

Virtual urban geographies in Italy and traditional-digital place interlinkage¹

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Abstract.— Detailed research on digital towns, especially from a geographical point of view, is surprisingly lacking in Italy which is one of the most ancient urban civilizations and a highly urbanized country. The paper tries to develop a 'geographical' perspective in dealing with and evaluating the development and extent of on-line cities. We prefer at this stage the term "on-line" instead of virtual or digital because the basic idea is that we need to develop criteria to plan e-space, simulating the 'traditional geographical' experience and values. The aim of the paper is to develop a methodological approach to benchmark and rank on-line cities in terms of geographical theory and planning approach; to apply the methodology to Italian virtual urban spaces in order to set up a ranking of digital cities and a framework of virtual urban geography and of traditional-virtual place interlinkage. The main results are an analysis of on-line cities in Italy in terms of ranking and initial interpretation of circulative influences between traditional and on-line cities and a geographical pattern for planning digital cities.

Keywords.— digital cities, Internet, geography, planning

Résumé.— **Géographies urbaines virtuelles en Italie et interrelations entre lieux traditionnels ou digitaux.**— La recherche géographique approfondie sur les villes numériques manque en Italie. Les auteurs tentent d'avancer une perspective «géographique» pour évaluer le développement et l'ampleur du phénomène des «villes en ligne» en Italie (ce terme est préféré en l'attente d'une définition de critères pour représenter l'e-espace). Les auteurs débouchent sur une analyse des villes italiennes en ligne (rang, influences circulatoires).

Mots clés.— villes électroniques, Internet, géographie, aménagement

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1. INTRODUCTION

Urban planning is, on a world-wide scale, an enormous challenge: approximately 80 % of the population works or lives in an urban system. The need for people and places to be accessible and connected is heightened by profound socio-economic and technological changes, by the structural crisis in industry and in employment, and by a growing social awareness with the consequent desire for more efficient services. The same situation applies to rural spaces with problems of connections and lack of services. Currently one of the frontiers of territorial planning consists of applying the possibilities offered by the new technologies to the partial solution of urban and rural problems. Interaction between a local area and new technologies also can produce:

- transformation of cities for data transmissions and elaboration implying a rethinking and the practical organization of settlements and place governance (Mitchell, 1995);
- planning projects using ICT networks as a tool to re-balance relationships between core and periphery and to reinforce non-central areas (for an example, Lorentzon 2003);
- new equilibriums in the field of jobs, forms of urban public transport and quality of life (Graham and Marvin, 1996, 1999) with the creation of new services and profiles.

Public institutions should take advantage of ICT potentialities for local areas (to improve their quality, to allow them to play a new role and to rediscover unexpressed opportunities) avoiding the risks (of leaving decisional and social processes unchanged, of handing over resources and power exclusively to the market).

The aim of this paper is to develop a methodological approach for analysing and benchmarking on-line cities in terms of geographical theories and planning approach; to apply the methodology to Italian virtual urban spaces in order to formulate a framework of digital urban geography and of traditional-digital place interlinkage.

ICT applied to the management and planning of the local area and to relationships with the citizens, considers the Internet as a main tool. Through the net, in fact, it is in theory possible:

- to inform the citizens/users;
- to guarantee participation in decisions on territorial planning;
- to increase social integration and cultural encounters, with the consequent discovery or strengthening of that sense of belonging to a specific area which is the essential condition for living together in cities. Obviously, in order to achieve all these, it is necessary to avoid underestimating the Internet use risks for these purposes: control, guidance and manipulation of opinion; the illusion of public 'transparency' and all-embracing data management (see the 'panoptic' of

J. Bentham and the 19th century utopias); creation of a new social difference between the haves and the have nots; alienation and dependence.

However, Internet applied to place planning can offer remarkable potentialities, in the field of democracy, competitiveness, connectivity, accessibility, interaction and the creation of shared beliefs which can be applied to real places such as cities or rural environments (on rural areas Moriset, 2000a, 2000b). The city operating on the virtual level, what we can call an on-line city (a city represented on the web), can therefore be considered as a new frontier of government. Correctly applied city planning can create a range of benefits:

- in the first place, for the citizens: in fact, the creation of faster and more flexible services helps to make relationships with the public administration easier by eliminating travelling, long queues and wasted time, which is certainly an advantage above all for the inhabitants of outlying areas. In addition, it will be easier to participate in government decisions (i.e. through online voting) or to get information about services in the fields of leisure, education, employment or for family life, such as the recording of births, deaths or marriages, application forms for Social Security benefits, the payment of taxes or information on the latest innovations in the legislative field;

- secondly, for business: the costs of setting up and running business activities could be considerably reduced if it were made easier to find the information or the services required. E-commerce and online shopping would make it possible to strengthen the local context and finally, the presence of these services can help to attract outside firms;

- finally, the various public departments would have the chance to collaborate and municipalities could work together to create joint projects before attempting joint management of the local area (Bonnet, 2000).

From the point of view of geographical research, digital cities represent a virtual laboratory of observation and ideas. In particular, the example of on-line cities constitutes a particularly promising subject. The digital city has been imagined as a circumscribed space on the Web that uses the new technologies in order to create a virtual space that is 'Agorà' (Mitchell, 1995): focussing on the human factor and on development; allowing people and organizations to share ideas, needs and activities in order to make life in common easier and richer not only in virtual interaction but also in real places. From a technical point of view it has been said that the city must become an intelligent space and therefore must be simple, methodical, accountable, responsive and transparent: 'smart'. From a theoretical geographical point of view, the concept of geocyberspace as the emerging fusion of geospace and cyberspace represents a geographical reality not confined to electronic space but with implications for geographical spaces (Bakis & Roche, 1997). Moreover the possible fusions among different forms of technologies of information, production and distribution may have as a consequence a unified space for

the provision of service as well as a public network of information consumption and production (Kellerman, 1997).

Understanding geocyberspace appears a major task (Bakis, 2001). Planning geocyberspace, as usual in the history of planning, starts firstly from the assessment of the citizen-users' needs; then access must be given to information and services; this implies a reconsideration of public-private dynamics in a space considered strategic.

At a general initial stage we can assume that planning a digital city could be based on the following steps, many of which can be considered to have a high geographical content:

- infrastructure and the choice of network locations taking geographical conditions into account;
- mapping and computerization of public administration and the surrounding area
- creation of information centres and data processing centre ;
- consciousness-raising and education on the opportunities of new technologies;
- imaging and designing contents referring to specific places and place-based needs;
- communication : creation of a city hub that also handles the management of information kiosks in high transit zones or disadvantaged areas.

In particular, critical factors in the implementation of IT programs in community, urban and regional development, accorded to Corey, 1998 quoted in Corey 2001, include the following: vision and leadership, modern information infrastructure investment, facilitative regulatory environment, human resources development and trained personnel, early and late experiences in IT public policy implementation, the essential and unique nature of a country's political economy and culture in executing urban and national IT policies, organizational/spatial synergies and their catalytic and coalescing dynamics.

This paper's research pathway consists firstly of a theoretical framework and benchmarking the existing methodologies of on-line cities reported at the Italian and at the international level: the selected source for the Italian panorama is the annual report on on-line cities in Italy carried out by a government agency, 'Censis', in partnership with 'Rur-Assinform' a business coalition body (2000); the source for the world-wide overview, with particular reference to the case of American on-line cities, is the survey conducted by Darrell West (2001), on behalf of Brown University.

Secondly, starting from the established theoretical tasks from the literature, we propose a methodology for benchmarking digital cities based on a parallelism between the shapes and functions of the traditional city and the analogous categories transposed in virtual spaces. The methodology aims at discovering the

convergence existing between the two spaces examined and establishing criteria of digital city planning in a geographical approach.

The proposed benchmarking methodology has been applied to e-government sites of Italian cities which are representative at the regional level (*capoluoghi di regione*) in order to obtain a research output in terms of benchmarking and ranking analysis so that initial interpretations can be given of the urban geographies of real-virtual place interlinkage. Some exemplary cases - which we could define 'islands of excellence' in cyberspace planning and organization - were examined, paying greater attention to connections with the local area. The general scientific aim is to understand what the specific local conditions are and how they influence the quality of e-spaces and to identify some possible criteria for planning digital spaces in a geographical approach. In a further research project we are going on to estimate the interlinkage between traditional and digital places in selected cases.

