

Kim H. Veltman

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Abstract

This paper focusses on developments on the role of Internet and networked media in the communication of culture. Part one reviews briefly the present state of the Italian scene in four domains: museums, libraries, archives and tourism. It concludes that considerably more co-ordination between international, national, regional and local bodies is needed. Part two turns to the future. Four terms of Aby Warburg serve as a framework for discussion: orientation, word, image and action. Part three turns briefly to the need for a new approach to search engines.

1. Introduction

Communication of culture is a theme as old as culture itself. It entails the whole gamut of media from oral traditions to audio-visual, and multi-medial. Traditionally this has been the domain of print media, radio, television and video. These older media will undoubtedly continue to play a role. This paper is concerned with developments in electronic communication through the Internet and World Wide Web, focusses on Italian examples and outlines possible directions for future development.

The vision of a such a network of communications leading to a global brain is over a century old. Since the advent of the World Wide Web (WWW) in 1990 there has been enormous progress with respect to communication of culture. To begin, a brief review of the present state is useful. At the International level we have organizations such as the International Council on Museums (ICOM),¹ the International Federation of Library Associations (IFLA)² and the International Council on Archives (ICA).³ These organizations play a crucial role in creating a global framework. They also create useful bridges to national and regional sites. For instance, ICOM has a Virtual Library museums pages (VLmp)⁴ site. At the time of writing this article the link to Italy was not working. ICOM also has an Italian Museum Websites Selected list,⁵ which shows 126 museums with 13 in Liguria. Meanwhile, the ICOM *Comitato Nazionale*,⁶ has a working website but no links to museums for non-members.

The Council of Europe has a Directorate of Culture, Cultural and Natural Heritage,⁷ which leads to a series of resources.⁸ The heading for National Cultural Portals does not list Italy. The heading, European Heritage Network (HEREIN), leads to a multilingual thesaurus. Italy is not listed as a member. Meanwhile, The European Commission has created an European Culture Portal,⁹ This has a section on Italy,¹⁰ which leads to the site of the Ministero dei Beni e Attivita Culturali (MiBAC).¹¹ This site is in Italian only. It has a section *Luoghi della Cultura* (Places of Culture), which lists 48 institutions for Liguria. Curiously, although the same ministry has created an Culture Portal¹² (*Il portale della cultura Italiana*), or Italian Culture Net, there is no obvious link to this from the MiBAC home page. Those who manage to reach the portal have access to regional sites such as Toscanamusei.¹³ The link to Liguria was not working in March 2008. Meanwhile, a simple Google search takes us to the site of saperviaggiare.it,¹⁴ which lists 139 institutions for Liguria.

Standing back we see that a naïve user wishing to visit museums in Liguria presently finds broken links through the official ICOM VLmp site and the official Italian Cultural Portal. Using the partial ICOM list they find 13 sites. Assuming they read Italian, the MiBAC site takes them to 48 sites, while a strictly commercial tourist site takes them to 139 museums in Liguria. Much greater co-ordination between different levels is still needed.

2. Memory Institutions

This need for greater co-ordination becomes even more evident when we turn to consider activities in various memory institutions, namely museums, libraries and archives.

3.i Museums

Florence is one of the most famous cities of culture in Italy. In the 1990s, the Uffizi was a pioneer in the introduction of web technologies. In the past decade there have been many changes. Today Florence offers a striking examples of continuing challenges. If we use Google and type in the word Uffizi, we are presented with 1,460,000 hits. For a naïve, potential visitor, who is looking for 1 famous office building turned museum on the Arno, this is very confusing. At the top of this long list is Uffizi, Uffizi gallery, Florence.¹⁵ The site is in English and Italian. It provides some information but is not the official site. A second site is Firenze Musei,¹⁶ which is “a network of thirteen state museums in Florence.” The site is in Italian, English, Spanish, has some useful information and is also not the official site.

The third site is a Wikipedia article about the Uffizi. This is in 25 languages. This has two links called Uffizi Gallery: 1) to the Polo Fiorentino and 2) the La Galleria degli Uffizi di Firenze - The Uffizi Gallery of Florence¹⁷, which as we read at the bottom of the page is a “Sito Web Non Ufficiale.” This second site, aside from the bilingual title, is solely in Italian. It has a link: Uffizi Musei Firenze which takes us to another portal called Florence Museum,¹⁸ operated by TuscanyAll.com, which allows us to book a ticket but does not take us to the Uffizi. If we go back to the La Galleria page, under Informazioni/Information we finally find a Google Map, which shows us where the Uffizi gallery is actually located. There is also a promising heading of Biografie. This takes us to seven biographies: Leonardo Da Vinci, Michelangelo Buonarroti, Sandro Botticelli, Bernardino Di Betto Detto Il Pinturricchio,

Pietro Perugino, Filippo Lippi. Even casual tourists can recognize that this list is incomplete. Nonetheless, a potential visitor from abroad who had never been to the Uffizi might be puzzled to find no mention of Giotto, Cimabue, Raphael and others for whom the museum is famous.

