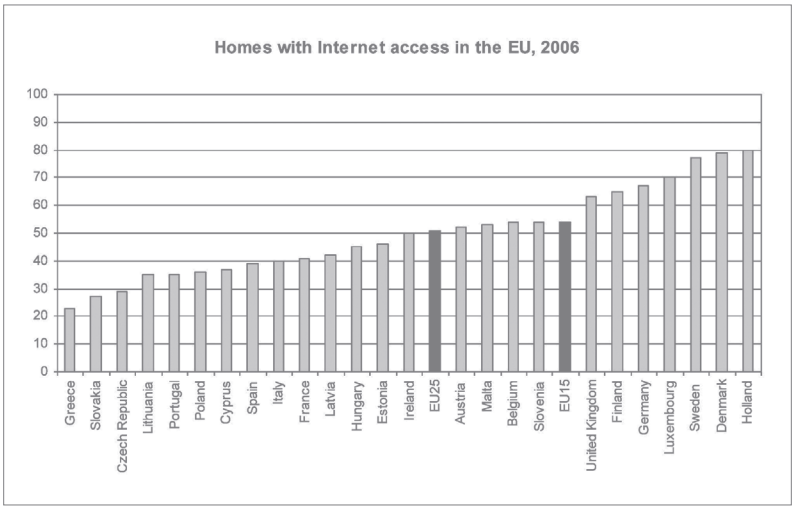

Figure 5. Homes with Internet access in the EU in 2006 [Source: España 2007, from Eurostat.]

"Immersion in the Information Society" offers resources specific for Brión, such as cultural and tourist guides and directories of business activities. It promotes the use of electronic commerce through a virtual market where goods and services are exchanged (Fig. 6). It offers electronic mail services associated to *Infobrion.com* to residents. It publishes a virtual local newspaper managed by the community and has established a local forum for opinion and debate (see http://www.infobrion.com/foros/index.php). The electronic commerce service permits the members of the local community to supply and demand goods and services. This promotes communication and mutual knowledge among its members, apart from generating commercial flows with outside.

Infobrion.com virtual environment also supplies information services for the local community, through the creation of a historical, physical and virtual archive specialized in popular culture and teaching resources. Finally, it offers an agenda with information about cultural and educational events of general interest for the residents in Brión. It also provides newspapers library and its own search engine (see http://www.infobrion.com/axendapral.php).

All in all, Infobrion.com represents a successful example of a virtual community that has aroused the local citizens' interest in ICTs. Since its inception, in November 2003, the number of visits to the portal has grown constantly (see Table 5). In October 2004 the portal recorded about 3,000 visits from 900 different IPs and, in September 2007 about 8,700 visits from about 5,100 IPs, within a municipality of only 7,000 inhabitants. This site has become an instrument of communication among the residents, especially through their participation in Debate Forums and Image Archive, as shown by the 7,250 visits to the Image Archive and 3,000 to the Debate Forums in April 2007 (see Table 6). As for computer usage, the community shows a growing interest. The local population with no computer at home has fallen from twenty-nine per cent in 2005 to ten per cent in 2007; there being fifty-six per cent real users and thirty-four per cent potential users, that is, with a computer at home which is not in use (see Table 5). The number of households in Brión connected to the Internet has grown from twenty-nine to forty-seven per cent between 2004 and 2007 and, with broad band access, from six to thirty-three per cent during the same period. Households with access to the Internet in rural municipalities in Spain, that is, municipalities with less than 10,000 inhabitants (Instituto Nacional de Estadística, 2007), are nineteen per cent, compared to forty-seven per cent in the case of Brión (see Table 4).

MONTH	IP´S	HITS
Oct-04	887	2754
Nov-04	1090	2364
Dec-04	1766	5711
Jan-05	1610	5777
Feb-05	1794	6387
Mar-05	1753	5779
Apr-05	1700	5435
May-05	1414	4229
Jun-05	1465	4278
Jul-05	1243	4368
Aug-05	1406	4338
Sep-05	1526	4415
Oct-05	1645	4252
Nov-05	1974	3934
Dec-05	1632	4050
Jan-06	1999	5189
Feb-06	2523	5952
Mar-06	3479	8603
Apr-06	3498	8333
May-06	4452	10388
Jun-06	4362	9822
Jul-06	3825	8701
Aug-06	2921	7426
Sep-06	3266	7338
Oct-06	3822	9767
Nov-06	3123	8451
Decc-06	3814	12002
Jan-07	3785	13765
Feb-07	4957	12678
Mar-07	2526	4213
Apr-07	2308	3892
May-07	2544	3939
Jun-07	3824	6058
Jul-07	3760	6133
Aug-07	4305	7133
Sep-07	5115	8653

Table 5. Evolution of number of visits to the portal www.infobrion.com during the October 2004 - September 2007 period
[*Centro de Supercomputación de Galicia*. Unpublished statistics from www.infobrion.com portal, 2004-2007.]