2. DIGITAL CITIES, PLACES, GEOGRAPHY

Detailed research on digital towns, especially from a geographical point of view, is surprisingly lacking in Italy which is one of the most ancient urban civilizations and a highly urbanized country. Mimmo and Palma (2001) provided an analysis of homepages of 20 regional main towns based upon benchmarking criteria referring to site contents. The core of the paper consisted of the enumeration and classification of content distribution with particular attention paid to the on-line services offered. The results referred to the Italian macro-territorial division: North-West, North-East, Centre, South and islands. This analysis shows some initial findings i.e. the excellence of some large cities in Italy - Rome, Turin, Florence, Naples - in providing web spaces, with the surprising absence of Milan, and the emergence of small to medium-size towns in the field of e-government, but the methodology should be extended to take in a geographical point of view including criteria that cover the complex interlinkage between the 'traditional geographical' experience and values and the digital experience. This point was conceptualized by Graham (1998) in three broad dominating perspectives: 'substitution and transcendence', 'coevolution', 'recombination' perspectives because cyberspace as a new kind of space is layered on top of, and interferes with, traditional geographical space (Batty, 1993). For Batty 2001, the notion of a small world is like a network of clusters of nodes which are locally linked and densely connected as a local group but have the ability to hop quickly between long-distance ties and interact with members of any locality by using their high local density. The result is higher local densities and improved global connectedness.

For Graham and Marvin (1996) cyberspace is mainly a metropolitan phenomenon developing out of the old cities; space is not 'shrinking' but perpetually

recast, so what is the geographical value of place-based webs and how do virtual and real places interact? How large is the geographical diversity of web spaces, how deeply does the web globalization affect e-regional diversity? Bonora (1997 and 2001) suggests that ICT introduces opportunities but also new marginalities due to the decisions in localizing infrastructure and emphasizes the peculiarity of the Italian case related to the ancient urban structure and the need for suitable ITC infrastructure.

Corey and Wilson (1997), addressing the rationale and structure of public policy to introduce and incorporate information technologies into existing and new cities provided a comparative survey of Malaysia, Singapore and the United States and a general framework to investigate the digital city identifying three facets of information technology: technical possibilities, economic viability, social acceptability. They particularly stress the socio-political element of IT whose translation in terms of planning for IT is crucial both from the point of view of regulatory conditions on a geographical basis and from that of practical implementation such as spatial access and distribution.

However, modes of observation oriented to service features and IT quality rather than to level of geographic representation - the subject of the city has always been a major topic in geography! - suggest setting up analytical methodologies of virtual spaces in a geographic approach. Previous studies of a popular character have been sensitive to technological accessibility and quality rather than to the transformation and interaction of real territories with digital ones. Evaluating only the dimensions of accessibility and the relational dimension of geocyberspaces appears reductive of the traditions and the geographic experiences of research and analysis. For example, according to studies aimed to investigate and map the complex geography of Internet (Dodge, 1998, 1999) it is necessary to operate on the virtual scale compared to the traditional-digital one in order to set up a conceptual framework of geographical analysis, and in order to interpret some features like: shapes, functions, characteristics of local identity, impact of dynamics of traditional-virtual relations, convergence and/or divergences in accepted orders and interpretations of the existing city models.

According to Kellerman (2002), the special significance of the interconnection and co-evolution of real and virtual space can be seen in the pervasive approach of the geography of information summing up the real, the virtual and the medium between the two dimensions reflecting the use of geography in production, consumption, distribution, expertise, knowledge and metaphorical experience. In particular the various interrelationships between real and virtual spaces can be formulated in terms of the interdependence in their functioning, the coevolution of both spaces, the dual construction and elimination of sites and activities in both spaces (Kellerman, 2002, p. 37). From the point of view of language, the ideas of Levy (1997) are stimulating: Levy argues that virtualization implies a deterritorialization and a problematization of realities. Its opposite is the 'possible' not the 'real' as

everything is real, including the cyber experience. Digitalization is a reinforcement of realities so it would be preferable to define places 'traditional' rather than 'real' - and 'digital' - as a reinforcement of traditional spaces in the web- rather than 'virtual'.

3. ON-LINE CITIES: PREVIOUS STUDIES AND RESEARCH REPORTS AT THE INTERNATIONAL LEVEL

The Darrel West survey. The detailed analysis conducted in Summer 2001 by Brown University in Providence, Rhode Island, made available a highly informative picture on the state of the art of the e-government experiences in 196 countries of the world, and in particular, in the 70 main metropolitan areas of the United States. While in the specific study of the American panorama they analyzed approximately 1506 official e-government sites, the survey conducted on a world-wide scale does not make reference to regional or local e-spaces, but rather pays attention to e-spaces set up by legislative bodies such as parliaments and congresses; executive bodies (ministers, royal houses); judicial organs, and finally agencies of services (health, taxes, tourism, education). The report does not really focus on the specific topic of on-line cities.

The analysis obviously doesn't cover the total number of web-sites but only a sample, 25 % of European ones, 18 % of the African ones, 8 % for the Middle East, 7 % for Russia and Central Asia, 5 % of North American ones, 9 % of Central American ones and finally, 7 % for South America, the Far East and Oceania. The methodology is based on 28 indicators to evaluate the efficiency and quality of e-government sites, the differences in the use of new technology by the public administration, between the 196 countries of the world, on the one hand, and the 70 most populated American cities, on the other.

The main aspects considered are: the presence of links with other web sites, access for the disabled, attention to security and privacy policies, multilanguage contents or translations, the multiethnic nature of various countries, and in particular of the United States, interactivity, and finally the amount and quality of the publications put on line. The basic idea is the attempt to see whether e-government initiatives have succeeded in bringing about a consistent improvement in the quality of citizens' daily life, facilitating access to information and bringing administration and the citizenry nearer. Precisely for this reason, the only services considered relevant by the authors are those can be carried out totally in remote mode, and therefore those that take full advantage of the potentialities offered by the Internet. The added value procured by the technologies of data transmission does not seem to lie in the amount of on-line information, but in the ability to offer that information in terms of highly transactive services involving the broadest possible part of population.

The main data, in percentages, on a world-wide scale provided by the West research are: English had become the language of e-government. Approximately

72 % of national level web sites had an English version, while only 28 % did not; 14.45% of web sites offered two or more languages; 15.6% had portals with characteristics of one-stop service or links with other e-government or non e-government web sites; 16.8% offered fully operable on-line services. The most frequent services offered were: purchase of stamps, filing of complaints. 71 % gave access to publications; 6% showed visible measures of privacy, while 3 % had security policies. Only 2 % had some evidence of access for the disabled. There was a big difference in the e-government overall performance from country to country. The nations classified at the higher levels were: the United States, Taiwan, Australia, Canada, Great Britain, Ireland, Israel, Singapore, Germany and Finland. On the whole, therefore, the cities of North America, Europe and Asia showed much more highly developed situations of e-government than Russian cities or those in Central Asia and South America.

Data percentages of 70 U.S. metropolitan areas were: only 7 % of web sites offered two or more languages. 25 % had portals with characteristics of one-stop service or with links with other web sites and 13 % offered services completely executed on line, among these the most common uses were: payment of parking tickets, filing of complaints about the bad street lighting system, damaged road surfaces or reports of rats.

Approximately 64 % allowed access to publications and 38 % had connections with database, 14 % ensure data privacy, while 8 % have security measures. Only 11 % provided access for the disabled. Less than 1 % had some kind of advertising. Accorded to the principle of transactivity of virtual spaces the best practice of electronic government was represented by portals providing links with e-government web sites enabling users to get information easily and quickly starting from a single source. From this point of view, the area comprising the United States, Canada and Mexico offered the highest percentage, 28 out of 100, of services that could be carried out totally on line.

At a more advanced stage were found e-government sites that enabled forms to be filled out and tax to be paid. On this point, the comparison made between public sites and the private ones, in particular shopping sites, is certainly of interest. The survey, in fact, emphasized that one factor that had slowed down the development of on-line services was the limited possibility of using credit cards and the digital signature; in the United States, in fact of the 1506 web sites analyzed only 4 % accepted payments with credit cards and, a mere 0,2 % accepted a digital signature for commercial transactions. In contrast, the commercial web sites allowed the purchase of goods and services by credit card; another sign of the still embryonic stage of state web sites compared to the private ones was the variety of audio and video clips, nearly completely absent on public e-space.