The fourth hit under Uffizi in Google is Virtual Uffizi.¹⁹ This site, by Aperion.it, a web agency in Florence, offers “the complete catalogue of the Uffizi Gallery” including a comprehensive list of short biographies and thumbnail images, which are more useful than those of the official site, in that they are large enough to get an impression of the whole at a first glance. The third hit in Google is the Uffizi Gallery operated by the Polo fiorentino.²⁰ This is the official site of the Uffizi and part of a larger complex as we learn from the Welcome page:

The Polo Museale Fiorentino is an institution which administers the largest ensemble of art works in Italy.

It includes twenty museums varying in importance from the Uffizi Gallery to the Medici Villa of Cerreto Guidi, from the Accademia Gallery to the Cenacolo of Santa Apollonia. It employs over 900 persons (art historians, administrative staff and warders, restorers, photographers, librarians), is responsible for 250 thousand catalogued works of art, and receives over 5 million visitors each year.²¹

The site is officially in Italian and English. The English section has its headings in Italian: e.g. *Vestibolo d'ingresso*, *Sala 4 Trecento fiorentino*, *Sala 7 del primo Rinascimento* etc. One could argue that any educated native speaker of English should know that Rinascimento is the Renaissance. But this cannot be obvious to native speakers of Chinese, Hindu, Russian and other languages. Under these Room headings there are two choices: “View the room – list of the works.” Choosing View the Room takes us to a ground plan but does not allow us to view the room as is the case in Louvre or as was a case in earlier versions of the Uffizi site. Clicking on “list of works” provides us with a summary list of paintings in that room. It is only if we go the Italian version of the site that we discover that each painting has two images relating to the *Inventario* and the *Catalogo* respectively, and an ability to zoom which remains somewhat clumsy. There is also a Nuovi Uffizi²² in Italian and English, which is in development.

Standing back, we note that the official site of one of the most famous museums in the world, in one of the founding countries of the European Union – which boasts 25 official languages - - offers serious access to its collections in only one language: Italian. And even here there are limitations. Italian keyboards do not have umlauts. So an Italian or other visitor using the search function, who types Durer, or Duerer, finds nothing. Only a person who has a German keyboard with umlauts that can type Dürer, or an expert who knows that an umlaut over an u is Alt 129 in Ascii can do a successful search for that author. In the case of some obscure painter in a provincial museum, this would seem like nitpicking. But when it applies to Germany's most famous painter in one of Italy's most famous museums, it reminds us that the quest for interoperability and universal access still has a long ways to go. According to Reuters,²³ the Uffizi is now number 6 in the list of the top 10 museums of the world. Surely in

a world of 6,500 languages, such a museum requires more than a not quite working system in one language.

The Polo is the official site for Florence. It boasts 20 museums. Strikingly absent from this list is the Istituto e Museo di Storia della Scienza, the pioneering work of which made it one of Italy's two entries for the G7's Pilot Project 5: Multimedia Access to World Cultural Heritage, which was shown at the ISAD Conference in Midrand (June 1996). Meanwhile, Florence.com²⁴ lists 31 museums in Florence while Musei e Chiese di Firenze lists 41 sites.²⁵ Those who do research will eventually find Musei Fiorentini, the official site of Comune di Firenze which lists 49 Museums (9 comunali; 20 statali in the Polo list and 24 piccoli e grandi).²⁶ This site, officially in Italian and English, does not work in English. Florence as a city, working in conjunction with the national body (MiBAC) may not be able to stop all pretender sites. But surely Florence as a city, which had 6.427,511 visitors²⁷ in 2004, should be able to offer tourists, scholars and Internet surfers a single comprehensive list of museums, memory institutions and sites of interest on their official site. The bad news is co-ordination is lacking. The good news is that the basic work has been done and often merely needs a simple link.

When we use the telephone we expect to reach a single person and not be distracted by hundreds of vague hits. When we use the Internet to search for the Uffizi or some other cultural site we expect to arrive immediately at one building. In France, this is the case. If we type Louvre we arrive immediately at Louvre Museum Official Website. It is also the case for the National Gallery, London. We have all the coordinates of our buildings and monuments in our GPS systems. These need to be coordinated with our Internet systems into a single coherent system. In 1994, pioneers such as Art + Com demonstrated how one could zoom from outer space to a specific room in a building. That technology is now readily available. A new generation of cultural sites needs to make it an everyday reality. If we added a sensor to every museum object and linked these to corresponding inventory and catalogue numbers we would have an entirely new dimension in tourist guides.