SITE	HITS
Image Archive	7246
Forum	3002
Front Page	2829
Agenda	1759
Virtual Market	886

SITE	HITS
Daily Life	517
Post Office	418
Daily Life at School	410
Historic Events	355
Wise Man Workshop	341

Table 6. EList of sites most visited by www.infobrion.com users in April 2007
[*Centro de Supercomputación de Galicia*. Unpublished statistics of the portal: www.infobrion.com, April 2007.]

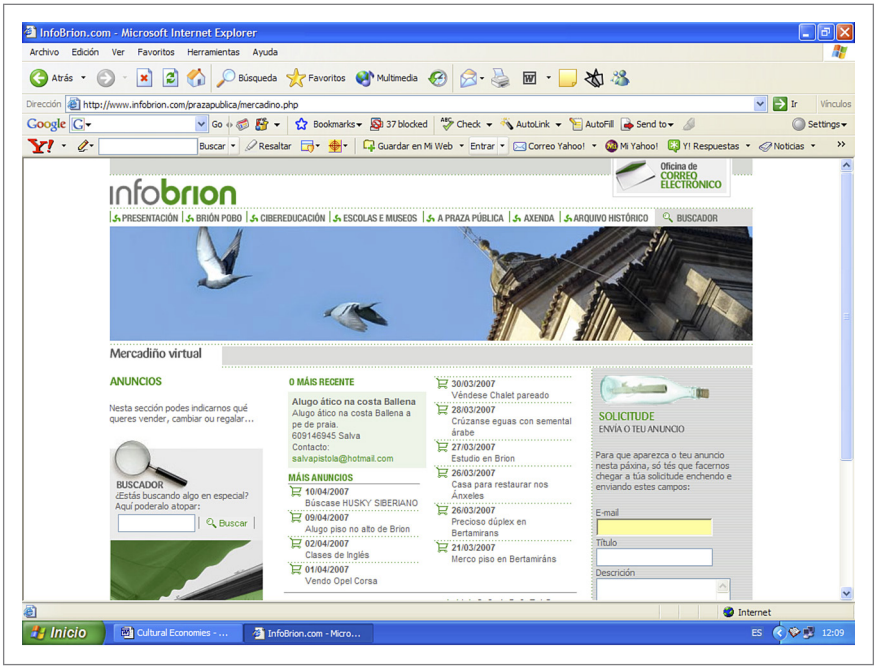

Figure 6. Virtual market of www.infobrion.com [Source: www.infobrion.com]

4. Information Society Atlas

Specialized maps were prepared to show the spatial distribution of ICTs in the municipality of Brión and the web production generated by *Infobrion.com* virtual community. It was done by compiling all the information obtained in different areas in the municipality into a geographical information system called *Info-Atlas*. For example, the number of computer users at home in every settlement, Internet users at and away from home and the expansion of mobile telephony was plotted (Fig. 8). All

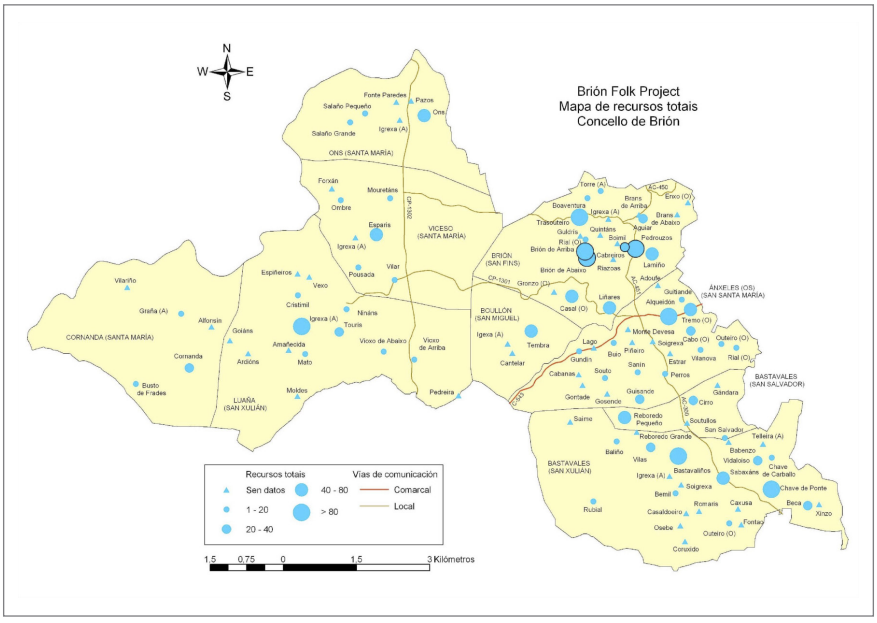

Figure 7. Brión Pobo Section. Total digital resources in the municipality of Brión, 2005.