Many networks, however, promoted e-places for interaction between the citizens and the institutions; at the national level, in fact, the supply of e-mail addresses of the people in charge reached 83 %, while 17 % accommodated spaces

for open discussion, like thematic forums or chat rooms, with the supremacy of Las Vegas and Albuquerque over the other on-line cities. Also the survey carried out at the world-wide level seems to confirm these trends. A decisive element in favour of wide accessibility to on-line services seems to be the elimination of barriers in terms of the functions of translation and support for disabled access, following the guidelines provided by the World Wide Web Consortium (W3C), suggesting for example, the use of external supports, like vocal synthesizers, to show images to a blind person.

One aspect, finally, of enormous significance even though still lacking at the world-wide and national level is undoubtedly the synergy of privacy and security policies. Once again these are more developed in the field of electronic commerce than in public e-space, above all from the qualitative point of view. The survey carried out by Brown University reveals that public opinion, probably in relation to the structure of internet data transmission itself, due to its non-regulated and widely accessible nature, placed these aspects at the top of the worry list. This suggests that if an e-government web site is seen to have measures for dealing with privacy and security the citizen would feel safe. Nevertheless, the research reveals that few on-line governments as yet offered such measures above all from a qualitative point of view because only isolated cases forbid commercial advertising or the creation of cookies and visitor profiles. While at the world-wide level, sites that distinguish themselves for the visibility of their security policies were the island of Santa Lucia, followed by Australia and Saint Vincent, with the United States coming in fourth place, and in the U.S. in particular Albuquerque and San Diego.

4. ON-LINE CITIES: PREVIOUS SURVEYS IN A ITALIAN SCALE

The spread of on-line cities in Italy can be monitored on a descriptive basis as regards growing trends, frequency and contents through a sufficiently reliable source: the annual report 'Città on line' in Italy, edited by Censis - Rur - Assinform. This is a state of the art report on the initiatives of electronic government promoted by local agencies and it allows us to monitor the development of digital cities in quantitative and qualitative terms, and to track the possible future developments through the appraisal of the dynamic tendencies emerging from the temporal comparison of the initiatives. In order to give immediate visibility to the topic the Censis survey of 1998 introduced a table in which the municipalities were grouped, based on the quality of the services offered on the net, in four categories: 'pioneers', 'developers', 'tourists' and the last group of the 'behinders' for their lack of commitment to innovation.

Already at a first level of analysis of the distribution data, it is easy to observe that the implementation of Italian on-line cities reflects, in its geographic distribution, the difference between the North and the South of the country, particularly in the qualitative appraisal of the average services offered. The initial enthusiasm

aroused by the quantitative data - from 1997 to 1998 the doubling of e-spaces with a jump from 540 to 1121 on-line places - was mitigated by the excessively limited number of cities providing advanced contents with particular attention paid to transactivity and interactivity with the involvement of the citizens: this was the case of cities like Bologna or Modena or again of Turin and Siena, which were placed at good levels, classified as pioneers since they started their first experiments in digitalizing public space in 1993-1994 and they continued to accommodate the more futuristic solutions, i.e. the use of the digital signature, brought in by one of the Bassanini laws, the 59/97, which has made it possible to exchange valid legal documents in remote mode.

The municipalities which benefited from the ground broken by the first group of pioneers are the so-called 'developers', and they are located essentially in Central or Southern Italy, but, surprisingly, some also appear in Milan. Having begun the digital experience later they can catch up with the pioneers. One aspect of the survey of the 2000 report seems to confirm above all a new growth phase in the number of territorial domain names registered and a clear development in the quality of the contents. From a strictly numerical point of view, the data show that of 103 main provincial cities the percentage with their own websites was about 93 % while in the case of small towns, on the basis of a statistical sample of the Italian municipalities with populations between 5000 and 100000 the percentage was about 46.3 %. If to the quantitative data we then add some structural considerations, which show that the services offered have reached a high level of quality of information, we can conclude that the number of on-line cities labelled as "tourists" has decreased. This kind of on-line city contains poor information mainly focusing on the tourist-cultural field or on timetables and so on. The positive trend of the development of on-line cities quoted by Censis must necessarily be linked with two factors: the increasing number of areas connected and the progressive use of the Internet by Italians, along with the interest shown by the central government in the development of ICT solutions for the improvement of the public administration. Both of these factors require explanation.

With regard to structural barriers, in 2000, PC use in Italian families reached merely 20 % of the total. This may appear to be in contrast with the previous statements on the increasing number of users, but in terms of relative numbers the increase has been calculated at +125 %. A clearer evaluation can be made of local and central government action aimed at developing the on-line modality, above all because we must point out weaknesses in interactive (public administration-citizens not citizens-citizens) or transactional operations.

As for the national ICT development plan objectives (2000), there are essentially three: A) to improve public administration efficiency B) to offer citizens and firms integrated services and not fragmentation of competencies C) to guarantee widespread access to information and services by the public administration.

This plan recommends some basic goals necessary in any kind of local ICT initiatives, which however were not achieved in the first experiences of on-line cities. The basic goal is the collaboration among public bodies and agencies. This can be seen as a traditional weakness in Italian city areas, where a large amount of top quality historical, artistic and social resources remain underdeveloped because fragmented political action prevents the interaction needed to set up local projects. And now the error has been repeated in digital city spaces

This lack of interaction is not a minor issue - and it results in a meagre overall productivity of the resource system prevents the system's potentialities from being expressed. The initial lack of public initiative in the field of on-line cities in terms of integrated planning is quite well-known. Surveys on the years before the ICT plan show how the setting up of civic data transmission had to be attributed, in most cases, to free initiatives by public employees. When the institutions became aware of ICT potentialities, the quality of the services offered to the local area were enhanced partly due to the greater availability of resources made possible by an economic and political commitment.

Hence the increasing attention to the performance of services through the promotion of spaces and instruments of communication. Staff e-mail addresses were accessible in 27.8 % of large municipalities, while 5.2 % also offered the possibility of guided communication with the offices; particular attention to 'transparency' allowed the users in 50 % of the cases to know the names of the people responsible for the services offered on-line along with the persons with technical responsibility for web sites.

Although the number of digital cities and the commitment to promoting spaces and instruments of horizontal communication are increasing, the on-line cities are not satisfactory in terms of the participation/communication dimension considering that on-line forums, newsgroups and chat rooms are found only on the e-spaces of 59 large cities and 60 small towns.

Most of the on-line cities visited, namely 83 main cities at the subregional level and 105 municipalities, in general merely provide information about the administrative structure with the description of local government bodies and their functions - details that are no doubt necessary to guarantee administrative transparency, but are certainly insufficient, above all considering the fact that on a large number of municipal sites they are not found at all. From this point of view, it appears that many managers of on-line cities lack an adequate knowledge or vision of the e-possibilities for places and, consequently, e-city planning remains circumscribed within the limits of technical-informative content neglecting, instead, synergetic and participative modalities. On the other hand, pages containing information on public authorizations are published by 67 % of the large municipalities, on educational issues by 61.9 % of the same networks, and also on social services and on the job market.

Another factor is that awareness of the benefits ICT could bring to public administration has catalyzed attention on optic fibre, which should greatly improve technological performance. Previously in 50 % of on-line cities the time required to access the home page was over the maximum.

There are still many critical flaws in Italian on-line cities compared to the rest of Europe, according to the guidelines of the European Commission, through the e-Europe guidelines on the full development of the Information Society (European Commission, E.U. Council, 2000). The Commission points to interactivity as the main advantage that Internet technologies provide for citizens and, at the same time, for the public administration.

Providing e-space for dialogue with the citizens should strengthen participation in political life and bring the institutions nearer to the citizen, while at the same time measuring the degree of satisfaction procured by political and legislative initiatives. Digital cities, in this perspective, constitute the new 'agorà' of the polis in a scenario of inexorable weakening of democracy, eroded progressively in advanced societies, which seem to have little interest in expanding the scope and solidity of democracy.

The Censis survey shows a dichotomy between intentions and concrete output. The main positive aspect was the increasing commitment of local bodies to on-line cities in order to promote the city space and, thanks to the effect of modern networks of economic systems in conjunction with local urban resources, projected Italian cities into an international context. This proactive attitude was particularly true of cities in central Italy.