3.ii.Libraries

Such problems are also apparent in the world of libraries. A search in Google for National Library Italy produces 940,000 hits, while a search for Biblioteca Nazionale Italia produces 705,000 hits. The first of these hits is a list of National Library Catalogues,²⁸ (operated by the University of Queensland, Australia) which takes us to the National libraries in Florence and Rome. A more precise search using quotation marks in Google for "National Library Italy" produces 905 hits headed by "national library italy :: Collectorz.com", which has nothing to do with the National Library. A search in Wikipedia under Category: National Library takes us to Biblioteca Nazionale Centrale Firenze, which has been responsible for all Italian literature since 1870 and the Biblioteca Nazionale Centrale di Roma founded in 1875. Wiki offers no link to the Central Catalogue in Rome. Nor does it tell us anything about the National Libraries in Bari, Cosenza, Milan, Naples, Palermo, Potenza, Turin and Venice.²⁹

Italy is probably unique in being a country having 10 institutions with National Library in their title of which two call themselves the National Central Library.³⁰

Considerable further research reveals that there is, of course, a union catalogue (Catalogo unico), formally called OPAC SBN, of the Istituto Centrale per il Catalogo Unico delle Biblioteche Italiane e per le Informazioni Bibliografiche.³¹ This is in Italian and English. A basic search in Italian under the subject Prospettiva³² leads to 204 hits. A basic search in English under the subject Perspective leads to 0 hits. A basic search under the subject (the Latin term) perspectiva leads to two hits, neither of which is a Latin title. A search under all fields yields the following hits: Prospettiva 3488; Perspective 5585 and Perspectiva 400. In the case of perspective, the first page of ten headings, has ten Spanish titles and not a single Latin title. These results from the country that claims to have coined the term perspective, are the more striking if we perform the identical search in a German union catalogue (Appendix 1).

Among its many initiatives MiBAC has a site with the promising title of: Internet Culturale.³³ The site claims to operate in four languages: Italian, English, Spanish, French. It has a direct link to the union catalogue (OPAC SBN) described above. As one might expect the Italian and English versions of Internet Culturale offer the same results for *prospettiva* and perspective as the official ICCU site. If one uses the Spanish interface and types the Spanish equivalent *perspectiva*, there are 2 hits, one in Italian, the other in English. If one uses the French interface and types the French equivalent, *perspective*, there are 0 hits. Since the Renaissance there have been profound links between Italy and France. Italy “exported” Leonardo, Serlio and Rosso Firoentino and trained Poussin. France made famous the Italian idea of vedute, developed Italian gardens in new ways and even tried to import Bernini. In a future Internet Culturale which has Italian as its base language, French should be an active language, along with English, Spanish and German.

At the European level, Italy is a member of a project for The European Library, which offers access to the resources of 47 national libraries in 20 languages.³⁴ Italy and Russia are the only countries in this list that have two national libraries. In the case of Italy, we are taken to the sites of the two national central libraries in Florence and Rome. Repeating the same search outlined above we get radically different results by the three official representatives at the national level (Table 1). Again it is instructive to compare these results in Italy with those in Germany using precisely the same terms (Appendix 1).

	Catalogo Unico	BN Firenze ³⁵	BN Roma ³⁶
Prospettiva	3448	1706	1006
Perspective	5585	228	311
Perspectiva	400	36	39

Table 1. Search results for the same three words, *prospettiva*, *perspective* and *perspectiva*, in three national databases.

The author of this article has been working on a standard bibliography³⁷ which has 8,000 primary and 7000 secondary sources. Attempts to keep up with contemporary bibliography were put on hold in 1990 because major libraries were promising that their collections would

soon be fully online. Eighteen years later, the discrepancies evidenced in Table 1 confirm that there is still a considerable gap between the rhetoric of universal access and everyday realities.

2.ii. Archives

Italy has been a pioneer in the domain of archives in electronic form. Since 1997 there has been an ARCHIVI portal.³⁸ The English version promises links to “Archivi e Soprintendenze”, “144 State Archives and Sections of State Archives” and to “19 archival supervision agencies.” None of these work. Those who use the Italian version are more fortunate.

3. Tourist Sites

A similar pattern is evident in the case of sites directed officially at tourism. On the positive side the site of www.Italianculture.net provides an excellent overview. In their section on the province of Friuli we still find a curious notes that “La regione è in costruzione” as if a region, which is the seat of the Istituto Italiano di Paleontologia had only just come into existence.

Tourism Bari	577,000	Tourism Puglia	154,000
Tourism Cosenza	77,900	Tourism Reggio Calabria	212,000
Tourism Florence	1,810,000	Tourism Toscana	446,000
		Tourism Tuscany	108,000
Tourism Genoa	218,000	Tourism Liguria	183,000
Tourism Milan	516,000	Tourism Lombardia	129,000
		Tourism Lombardy	223,000
Tourism Naples	360,000	Tourism Campania	200,000
Tourism Palermo	303,000	Tourism Sicilia	190,000
		Tourism Sicily	77,000
Tourism Rome	566,000	Tourism Lazio	181,000
Tourism Potenza	67,200	Tourism Basilicata	222,000
Tourism Turin	626,000	Tourism Piemonte	143,000
Tourism Venice	491,000	Tourism Veneto	464,000

Table 2. Hits in Google for the word tourism plus the names of the eleven Italian cities and corresponding figures for their respective provinces.