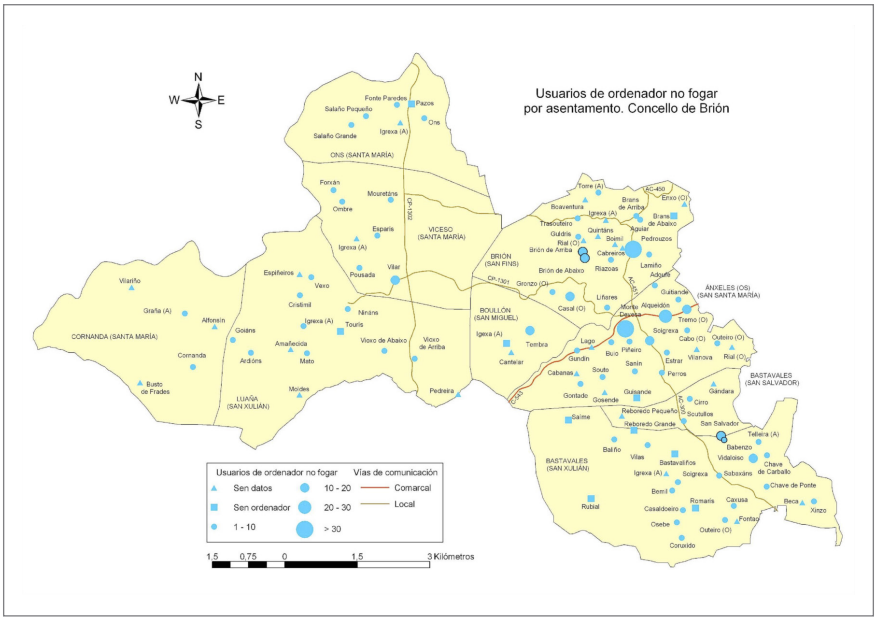

Figure 8. Home computer users by settlements. Brión Town Council, 2005.

the elements characterizing every report or piece of news in *Infobrion.com* were also collected and their reference locations were identified (Fig. 7).

The compiled data were divided into two blocks, according to the sections of the web site. On the one hand, data from *Brión Pobo* section, which included all reports and digital resources related to the landscape and daily life in the municipality, architecture, popular culture, music, sports and festivals. On the other, data from *Cíber Educación* platform were differentiated; they included reports and digital resources from the schools in the municipality of Brión: Pedrouzos Primary School and Esparís Secondary School. The mapping of the contents in *Infobrion* permits the spatial observation and identification of those parishes, villages and settlements that produce information of interest for the virtual community. This endeavour results in more or less highlighted spaces, that is, better or poorer connected spaces in the information society.

The contents of these virtual networks are of great interest as they support the diffusion of ICTs and end isolation on a spatial scale, as they facilitate the organization and strategic direction of the digital literacy work in the community. Local families are interested in learning about the utilities of *Infobrion* on the use of electronic mail and digitalized information on video, sound and photographic formats offered by the web. This enables them to understand about children's daily life at the crèche or in relation to students at school or about social and cultural activities organized by the community. All this awakens curiosity for ICTs and their usage. That is, this mapping tool, with a Geographical Information System format, informs us where computers are, what they are used for, the distribution of mobile telephony, the spatial diffusion of newspapers in the homes and the type of connection to the Internet. We can learn which villages are connected to the network and which are not and, consequently, develop social intervention schemes and digital literacy campaigns wherever they are most necessary. For example, the digital recording of the elderly's oral testimonies, traditions or any other expression of local culture in *Infobrion* can be used to attract families and communities to the new technologies in those settlements isolated from information.

Finally, *Info-Atlas* is a Geographical Information System that helps to address the public and private efforts in diffusing ICTs utilities, by regulating the spatial and strategic distribution of technicians' work in the process of digital education of a marginal community.

V. Conclusions

New technologies and telematics may become development agents and tools in peripheral rural areas. Telematics and the diffusion of new technologies enable peripheral areas and territories to overcome physical barriers that prevented them from developing and kept them isolated. Instant communication through electronic mail shortens distances and represents what is known as "the end of geography" and an opportunity to overcome

isolation and peripheral nature of certain unconnected areas in the information society (Graham, 1998; Cairncross, 2001; Li, Waley and Williams, 2001). New technologies and telematics may enable the universal distribution of public services such as health, education and administrative services; they may reinforce the sense of community and slow down emigration in peripheral areas (Ray and Talbot, 1999). With telematics, communities traditionally marginalized by distance or by an isolated location may access knowledge markets and information without having to move. However, it is worthwhile to stress that training of local human resources and acquiring marketing and organization capacity are also necessary, besides simple access to technology (Grimes, 2003, 2005). Environments of cultural economy may arise from virtual communities that promote local culture and education. Community web sites with universal-access multimedia resources, related to local life, may become a communication tool that may attract rural residents, families, businesses, institutions and other stakeholders towards the new technologies, the use of computers and the Internet. They also represent an important potential niche of creativity and innovation for generating wealth and development. In short, from our experience we believe that telecommunications can be understood as effective tools for social intervention to contest isolation from information flows experienced by peripheral rural areas and communities.

Infobrion.com virtual community has been designed to serve as a digital communication public vehicle that promotes the use of new technologies in the rural municipality of Brión. This multimedia portal reaffirms popular culture and local history by providing the community with educational resources and examples of good practices. It also encourages digital literacy through a planned strategy of participation and direct work with the local community. Finally, it is an experience that can be reproduced in other municipalities or regions disconnected from the information society.

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