Analysis of Italian digital cities suggests analogies with real places and also brings up some critical issues in the comparison between American e-spaces. Italian on-line cities provide a more participative e-place compared to the American networks, which instead have high transactive values. From the data and empirical observation we understand that Italian on-line cities, with the exception of some islands of excellence, rather than investing in e-services, deal with the participative dimension through the promotion of spaces and instruments of horizontal communication, such as e-mail addresses, thematic forums and chat lines, which are geographically distributed uniformly in the virtual territories without the distribution gaps of real places. To the contrary, as the West research already emphasized, the more mature American experiences consider the central factor of e-spaces to be the presence of completely executable on-line services. Therefore, a high percentage of them offer virtual shops that help to send administrative documentation in remote mode, to pay tax or insurance, taking full advantage of one of the most important attributes of the net: transactivity.

Italian on-line cities and American e-places express, at a first glance, two different kinds of public e-spaces, which differ in form and in the type of functions.

A qualitative interpretation of actual Italian on-line cities reveals that the reason for differences in quality is the strongly rooted tradition of urban planning

in some areas of our country. The Censis report, in fact, already identified a small number of Italian municipalities, which since 1995 have been trying out innovative solutions in data transmission, offering quality services, paying particular attention to fostering interaction among citizens and between citizens and institutions, and which represented a kind of 'islands of excellence' in the national panorama. The particularly significant data is once again of a geographic nature. The top on-line cities are once again cities like Bologna, Modena, Siena, Turin and Florence located all to the Center-North of the country and, therefore, particularly influenced by the municipal tradition which gave rise to Italian civilization (except Turin where coalitions were created in an effort of intense strategic planning to regenerate the town from a Fordist monoproduktive town model to a non-industrial post-fordist town). It was in central Italy that the civilization of municipalities developed, providing a tradition of associational behaviour and shared belief in cooperation between citizens and institutions. It seems, therefore, that through the most modern forms of communication, geocyberspace reproduces the values and behaviour of the ancient municipal relational governance. And one might add that the specific local characteristics strongly resist the levelling effects of globalization, revealing their own identity through the different forms that virtual spaces take.

5. DIGITAL AND 'TRADITIONAL' URBAN GEOGRAPHY: TOWARDS A METHODOLOGICAL APPROACH

The choice of sources of information also plays a strategic role. The two benchmarked surveys mirror different experiences in terms of geographical contexts, implying different outcomes and above all different methodologies. The cultural background of the authors appears to be inextricably linked to the structure and contents of the surveys.

In fact the two reports share some common indicators such as usability, technological quality, but there is no doubt about the distance between the Italian concept of and concern for interactivity and the 'Anglo-Saxon' attitude, far more oriented to the transactivity of web sites.

The Brown University study gives great weight to all the services that citizens can access directly online, while the Censis report analyzes the amount of information available with particular attention to the presence of spaces targeted to interaction between citizens and users, like the chat forum (generally called in the Italian language an on-line 'piazza'), establishing a category dedicated to the appraisal of the quality of these features. Such a contrast is particularly relevant to the purposes of a geographical approach, recalling the geography of real spaces. A certain opposition can be noted between two types of virtual territories and their corresponding values and experiences: an Anglo-Saxon matrix, oriented to the market and to profit-making capacity, and the other reflecting the traditional formal Italian public space oriented to social interaction (a Latin cultural attitude reflected in e-spaces?).

Table 1.— *Benchmarking methodology A)*

West survey categories		West survey categories	
Online Information	Phone Contact Info	Privacy and security	Commercial Marketing Forbidden
	Address Info		
	Links to other sites		Cookies Forbidden
	Publications		
	Databases		Sharing personal Information Forbidden
	Index		
	Audio Clips		Use Computer Software to Monitor traffic
	Video Clips		
Services provided (fully executable)	Pay parking tickets or traffic violations	Accessibility	Disabled People Access
	Complaint		
	Services Request		Foreign Language Access
	Permit Applications	Public outreach	E mail
	Job Application		Search
	Document Request		Comments
	Pay utilities bills		E mail updates
	Request police documents		Broadcast
	Pay taxes		
	Report crimes		Personalized sites

In actual fact, the two tables (Table 1. and Table 2.) evoke some possible geographies of digital spaces, which reproduce those elements constituting the real environment of urban space organization conceptualized by urban studies: on the one hand the Anglo-Saxon Central Business District, on the other the 'Agora' the citizens' meeting place, the discussion space so strongly rooted in traditional Italian town planning and urban environments (Benevolo, 1996) and the ancient Italian

Table 2.— Benchmarking methodology B)

Censis categories		Censis categories	
Institutional Contents and transparency	Info to Contact Chief Officers	Accessibility	Disabled People Access
	Public Officer Names		Version Text
	Info Competences & Functions		No Splashes
	Info Political Board		No Frames
	Info Contact	Integration and Interaction	Forum/Chat
	Info Board targets		Comments to Specific Services
	Public Acts Publications	Urban Marketing	Touristic Informations
	Statute Publications		Accommodation Capacity
	Balance Sheets Publication		Local Events Info
Quality and Services' Interactivity	Downloading Forms		Foreign Language
	Forms (to Fill in on line)		Investment opportunities
	Notice of competition Forms		Financial Aids
	Security in Exchanging Data		Provided Services
Usability	Characterizing Element in every page	Technology quality	No Interrupted Links
	link to Home Page		Compatible Browsers
	Path		Home Page < 40Kb
	Site Map		
	Link		Graphic HP < 2,5
	Search		

urban structure (Bonora, 1991). This analogy with real spaces is repeated, even though on a different plane, namely, that regarding the outcomes of the contrasting research methodologies. For a better understanding of the whole discourse, some reference to urban geography literature would be useful.

Geographical approaches to urban studies have produced by and large two possible models of territorial organization: the hierarchical model and the network one (on urban networks, Dematteis, 1990). In the first case, one central area where directional functions are concentrated, called Central Business District (CBD) by Anglo-Saxon scholars, is opposed to the peripheral areas, generally of much smaller size, specialized in accommodating less important functions essentially covering the microlocality. In order to explain the role played by several centres in a particular area the rank-dimension rule has been introduced, which holds that the larger the centre the more advanced the functions associated with it, and vice versa. The urban area of New York City can rightly be considered paradigmatic of this kind of territorial model. What is interesting is that the Brown University survey, on the basis of the chosen parameters, leads us to trace a possible parallelism between the real shape of the city of New York, as it has been presented, and its virtual transposition. In the analysis of the www.ci.nyc.ny.us, it is easy to see, in fact, that the district web sites not only do not offer services of the same level as the city's official web site, but they are closely dependent on it, as they have no independent spaces but only pages connected internally to the Central Home Page.

On the other hand, the reticular or systemic space of the modern networked organization of economic systems and city localities triggers interactive processes which tend to modify previous urban scenarios, making them more complex and interconnected. These interactive processes are due in particular to the effect of immaterial relations (flow of communications, provision of technological innovation, activities concerning ideas and management). In a context of the network type, some geographic entities are best characterized by an extraordinary ability to create technological, organisational and socio-political innovation at a world-wide scale (for methodological aspects and Italian examples, Conti&Spriano, 1991). Because of the role that these kinds of cities succeed in playing on the international urban network they represent advanced level nodes. Their positioning, then, is that typical of a door, the access-way to the system, and of a node, the starting point of the total system of relations that rotates around the role played and developed by such world-wide cities.

An urban network consequently envisages a structure made up of many centres specialized in one or more functions, each centre assuming a certain role according the kind of functions concentrated in it, and therefore representing a node of the system (Dematteis and Emanuel, 1987).

Every node, as we have seen, is closely dependent on and linked with the others. An example, of a reticular system in the Italian panorama is the urban area of the city of Naples. In this case, in fact, what the city offers is represented by the roles played by the quarters, located like a crown around the centre: Chiaia, as a tourist and free time area, Fuorigrotta as a residential area, the Vomero as a commercial area. Also here, from the virtual transposition of the Naples area emerges the city's real nature. In the virtual area of Naples, in fact, official and

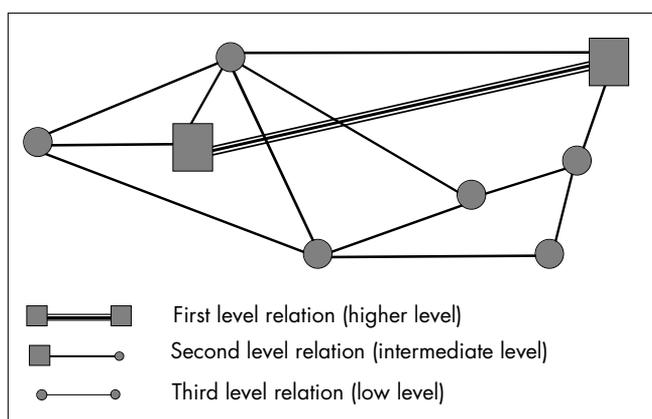


Figure 1.— *Networked urban relations at different levels*

private web sites coexist, and thanks to the NapoliA plan (www.napoliA.it) they should be brought together into a single network, with identical graphic format and internal links.