In the first decades of the Internet there was a continual worry about whether there would be enough hits. These concerns continued to dominate the 1990s. One might argue that today the reverse is true: the excessive number of hits have become overwhelming problems for several reasons. First, there is the practical problem of quantity. Not even the greatest fan of Florence wants 1,810,000 hits when they are looking for some 40 museums and sites. Second, there is a problem of understanding the numbers. Florence has three times the number of websites than Rome. Even great enthusiasts of Florence may have difficulty in arguing persuasively that Florence is three times more important than Rome.

One would expect that the hits for an entire province would far exceed those for a specific city in that province. A glance at Table 2 confirms that although this logic applies to Basilicata, it does not apply to the other cities and their accompanying regions. In short, we have numbers which make a statistician's heart jump for joy with respect to their magnitude. But these same numbers are confusing and not helpful for tourists in whose name they have presumably been created. Needed is more work in the direction of the Italian cultural portal such that we arrive at less hits and more facts.

The media theorist Marshall McLuhan once noted the danger of looking towards the future in a rear view mirror: i.e. the danger of using the techniques of an earlier media in defining new media. Hereby, we restrict the potentials of new media to the limitations of old media. If we stand back to take a global view of developments during the past decades we see that this is precisely what has been happening. The examples cited above confirm that too often we are creating electronic versions of old catalogues rather than integrating them into whole new frameworks. Needed is not more of the same, but rather a new approach.

4. Orientation

A century ago, Aby Warburg (1866-1929), had a vision of such a new approach to cultural history that involved four categories: orientation, word, image and action. By orientation he meant philosophy, religion and science, disciplines that provide our frameworks for structuring the world.

One of the most obvious frameworks is geography. Today almost every serious site has some form of map. Our libraries have map rooms which collect this important tradition. Some of these maps are national, other regional, others of a specific city. City Museums of the history of a city such as Florence typically have numerous maps early maps of their city. Increasingly tools such as Google maps are making contemporary maps available on mobile phones. In future this could be complemented by historical maps. A scenario: a tourist is standing the Piazza della Signoria and has lost their bearings. A Google Map or its equivalent shows them where they are. The tourist then wonders what the square looked like in the Renaissance. They are taken to specific historical maps from the 15th and 16th centuries which helps them to imagine the Florence at the time of Brunelleschi or Savonarola. If this sounds far fetched it is instructive to recall the NUME (Nuovo Museo Elettronico) project in Bologna has been working in this direction for over a decade.

This approach can be taken much further. The map rooms in our libraries include maps of both the heavens and the earth, because historically geography was intimately connected with astronomy. So the same approach could allow us to see maps of the heavens for the 15th, 16th or any other century. Various important frescoes show us such maps of the heavens, e.g. the Palazzo della Ragione (Padua), the Palazzo Schifanoia (Ferrara) and the Palazzo Farnese (Rome and Caprarola). Using an historical version of a GPS system, Asian tourists unfamiliar with Western constellations could literally have these heavenly worlds of the past opened up to them, not just by identifying individual figures but also the underlying system. Similarly, Europeans travelling the East could use the same techniques to understand other maps of the heavens. Today, complex tours have professional guides who provide lectures to a group as

they travel through a series of cities. In future this could be complemented by select thematic packages online that introduce potential tourists, students and scholars alike to such interconnections.

In the past 50 years, we have developed GPS system that have evolved into Universal Mobile Telecommunications Systems (UMTS). In the next 50 years we need to extend this to an historical version, that leads to the equivalent of a GPS of theoretical, mental and imaginary worlds. During the Middle Ages, scholasticism distinguished clearly between the physical world, animal, mineral, vegetable and human kingdoms. These distinctions are the basis of contemporary disciplines such as mineralogy, botany, biology and life sciences. Today's search engines ignore these distinctions. For example, if we type in the word, Palm Tree, into Google we receive 2,730,000 hits. Botanical, religious, philosophical, medical, artistic and others representations are all indiscriminately confused in a single seemingly interminable list. Among the early gnostic sects the palm was a symbol of the Father of Light and the spring well was a symbol of the Mother of Life. Anyone wishing to find this kind of palm in a list of 2,730,00 hits would need a great deal of time and an even greater amount of patience.

Catalogues in our memory institutions have very specific information about the location, time, medium and discipline connected with verbal and visual descriptions of palms. In future, we need engines that not only find palms but then allow us to see subsets by time (When), place (Where), medium (How) and discipline or purpose (Why). We could then search for palms in Syria in the period 800-850 in a religious context. With such filters a list of 2,730,000 hits would lead to a small subset that is both manageable and useful.

This approach can be taken much further. Ancient thinkers conceived of a complex series of links connecting man as microcosm with his environment (mesocosm) and the universe (macrocosm). In ancient India letters of the alphabet were linked with parts of the body, specific plants, animals, directions, planets, gods and even stars in the sky. An historical GPS of our collective memory would allow us to navigate through these various worlds. For instance the three principle arteries (nadis) of the body, were linked with three pillars in architecture, with three rivers in the landscape and three sections of the Milky Way. In India, there was a system of 3 rivers, then four rivers, 5 rivers (the *Panch ab* now called the Punjab) and subsequently seven rivers (the *Sapta Sindou*) all of which became connected to ever more intricate connections with plants, stars and many elements in between..