The above observations, concerning a possible correspondence between the classic theories of urban geography and the organization of virtual spaces, derive less from the data in the Censis and West surveys than from a later analysis of Italian on-line cities carried out through direct observation in the following way. The on-line cities chosen were the 'capoluogo' of each region -the main regional administrative town - except in the case of Reggio Calabria which was considered instead of Catanzaro, still not active on the web, in order to assure one representation to the Calabria region and so to obtain a complete panorama on the state of art of digital cities in Italy.

We proceeded through a benchmarking analysis of the existing methodologies (West and Censis), we selected some concepts of urban geography for analysing digital spaces, we formulated other new criteria fitted to the e-space analysis inspired by the concepts of urban geography to highlight the interlinkages and convergences/differences between traditional spaces and digital ones. The outcome is a new methodological framework as follows.

Like the subject of analysis, the choice of the method of appraisal and also the contents taken into consideration diverge from the more general Censis surveys, characterized by a geographical perspective. While, in fact, as in the above surveys, we analyzed basic parameters like accessibility or contents, greater attention was paid to the observation of all those tools that mainly influence, directly or indirectly, place management and planning. Great attention was placed on the presence of spaces for discussion and communication about local planning issues, or to interactive maps and cartographic web labs, obtaining highly interesting and often unexpected outcomes. These criteria reflect the experience of place in terms of human interaction for socio-political-cultural reasons.

Similarly, following the Anglo-Saxon experience, we did not neglect the analysis of economic functions, and therefore the public administration's attention to aspects of transactivity. The contents taken into consideration can be outlined, as has been done earlier, in the following way.

Our proposed concept of a digital city in a geographical perspective is a mediated space of geographical contexts taking into account some spheres of interaction:

- the spatial experience of place in terms of accessibility, mobility, flows, localized resources (categories of accessibility, basic contents)
- the dynamics of economic spaces (category of transactivity, criteria of security and digital signature)
- the dynamics of civic spaces (category of interactivity i.e. socio-political relations)
- the geographically advanced dynamics in terms of place self-organization, self-reflexivity, planning (category of geographically advanced contents, which is a distinguishing feature).

For each category a set of criteria was designed to allow for empirical research and a methodological guide to planning digital cities.

The new methodological framework of analysis has been applied to the on-line cities in Italy with direct observation of every digital city, simulating a 'virtual' field analysis.

In particular, each site was attributed a grade based on the correspondence to each of the parameters chosen following a scale from "low" (basso), to

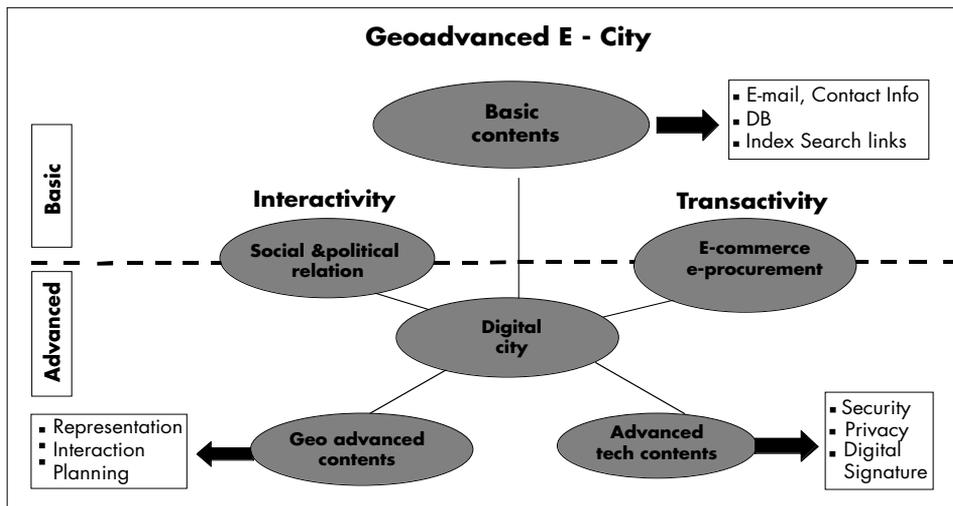


Figure 2.— The geographically advanced e-city

Table 3.- Generation of on-line cities: the geographically advanced city.

CATEGORIES		CATEGORIES	
ACCESSIBILITY	VISIBILITY	POLITICAL AND SOCIAL RELATIONS	INTEGRATION WITH OTHER INSTITUTION
	WEB DESIGN		URP-Liaison office with citizens
	PATH		COMMUNITIES & FORUM
	FRAMES	ADVANCED TECH-CONTENTS	SECURITY
	FOREIGN LANGUAGE		PRIVACY
	WEB ADDRESS		DIGITAL SIGNATURE
	DISABLED PEOPLE ACCESS		
BASIC CONTENTS	E-MAIL	GEO ADVANCED CONTENTS (TERRITORIAL PLANNING AND GEOGRAPHICAL REPRESENTATION)	DISCUSSION LIST ABOUT TERRITORIAL PLANNING
	PHONE AND ADDRESS CONTACT INFO		CARTOGRAPHIC WEB LAB
	INDEX		TERRITORIAL MARKETING (info about tourist places, info about events, booking...)
	DATABASES		INTERACTIVE MAPS
	SEARCH		PHOTO AND VIDEO CLIP
	LINKS TO OTHER SITES		HISTORICAL CARTOGRAPHY
ECONOMIC FUNCTIONS (TRANSACTIVITY)	INFORMATIONS		FORUM AND CHAT ABOUT LOCALIZED ISSUES
	SERVICES		
	E-COMMERCE		
	E -PROCUREMENT		

“medium” (medio), to “high” (alto). We obtained, firstly, a more complex and problematic picture than that given by the presence/absence criterion chosen in the two previous studies considered.

This methodology was applied to Italian e-cities (main cities at a regional level) and we ranked on-line cities to have a broad picture of the degree of evolution of Italian geocyberspace. In a second step, in order to achieve a clearer representation, each grade was equated to a number from zero to three to obtain a ranking of Italian digital cities.

6. APPLYING THE METHODOLOGY: ITALIAN E-URBAN GEOGRAPHY

Italian urban geography-related research into the international integration of Italian cities in the European context (Bonaverò 1997), focussing especially on the distribution of international functions in Italy, can serve as a useful basis for comparison with our survey on digital cities. The above-mentioned study is based upon a method of analysis that starts by singling out 20 variables related to six different function types: productive, financial, scientific and educational, communications, receptive, and political-diplomatic functions. Some important variables, like those related to “cultural environment”, instead, are not mentioned. According to Soldatos (1990), however, this is one of the seven components used to define the specificity of every urban system and its internationalisation potential. As to the territorial aspect, then, a wide field of analysis was chosen covering the whole national urban system: not only the upper nodes of the urban hierarchy but also all centres including middle-sized and small ones.

The survey (Bonaverò, 1997) shows that more than half of the urban systems considered, 415 out of 784, have international functions and that the most wide-spread variables belong to the productive function category linked to the recurring presence of firms exporting goods and services. The most discriminating variables prove to be those related to financial functions, apart from airplane connections. The first and clearest element emerging from the analysis of the results is the unbalanced territorial distribution of international functions; while the centre-north regions, apart from a few small areas, prove to be equally endowed with internationalisation attributes, in the south the situation appears to be reversed: some regions, e.g. Puglia, Abruzzo and partially Campania, seem to be properly equipped, while in others, e.g. Calabria and Basilicata, most of the centres considered show a lack of facilities, as do the islands.

The situation of regional differences makes it possible to draw up a diagram highlighting three hierarchical levels in international functions within the Italian urban system. The first level only includes Milan and Rome, which are the only cities to combine all the 20 variables considered. The second level includes some of the main Italian urban centres - Turin, Genoa, Venice, Bologna, Naples - which show many inconsistencies, even though they have some features in common. The third level includes Trieste, Bari, Palermo, Catania and Cagliari. According to Soldatos's (1990) theory, which points out the importance of “multidimensional type” provisions, it emerges that it is not only the total amount of provisions for international functions but also their variety and synergy that must be taken into account for such profiles.

On the grounds of these variables we can see how Rome and Milan, even if on the whole very different from each other, reach a level of excellence in the Italian survey. Milan stands out for “international executive, strategic and dynamic growth functions” (Soldatos 1990) which make it the only Italian European-level international city, while Rome, instead, clearly stands out for its institutional elements as well as being well supplied with hospitality facilities.

The outlines of the cities that belong to the second hierarchical level, once again different from one another for specific attributes, can still be found to have something in common in specific fields and this allows us to split them in two sub-groups which, however, are not to be seen as a further classification.

While Turin, Genoa and Naples appeared to share a common specialization both in political-diplomatic functions and in scientific-educational ones, on the other hand Florence, Venice and Bologna showed good hospitality facilities, clearly an outcome of their great capacity for attracting tourists. It has to be underlined that Venice's pre-eminence in hospitality facilities is based on the excellent supply of hotel infrastructures, while Bologna, lacking in this field, reaches a good position and can be considered in a top position for its leadership in trade fairs and international expos, which also leads to the city's high level of interactivity features.

Lastly, in the third group we find those municipalities, e.g. Trieste, Palermo, Bari, Cagliari and Catania, identified by definitely less consistent provision of international functions compared with the previous group: Trieste has to be seen separately because it plummeted solely due to its poor air connections. It still is, all in all, fairly well supplied for international functions, especially ones related with the political-diplomatic sector, since it holds a key position in eastern Europe. Bari also seems, somehow, to stand out from the group thanks to its participation in EU research networks. Finally, Catania and Cagliari lie at the bottom because of their general facilities are poor.

The data described above can easily be shown diagrammatically as follows.

From the point of view of the Italian digital urban system we obtained the following results by applying the methodology to on-line cities which can be summarized as follows:

6.1. Accessibility

As discussed previously, in the category of accessibility different pointers considered are: web address, visibility, graphics and indication of pathway. Nearly

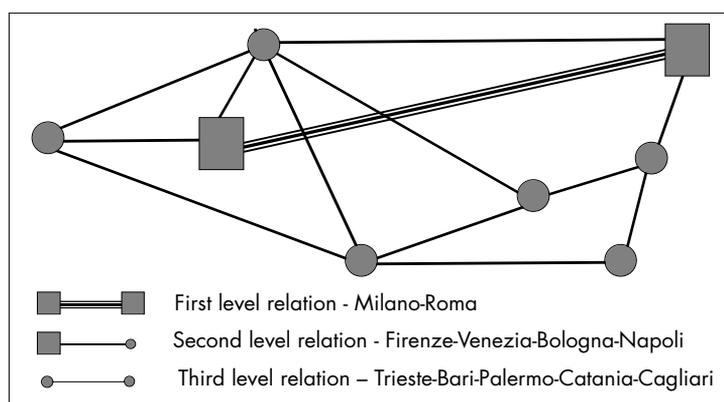


Figure 3.— Networked urban relations at different levels for international functions.

all digital cities visited have an address of the type `www.comune.nome.it`, with the exception of Reggio Calabria, with a more complex address, having introduced a hyphen between the words Reggio and Calabria. This type of address prevents fast easy searching and accessibility and in the case of the Calabrian digital cities makes a search engine necessary. To compensate for this weakness, in many cases a careful internal structure is provided with clear indications on information available, ensuring good recognizability and lack of frames, creating considerable advantages for easier usability. By far the weakest aspect is the possibility of access for the disabled. Only the digital cities of Bologna, Venice and Florence, and in some measure Naples, make available instruments mitigating the handicap barriers to the services offers. Bologna, representing a model of digital Italy, overturns the secondary placement given by urban geography studies and shows, even in this case, all its added value: it is the only Italian city to earn the U.S. sites exclusive label of non-profit organisations found on US sites 'Bobby Approved'. We can also note the commitment shown by the city of Venice. Venice offers a particularly innovative solution of completely downloadable interactive tactile maps, equipped with a space dedicated to information on the services activated for blind persons. These attributes cannot but be considered a boost to the internationalisation of the urban fabric. An obstacle to access to Italian on-line cities is the scarcity of foreign languages. In this respect the only Italian city to deserve the top appraisal is certainly Turin, for supplying five languages, Italian, English, French, German and Spanish. This feature, against all expectations, is not found on the web sites of Rome and Milan, cases of excellence in the provision of international functions, but with only bilingual sites. In the other cases, limited to the cities of Aosta, Bologna, Florence, Milan, l'Aquila, Rome, Naples and Udine, there are never more than two access languages; the second language is always English, except in Aosta, where it is French. All these observations lead us to conclude that, although in recent years accessibility to Italian on-line cities has improved, a lot of work still remains to be done in order to be comparable to the more highly developed American experience.

6.2. Basic contents

This category gets the best evaluations. Nearly all the digital cities in fact allow the user to contact the person responsible or the public agencies through e-mail addresses. This is lacking only in the cases of Naples and Palermo, replaced by other types of contact; equally common are internal search engines, links and indexes of sections.

6.3. Economic functions

While most of the digital cities present a broad range of information on the offices, government bodies and their political objectives, it is difficult instead to find the possibility, typical of the American model, of executing transactions on-line. Everywhere the services offered are limited to the downloading of forms or

the request for certificates. On this aspect, an exemplary place is certainly Genoa which provides users with a space, the portal TU 6 GENOA, completely dedicated to services on line, offering the possibility of paying fines, taxes and even enrolment fees for municipal nursery schools. The efforts of Bologna, Turin, Florence and Perugia in this direction should also be pointed out. The sections devoted to e-commerce and e-procurement are therefore still in a starting phase, and they are barely visible on the e-Naples and e-Florence sites.

6.4. Political and social relations

This aspect is well developed in Italian on line cities. Digital meeting places for civic discussion and public debate on various issues ranging from place management to subjects peculiar to specific urban contexts are commonly found. For example, Florence offers a forum on the city traffic, as does Bologna, but also Reggio Calabria and Potenza provide ample space and pages dedicated to discussion; in both cases the citizens can introduce subjects for debate. And all the Italian digital territory is homogenous in presenting pages reserved for the offices handling relations with the public. An interesting opening towards internationalisation that could potentially help to alleviate the weakness highlighted in this field by Bonavero (1997) can be seen in the dedicated web pages for non-Europeans in the Rome city network, which actually contain important legal information and links to related sites.

6.5. Advanced technological contents

Like transactive services, elements connected to the protection of privacy and security are also insufficiently widespread on e-spaces. It is not yet standard practice to give transparent communication of privacy measures, the best examples being Aosta and Milan. Even more disappointing is the poor attention paid to user security, revealed by the survey. The only case in which these measures are complied with seems to be the use of the digital signature in Bologna, to exchange documents on-line and to verify authenticity and origin of documents.

6.6. Geographical-advanced contents

The results obtained are surprising. Information on local events, the history of the municipality, and entrepreneurial opportunities are present in nearly all the digital cities. Cartographic resources are surprisingly common, such as interactive maps as in the excellent case of Udine which offers the user the possibility of a digital tour with visits to monuments. Photos and video clips also show the urban itineraries and environment of Ancona, Perugia and Naples, while Reggio Calabria even offers Web News informing on local events. Some digital cities like Florence also devote space to discussions on local planning projects. The adequate hospitality facilities shown by Rome in Bonavero's (1997) survey are confirmed by the analysis of "digital Rome" where large spaces in the "Rome-tourism" section have been dedicated to accommodation, both hotel, farm holiday and B&B, and to transportation

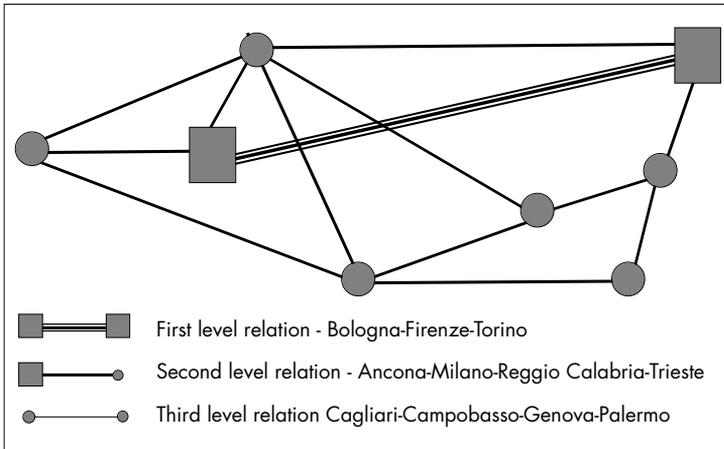


Figure 4.— Italian e-city organization

with hints about the various cultural itineraries available. Such space is usually less developed on the networks of other Italian cities where, in most cases, only some help about hotel availability is given and only in an informative way.