Today we use mobile phones with cameras passively to take images of objects in the natural world. In future, this principle could be extended to take images of objects in the natural world which are then actively connected via image recognition technologies to their corresponding images in memory institutions. As a result our mobile device could potentially be transformed from a passive recorder to an active identifier of objects in our environment. All the world would then become a search engine. By extension, if we are studying an image in a book or an object in a museum, the device³⁹ could help us recognize and learn about what we are seeing, acting as the equivalent of a personal guide system on steroids.

In major archaeological and architectural sites this would mean that we could point at some section or detail and then receive information about earlier images of that site as well as reconstructions that help us understand what it looked like earlier. In this way, we could gain

an impression how a Romanesque or Gothic church, which was redecorated in the Baroque period, would have appeared in its pristine state.

This process of contextualization needs to be extended especially to pilgrimage and other routes, some physical, some conceptual. Italian cultural sites are full of lists of religious architecture in the form of churches and monasteries. We know that in the 6th century Saint Columbanus⁴⁰ travelled from Ireland, founded the monasteries of Luxeuil, Saint Gall, and Bobbio, and thus established one of the first intellectual networks of Europe. There are sites for all these places. Needed are spatio-temporal maps that help us understand how the Irish saint made his way across France, and Switzerland to Italy and help us to appreciate how this transformed learning on an European scale.

Another example: there are lists of Benedictine monasteries⁴¹ and those of other orders. We know from history books that Saint Benedict was born c.480 in Norcia, that he began his religious life in the Sacro Speco of Subiaco, founded the monastery of Monte Cassino and went on to build an even earlier intellectual network through a series of monasteries. Italian cultural sites have many itineraries (*itinerari* or *percorsi religiosi*). But at present we look in vain for sites which help us understand how the Benedictine order spread, first in Italy and gradually around the world. We need more than a map of Benedictine monasteries. Again we spatio-temporal maps that help us to see how these monasteries spread geographically in the course of time.

In the case of the Benedictines this is the more fascinating because some of the sites chosen were sites connected with Saint Michael, with previous connections to Apollo. They formed a long line from Skelling Michael in Ireland, through Saint Michael's Mount (Cornwall), Mont Saint Michel, (Normandie), Bourges, Lyon (formerly Lugdunum connected with the god of the sun, Lugh), Sacra di San Michele (Piemonte), Perugia, Monte Gargano, Delphi, Athens, Delos, Mount Carmel and Armageddon.⁴² As Martin Grey has noted: "The Abbey of Mont St. Michel (France) is positioned on the axis 64 degrees off North. This direction faces towards the sunrise of the 8th of May, traditionally the St. Michel day of Spring. The opposite direction shows the sunset of the 6th August, Transfiguration of Christ."⁴³

In mediaeval Christianity, there were initially three important archangels: Michael, Gabriel and Raphael. Michael is said to be based on Eastern predecessors. In Asia, the equivalents of archangels are bodhisattvas. One trinity of bodhisattvas included: Manjusri, Vajrapani and Avalokiteshvara. They represented wisdom, power and compassion, reflecting the principles of Essence, Activity, Inertia (*sattva*, *rajas* and *tamas*). Manjusri has a flaming sword. Michael has a flaming sword. To explore all these connections would take us far beyond the scope of this paper. At this point we are interested in the basic idea: with the aid of a contextualizing GPS of the knowledge of memory institutions, i.e. cultural heritage, our notions of itineraries and routes go far beyond the footsteps of mediaeval pilgrims. We could start at a Benedictine monastery, retrace lines of influence connecting Saint Michael with earlier traditions of Apollo (and Dionysius), Buddhism and Hinduism.

In Italy, we imagine that wine began there although we learn at school that it was invented by Dionysius and read in the Bible that it was introduced by Noah. The oldest written documents concerning wine have been dated to 10,000.B.C. in Iran. Meanwhile, the Rig Veda tells us

that there was a goddess of wine at the time of creation. In the Indian system, that is 4,3000,000 years ago. Her name is Madira. Even if we allow for some poetic license with respect to the precise date, we can safely conclude that Madira long predated the now more familiar Madeira. Such knowledge will not diminish either the importance or the pleasure of Italian wine. It will, however, make us aware of a bigger picture, as we sip our next glass.

5. Word and Image

Part of Warburg's interest was focused on the history of the word and the image, i.e. the history of literature and history of art. He constructed his library⁴⁴ on these principles with a specific floor in his library devoted to these themes. He pointed to a series of links which have become more readily possible using electronic media.