To sum up, the overall picture emerging from this enquiry about the Italian urban system's openings towards the international scene shows various points of convergence with digital geographic analysis. This is evident both in the contrast between the North, which reaches outwards more and has better structural and functional provisions, and the South, still lagging behind; and also in the identification on a national scale of three developmental steps. However, focusing better we clearly see that Carla Lanza Dematteis's (2001) statement that the main feature of digital cities is, in different ways from other digital communities, their close link with real geographical space, can only be considered from an exclusively territorial point of view since, as has been shown above, there is a considerable gap between a real city's facilities and its digital transposition.

7. E-URBAN GEOGRAPHY IN ITALY AND INTERLINKAGE OF TRADITIONAL-DIGITAL PLACES: INITIAL STATEMENTS

The above survey gives some useful general indications that, in most cases, allow us to identify interesting correlations between Italy's real geography and its cyberspace, and in a few other cases to highlight far more significant divergences. The use of a methodology with digital territories, the above-mentioned main provincial towns, leads immediately to a subverting of the three levels highlighted by Bonavero (1997) in regard to his first cognitive aim.

The Italian urban system's hierarchical and polarised structure is not duplicated in digital space since the pre-eminence of the capital city and the absolutely nation-wide predominant position of the Lombard capital, emerging from

Bonavero's (1997) survey, are not reflected in the organization of digital spaces. This is actually the field where top national-level cities - first of all Bologna and then Florence and Turin - find their rightful place both for heterogeneity of functions featured, and for the importance of these functions: seen from the point of view of the survey, instead, they are only on the second rung of the above hierarchy together with Naples, Genoa and Venice. As far as Bologna and Florence are concerned, we are referring to the pre-eminent function they hold in the Italian urban system in the "one hundred cities-structure" (Dematteis, 1997). Since in Turin there has only recently been a move towards strategic planning, great importance is placed on the use of ICT (Occelli & Lanza, 2002). It would be very interesting to be able to assert that such a gap originates in these urban systems from the need to overcome the weakness of real provisions for international functions by using digital reality. It would also be interesting to assert that the process might apply inversely to the first two cities analyzed and that the plan is to produce urban growth through the internet. These sketchy conclusions clearly derive from the analysis of single indicators

The classification of the salient elements of Italian on-line cities ends up confirming the well-known dichotomy between a more advanced North and Centre and a backward Southern Italy, along with the ancient regional differences due to cultural traditions and political experiences from the past and produced by the same civil history of the Italian municipalities. The dynamic role of medium-sized towns in Central and North East Italy has been confirmed also in terms of Italian economic geography (Conti&Sforzi, 1997).

Moreover, we can see that in the last decade the fast affirmation of computers in Italian society has produced a substantial levelling of behaviour and demand for services vertically across the social strata, involving the growing middle class, and horizontally over the national territory involving the geographic network of inter-city relations.

It is precisely the greater importance of ICT both at government level and in terms of public demand that allows us to foresee within a brief space of time the homologation of the services offered, which, through the transfer of best practices (benchmarking) also determines a rapid development of the structure of urban sites. This is the conclusion reached by considering also the investment in the PORs (Regional Operative Plans/Piani operativi regionali) introduced by the EU in the Southern regions with the use of EU funds in 2000-2006 where there is a considerable financial commitment to the Southern urban networks. On the other hand, under special projects included in EU programs some Southern municipal administrations had already implemented systems of communication and participation in the development of urban networks, carrying out experimentation activity in terms of accessibility, graphics and contents.

Some conclusions can be advanced: we could define the different experiences of on-line cities - both temporally and spatially- as different generations of on-line cities. The birth of on-line cities has been accelerated in towns with solid traditions in

citizen involvement and civic government and their experience has acted as a reference point for other places less advanced in governance. In the first generation the economic dominance of some towns is not relevant. The transition from a first generation, with a restricted amount of elements, reduced graphic design and interactivity, to the second one where both technological contents and services to citizens are added, occurs at different speed depending on the local geopolitical context. The latest generation - where transactivity and advanced technological contents are more and more developed - is in progress in a few urban areas (Bologna, Florence, Turin) characterized by distinctive competencies in innovation (social and technical) and cannot be standardized at the moment in other geographical contexts.

From the direct analysis another aspect emerges, not always clearly expressed, regarding problems of an economic nature not on the plane of innovative planning but at the level of the management and maintenance of local on-line services. While a significant contribution will come from the E.U. funding to the Southern regions, similar benefits should come from a government plan of vast geographic scope aiming at the development of the Information Society. This plan will meet not inconsiderable financial obstacles due to the unfavourable economic situation current in Italy and due to the cultural nature of government bodies.

The last consideration is related to various discussions with experts focussing on the possible interest that businesses manifest in these tools and e-environments. The problem of sponsorship and openness to the private business sector is not a simple issue. On the one hand, the currently prevailing political line would seem to strongly support broader private participation in activities traditionally classified as the domain of the public sector, on the other hand the worry is not unjustified in terms of the risk that this kind of partnership (public-private) in such a space (e-urban 'public' space) may hold. An equitable and correct solution may be reached when an advanced common standard, also in geographical terms, establishes itself so that clear rules of participation and public-private collaboration can be made, fostering broader citizen participation and geographic transparency and variety. If the Italian society and the geographic specificity of the numerous cities of the country are able to contribute to the constant improvement of on-line cities following the best international standards and a contextualization of contents and functions, further research will be able to measure the stage of advancement in terms of quality and speed of implementation and advantageous give-and-take (à la J. Gottmann) with traditional places.

8. CONCLUSIONS: INTEGRATING GEOGRAPHICAL REPRESENTATION CRITERIA INTO TRADITIONAL-DIGITAL CITY PLANNING

Our general concern in the research was to investigate the geographical nature of cyberspaces, their spatial variation and disparity and convergences or divergences with traditional places. For this we developed a benchmarking methodology and applied it in order to assess a framework of digital urban geography

Table 4.- Visions of e-city generations

Evolution generation	Phase	Features	Geographical opportunities & constraints	Urban planning required
On line "Window City"	I The Birth	Essentiality	Opportunity perceived every where. Economic Urban Dominance doesn't influence	
Virtual City	II Diffusion & dev't	Contents and services improved	Geographical divides matter local tradition in civic gov't and social cohesion	*
Digital City	III Transactivity & Interact	E-commerce, E-procurement, forum, chat-rooms	Law crucial factor Ec. & Business influence. Urban context orientated to innovation and relations	**
	IV Geoadvanced E-City	Geo tools of representation, localized forum, chat. Participated local planning	Georeferenced and contextualized themes & functions orientation to "on ground" effects	***

in Italy (main towns at the regional level). A further research will aim at assessing and giving a detailed interpretation of interactions between traditional and e-space in terms of planning practices. The major task of planning digital cities following geographical representation criteria could be a precondition to integrate geographical culture into traditional-digital city planning.

The research yielded some useful general pointers which, in most cases, allow us to identify interesting matches between Italy's real geography and its cyberspace, and in a few other cases to highlight far more significant gaps: the application of the methodology shows a subverting of the three levels underlined by studies on the traditional urban system; the hierarchical and polarised structure of the Italian urban system is not markedly duplicated in digital space since the pre-eminence of the capital city and the absolutely predominant position nationwide of the Lombard capital were not reflected in the organization of digital spaces. The top national-level cities - first of all Bologna and then Florence and Turin - find their place both for heterogeneity of functions featured, and for the importance of these functions: seen from the point of view of the survey considered, instead, they are only on the second rung of the above hierarchy together with Naples, Genoa and Venice. The e-urban system mirrors the pre-eminence of the urban system in the so-called third Italy as opposed to the old industrial core of the north-west or to the South (the case of Turin is explained in terms of a local political agenda in favour of ICT for Turin's urban future). For single functions reflecting an original vocation or the special concern of local bodies, some excellent positions

were gained by more marginal cities or metropolitan centres. It would be very interesting to be able to assert that gaps originate in these urban systems from the need to overcome the weakness of real provisions for international functions by using virtual reality. It would also be interesting to assert that the process might apply inversely to the first two cities analysed and that the plan is to produce urban growth through the Internet. These sketchy conclusions clearly derive from the analysis of single indicators

The classification of the salient elements of Italian on-line cities tends by and large to confirm the well known dichotomy between a more advanced North and Centre and a backward Southern Italy, along with the ancient regional differences due to cultural traditions and political experiences from the past and produced by the very history of the Italian municipalities. The dynamic role of medium-sized towns of Central and North Eastern Italy has been confirmed also in terms of Italian economic geography.