Today, if we go the Uffizi site and go to Sala 7 del primo Rinascimento we find a painting by Paolo Uccello, *The Battle of San Romano*⁴⁵ The Inventory and the Catalogue cards provide us precise information about that painting. They tell us nothing about the existence of two other paintings of exactly the same name by the same painter in the Louvre and the National Gallery of London, respectively. This is symptomatic of collections generally. We tend to have precise descriptions of paintings by a given artist in one institution. In the case of Uccello there is a site: *Opere di Paolo Uccello. Elenco delle opere di Paolo Uccello localizzate nei musei e monumenti italiani*,⁴⁶ but this omits the paintings in London and Paris. There is of course a series called *Tutte le Opere* in book form, which has a volume on Paolo Uccello and does include them. But tourists on their way to Florence should not require a research project to learn basic facts about major works of art. Today a major library theoretically gives us a list of all books by an author. In future, a basic list of titles of paintings and other works should also be freely accessible. A spatio-temporal, disciplinary approach to contextualizing knowledge would allow us to look for verbal and visual accounts of the battle of San Romano and follow them chronologically or geographically.

6. Action

Warburg was interested also in cultural and political history which he termed Action. This included a wide range of disciplines, namely: Psychology, Anthropology, Folklore, Position of Women, Music, Theatre, Festivals, Technology, Transport, Trade, Public Opinion, Law, Sociology, Political Theory. In today's Internet, we have web sites on all these themes and yet an integrating framework, whereby we can trace an idea or an image through these disciplines through a spectrum of different media is lacking. Ultimately this requires something much more than local and regional sites. It requires that the detailed knowledge and information of these local resources be integrated with the larger visions of an European and eventually a World Digital Library.

Many important historical events are linked with historical pageants, festivals and sometimes with full scale reconstructions or re-enactments of an event or battle. Typically these occur on the day of the original battle. Only seldom is a tourist in a given place on a date that coincides with a particular local festival. In a fully networked knowledge framework a visitor could see multimedia versions of the event, the physical version of which they were missing. Or they

could study these at home in order more strategically to plan which ones they would like to see in all their splendour. Tourism now accounts for more than 14% of the economy in many European countries. Greater access to our historical knowledge is not a threat: it is a key to interesting sites becoming even more fascinating and consequently more economically thriving.

7. Search Engines

Some of the problems outlined above apply specifically to local conditions in Italian cities, provinces, regions and to a certain extent the responsible ministries in Rome. It is important to emphasize, however, that there are other dimensions at play which go far beyond the borders of Italy. Throughout the last decade of the 20th century there were constant debates as to which search engine was the more useful. Yahoo and Lycos were two contenders. Today the situation is dramatically different. Google, which has admitted that it has a 300 year plan, is more than an industry leader. Many have stopped even thinking about alternatives. The head of the Bibliothèque Nationale expressed his concern about the “googlisation” of knowledge. This created a brief wave of discussion and was then all but forgotten.

Google has become number one because it offers us more than anything else on the market at the moment. This is good news. Even so, there are serious reasons why we ought to be more skeptical about what we are finding. We are not seeing a simple list of what exists on in electronic form. There is a hidden commercial dimension to Google. Businesses need to pay to have their sites ranked higher on the list. The catchy phrase of the 1990s, build it and they will come, could be revised as: pay enough and they will come higher up in the list.

Nor are these trends evident only in the commercial sphere. At a personal level there is enormous fluctuation. In the case of the author, for instance, the number of hits climbed from c. 100,000 to 200,000 in 2007, then fell to c. 50,000 only to rise again to just over 100,000 in the course of the past months. There is typically a discrepancy of 30,000 hits between morning and afternoon. This pattern is also evident in the case of colleagues. In the grand scheme of things this is of little significance. But the problems go deeper. In 2004, the author made a list of 9 figures whose impact on history was obvious. As an aside, the current president of the United States was added. These results were published with a view to showing that there was a great discrepancy between the hits and the actual impact of historical figures. For instance, in terms of land conquered, Tamurlane, was second only to Alexander the Great. The Internet hits provide no hint of this.

For the purposes of this paper, it is interesting idea to see what has happened to those statistics in the past four years. The Internet has grown by over 500 million users in that time. One would expect the numbers to reflect a proportional increase. In the case of Genghis Khan and Mao Tse Tung this seems to be roughly the case. On the other hand, Napoleon has tripled and Hitler has quadrupled in terms of hits, thus becoming a hit-ler in a new sense. On the other hand, Charles V and even Georges Bush have diminished by more than 50%.. If this were a gallop poll or a popularity chart such a diminution would be explicable. But if this is a record of the sites pertaining to the most powerful individual alive there are things that do not jibe. Attentive readers will note that in the case of some delicate contemporary issues, Google is a

Leader	Hits in 2004	Hits in 2008
1. Charles V	29,600,000	12,600,000
2. George W. Bush	27,800,000	11,600,000
3. Alexander the Great	26,500,000	6,080,000
4. Hitler	8,560,000	32,700,000
5. Napoleon	8,410,000	27,000,000
6. Charlemagne	1,350,000	3,550,000
7. Mahatma Ghandi	1,120,000	4,140,000
8. Genghis Khan	374,000	1,310,000
9. Mao Tse Tung	361,000	700,000
10. Tamurlane	886	3,450

Table 3. Ten political figures and their hits in Google in 2004 and 2006.

first source. In some cases CNN is there first. In other cases we are well advised simply to watch the news. Google's domination of the portals to information is part of a larger and less visible trend, whereby basic decisions re: scholarship, what gets published, what gets accessed is moving across the Atlantic. Google now scans the full texts of contemporary books in print without reimbursement and without even consulting the author. Meanwhile, initiatives such as JSTOR, have a rhetoric to give greater access to scholarly material. In practice, scholars or individuals with no formal links to a partner institution typically have to pay \$10- \$14 for access⁴⁷ to an electronic copy of an article often published in Europe at a date prior to present copyright restrictions.

The implications of such developments are profound. Europe's richness lies less in natural resources such as oil and much more in cultural resources. Indeed culture, history and memory institutions are our richest resources. Projects for digitization of such resources are increasing dramatically in scale. Where the late 20th century spoke of thousands or at most a couple hundred thousands there are now plans to scan the full texts of over 60 million records worldwide by the year 2,020, i.e. within 12 years. Compared with the 2.5. billion books, which the European Commission estimates are in Europe alone, even these figures are modest. Even so a new era is dawning. Having scanned in its works, Europe will need to create its own search engines, which are independent of paid rankings, commercial advertisements, popularity contests and possible political agendas. The healthy communication of cultural heritage requires access to all citizens.

8. Conclusions

In 1990, when the World Wide Web began, online cultural content was very rare. A brief survey of the present state in Italy confirms that there have been dramatic developments. On the positive side, there are now hundreds of thousands and sometimes over a million hits concerning a given topic. A series of problems remain. One is co-ordination. We found that in Florence even official sites are not always sufficiently cross-linked. As a result tourists looking for well known museums such as the Uffizi have difficulty even finding the official site. Second, there is a problem of language. In most sites detailed information remains

available only in Italian. Lip service is paid to English, and French. The new Italian Culture Net portal adds Spanish, German and Japanese, but often the details still only available in Italian. This problem applies to memory institutions generally: i.e. museums, libraries, archives and even tourist sites.

Italy is a land of paradoxes. Its cultural roots through the Etruscans, Ligurians and other peoples go back thousands of years. Even so it was not until the period 1859-1870 that a unification of Italy took place. Even today there remain two central national libraries and eight other national libraries. In a manner reminiscent of the Länder problem in Germany, co-ordination remains a great challenge.

One happy consequence of this distributed system is, in the words of my former teacher, Professor Stillman Drake: Italy is the only country in the world where every little hill town is the centre of the world. This is the incredible uniqueness of Italy. Every town is different, proud and free. In a networked world, access to these unique local expressions is a key to the future. It must be achieved without compromising the original and yet there must a framework that goes far beyond local interests.

In theory we are already working towards a European Library and there are plans for a World Digital Library. Italy has an important part to play in this. It is not just a matter of scanning in pictures and objects. We already have a UMTS system. Through the advent of GALILEO we shall have control of our version of GPS. In future we must assure that things are on earth as in the heavens: that we have GPS systems for our physical world and for our mental, philosophical, and imaginary worlds. We need a GPS of the mind, of our collective memory and we need new methods to navigate in those systems. The hope of Europe's future lies in becoming as independent as Italian hill towns, while enjoying the advantages of a mobile, networked electronic world.

Appendix 1: Search results for the subjects prospettiva, perspective and perspective in the GBV: <http://p7.gbv.de/iPort>

search (all fields) prospettiva

action/database	hits
 Bavarian Union Catalogue	491
 Union catalogue of UK and Ireland & British Library	708
 Common Library Network	615
 Northrhine- Westphalian Union Catalogue	156
 Berlin-Brandenburg Cooperative Union Catalogue	142
 South-West German Union Catalogue	468
 All Collections of Nationally Licensed Databases	20
 Zentrales Verzeichnis Digitalisierter Drucke	0
 Library of Congress (USA)	447
 Norway library data center	23

search (all fields) perspective

action/database	hits
 Bavarian Union Catalogue	5000
 Union catalogue of UK and Ireland & British Library	138041
 Common Library Network	30245
 Northrhine- Westphalian Union Catalogue	1000
 Berlin-Brandenburg Cooperative Union Catalogue	1500
 South-West German Union Catalogue	12591
 All Collections of Nationally Licensed Databases	18050
 Zentrales Verzeichnis Digitalisierter Drucke	5
 Library of Congress (USA)	10000
 Norway library data center	11470

search (all fields) perspectiva

action/database	hits
 Bavarian Union Catalogue	676
 Union catalogue of UK and Ireland & British Library	4593

	Common Library Network	3388
	Northrhine- Westphalian Union Catalogue	377
	Berlin-Brandenburg Cooperative Union Catalogue	300
	South-West German Union Catalogue	981
	All Collections of Nationally Licensed Databases	80
	Zentrales Verzeichnis Digitalisierter Drucke	5
	Library of Congress (USA)	1787
	Norway library data center	89
	Union catalogue of UK and Ireland & British Library	4593