Furthermore, the greater importance of ICT at government level, and in terms of public demand may also determine a rapid advancement of on-line city services for local development. This is the conclusion reached also by considering the investment in the PORs (Piani operativi regionali/Regional Operative Plans) introduced by the EU in the Southern regions with the use of E.U. funds in 2000-2006 where there is a considerable financial commitment to the Southern urban networks.

Based upon this scenario and the discussion on the geographical perspective, some conclusions can be advanced in general terms not to be applied only to Italian cases: we defined the different experiences of on-line cities - both temporally and spatially- as different generations of on-line cities. Each phase experiences different geographical factors shaping the nature of cyber places and needing different strategies in terms of place planning.

The cyberspace variation is not strictly linked to the nature of traditional places in terms of economic hegemony but in terms of the heterogeneity of urban identity or specific local awareness of the role of ICT in local development. Certainly the demarcation of places and boundaries in e-space produce a different geography compared to the traditional one and require a greater commitment to integrating planning objectives and tools in e-space to ensure interaction with traditional places.

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Table 5. – E-cities evaluation

		AN	AO	BA	BO	CA	CB	RC	FI	GE	AQ	MI	NA	PA	PG	PZ	RM	TO	TS	UD	VE	
ACCESSIBILITY	VISIBILITY	M	M		M	H	H	H	M	L	M	M	H	M	H	H	M	H	H	L	H	
	WEB DESIGN	H	L		H	L	L	H	H	L	M	H	H	L	M	M	L	M		H	H	
	GUIDE	H	H		H	H	H	H	H		L	H				H	L	L	L	M		
	FRAMES				M			M	M		H		M									
	FOREIGN LANGUAGE		M					L	M		M	L	M				M	H		M	L	
	WEB ADDRESS	M	M		M	M	M	L	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	DISABLED PEOPLE ACCESS				H				M				L									H
BASIC CONTENTS	E MAIL	H	M		H	L	L	M	M	H	H	H			H	H	L	M	H	H	M	
	PHONE & ADDRESS CONTACT INFO	H	L		H			H	M		H	L	M	H	L	L		M	L		M	
	INDEX								H	L	M	H		H	H	H	H	H	H	H	H	
	DATABASES								L			M						H				
	SEARCH	H			H			M	H	M		H					H	H	M	H	H	
	LINK TO OTHER SITES	M	M		H	M	M	M	M		L	H	M	L	H	L	H	M	H	L		
ECONOMIC FUNCTIONS (TRANSACTIVITY)	INFORMATIONS	H	H		H	L	M	H	H	H	M	H	H	M	H	H	H	H	H	H	M	
	SERVICES	M	L		H	L	L	M	H	H	M	H	L		M			H	M			
	E COMMERCE								M				L									
	E PROCUREMENT	M																M				
SOCIAL & POLITICAL RELATIONS	URP LIASON OFFICE WITH CITIZENS	M			H	M		M	M				L	M	M	M	M	H	L			
	INTEGRATION WITH OTHER CORPORATIONS	M	M		H	H	L	L	M	L			M	L	L					M		
	COMMUNITIES & FORUM	L			H			H	H	M			L	M		H		H	H			
ADVANCED CONTENTS TECHNO	SECURITY	M			M	M		M	L	L					L			M	M			
	PRIVACY	L	H		L			L	L	L		H			L							
	DIGITAL SIGN				H			M														
ADVANCED CONTENTS GEO	TERRITORIAL MARKETING	H	M		H		M		H				H	M	M	M	H	H	H	H		
	DISCUSSION LIST ABOUT TERRITORIAL PLANNING	L							M					M		M		H				
	INTERACTIVE MAPS	H			H		L		H	M	L	H	H	L	H					H	H	
	CARTOGRAPHIC WEB LAB				H				H			H								H		
	PHOTOS AND VIDEO CLIP	H	L		L		M	H	L		H	L		L	M		L		M		M	
	HISTORICAL CARTOGRAPHY	L					M															
FORUM & CHAT ABOUT LOCAL PLACES																						

LEGENDA : AN = ANCONA, AO = AOSTA, BA = BARI, BO = BOLOGNA, CA = CAGLIARI, CB = CAMPOBASSO, RC = REGGIO CALABRIA, FI = FIRENZE, GE = GENOVA, AQ = L'AQUILA, MI = MILANO, NA = NAPOLI, PA = PALERMO, PG = PERUGIA, PZ = POTENZA, RM = ROMA, TO = TORINO, TS = TRIESTE, UD = UDINE, VE = VENEZIA

Table 6. –Ranking of Italian e-cities.

ACCESSIBILITY	BASIC CONTENTS		ECONOMIC FUNCTIONS (TRANSACTIVITY)		SOCIAL & POLITICAL RELATIONS		'TECHNO' ADVANCED CONTENTS		'GEO' ADVANCED CONTENTS		TOTAL		
FIRENZE	16	MILANO	15	FIRENZE	8	BOLOGNA	9	BOLOGNA	6	FIRENZE	12	BOLOGNA	58
BOLOGNA	15	TORINO	15	TORINO	8	FIRENZE	7	REGGIO CALABRIA	5	ANCONA	11	FIRENZE	58
NAPOLI	13	FIRENZE	13	BOLOGNA	6	REGGIO CALABRIA	6	ANCONA	3	BOLOGNA	10	TORINO	47
TORINO	13	BOLOGNA	12	GENOVA	6	TORINO	6	AOSTA	3	MILANO	9	ANCONA	45
REGGIO CALABRIA	12	TRIESTE	12	MILANO	6	ANCONA	5	MILANO	3	CAMPO-BASSO	7	MILANO	44
L'AQUILA	12	ANCONA	11	ANCONA	5	CAGLIARI	5	CAGLIARI	2	L'AQUILA	6	REGGIO CALABRIA	40
POTENZA	12	PERUGIA	10	REGGIO CALABRIA	5	PALERMO	5	FIRENZE	2	UDINE	6	PERUGIA	32
VENEZIA	12	ROMA	10	NAPOLI	5	POTENZA	5	GENOVA	2	VENEZIA	5	L'AQUILA	31
MILANO	11	UDINE	10	PERUGIA	5	NAPOLI	4	PERUGIA	2	PERUGIA	5	TRIESTE	31
ANCONA	10	VENEZIA	10	TRIESTE	5	TRIESTE	4	TORINO	2	PALERMO	4	UDINE	31
AOSTA	10	REGGIO CALABRIA	9	AOSTA	4	GENOVA	3	TRIESTE	2	AOSTA	3	POTENZA	30
UDINE	10	L'AQUILA	9	L'AQUILA	4	PERUGIA	3	BARI	0	REGGIO CALABRIA	3	NAPOLI	29
CAGLIARI	9	POTENZA	8	CAMPOBASSO	3	ROMA	2	CAMPO-BASSO	0	GENOVA	3	VENEZIA	29
CAMPOBASSO	9	PALERMO	7	POTENZA	3	UDINE	2	L'AQUILA	0	NAPOLI	3	AOSTA	26
ROMA	8	GENOVA	6	ROMA	3	AOSTA	1	NAPOLI	0	TORINO	3	CAMPO-BASSO	24
PERUGIA	7	AOSTA	5	UDINE	3	CAMPO-BASSO	1	POTENZA	0	TRIESTE	2	GENOVA	24
TRIESTE	6	CAMPO-BASSO	4	CAGLIARI	2	MILANO	0	PALERMO	0	POTENZA	2	ROMA	24
PALERMO	5	NAPOLI	4	PALERMO	2	L'AQUILA	0	ROMA	0	ROMA	1	PALERMO	23
GENOVA	4	CAGLIARI	3	VENEZIA	2	VENEZIA	0	UDINE	0	BARI	0	CAGLIARI	21
BARI	0	BARI	0	BARI	0	BARI	0	VENEZIA	0	CAGLIARI	0	BARI	0

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