Note

¹ ICOM: <http://icom.museum/>

² IFLA: <http://www.ifla.org/>

³ ICA: <http://www.ica.org/>

⁴ VLmp: <http://icom.museum/vlmp/>

⁵ ICOM Selected List: <http://www.musei-it.net/vlmp/default.asp>

⁶ ICOM Italia: http://www.icom-italia.org//index.php?option=com_frontpage&Itemid=1

⁷ COE: http://www.coe.int/T/DG4/CultureHeritage/Default_en.asp

⁸ COE Resources:

http://www.coe.int/t/dg4/cultureheritage/Resources/Info/databases_en.asp#TopOfPage

⁹ ECP: http://ec.europa.eu/culture/portal/index_en.htm

¹⁰ European Culture Portal: http://ec.europa.eu/culture/portal/sites/members/italy_en.htm

¹¹ MIBAC <http://www.beniculturali.it/default.asp?versione=Inglese&from=1>

¹² For a discussion of the background to the Italian Culture Portal:

ieeexplore.ieee.org/iel5/4402840/4402841/04402865.pdf?tp=&isnumber=4402841&arnumber=4402865

The actual site is at: <http://www.italianculture.net>

¹³ Toscana:

<http://www.italianculture.net/redirect.php?url=http://www.cultura.toscana.it/musei/index.shtml>

¹⁴ Saperviaggiare: <http://musei.saperviaggiare.it/liguria-musei.html>

¹⁵ Uffizi Gallery: <http://www.uffizi.com/>

¹⁶ Firenze Musei: http://www.firenzemusei.it/00_english/index.html

¹⁷ Galleria: http://www.historiaweb.net/galleria_degli_uffizi/

¹⁸ Florence Museum: <http://www.florence-museum.com/it/index.htm?gclid=CLrui8OYm5ICFQ5HQwodTyVB-Q>

¹⁹ Virtual Uffizi: <http://www.virtualuffizi.com/>

²⁰ MIBAC <http://www.beniculturali.it/default.asp?versione=Inglese&from=1>

²¹ Polo Welcome: <http://www.uffizi.firenze.it/english/benvenuto.asp>

²² Nuovi Uffizi: <http://www.nuoviuffizi.it/progetto/percorsi/>

²³ Reuters, World's Top 10 art museums:

<http://features.us.reuters.com/destinations/news/17674ECC-E656-11DC-AC35-6A384C51.html>

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- ²⁴ Florence.com: <http://www.aboutflorence.com/museums-in-Florence.html#moremuseumsinflorence>
- ²⁵ Musei: <http://www.mega.it/ita/not/musfi.htm>
- ²⁶ Musei fiorentini: http://www.comune.firenze.it/servizi_publici/arte/musei/
- ²⁷ (ISTAT survey of the tourist movement in 2004:
whc.unesco.org/archive/periodicreporting/EUR/cycle01/section2/174-summary.pdf
- ²⁸ National Library Catalogues: <http://www.library.uq.edu.au/natlibs/e-k.html>
- ²⁹ There is also a Biblioteca Nazionale delle Donne in Bologna, which also has one of the most advanced library systems of Italy at the university library.
- ³⁰ For a useful introduction into these complexities see: Maria Patrizia Calabresi, "Two national central libraries in Italy: bibliographic co-operation or competition?", *6th IFLA Council and General Conference*, Jerusalem, Israel, 3-18 August 2000:
<http://www.ifla.org/IV/ifla66/papers/066-123e.htm>
- ³¹ ICCU: <http://opac.sbn.it/opacsbn/opac/iccu/base.jsp>
- ³² ICCU under prospettiva:
http://www.sbn.it/opacsbn/opaclib?db=iccu&select_db=iccu&nentries=10&from=201&searchForm=opac/iccu/base.jsp&resultForward=opac/iccu/brief.jsp&do=search_show_cmd&rpnla bel=+Soggetto+%3D+prospettiva+&rpnquery=%40attrset+bib-1++%40attr+1%3D21+%40attr+4%3D2+%22prospettiva%22&totalResult=204&ricerca=base
- ³³ Internet Culturale: <http://www.internetculturale.sbn.it/>
- ³⁴ TEL: http://www.theeuropeanlibrary.org/portal/organisation/about_us/aboutus_en.HTML
- ³⁵ BN Firenze:
http://opac.bncf.firenze.sbn.it/opac/controller.jsp?action=search_basesearch&query_fieldname_1=keywords&query_querystring_1=prospettiva&Submit=Cerca
- BN Roma: http://193.206.215.6/opac/form-go?language=ITALIANO&s_class=Dewey&nature=Tutte&source=UNFI&action=find&browse=Titolo&libr=Tutte
- ³⁶ BN Roma: http://193.206.215.6/opac/form-go?language=ITALIANO&s_class=Dewey&nature=Tutte&source=UNFI&action=find&browse=Titolo&libr=Tutte
- ³⁷ Bibliography on Perspective: <http://www.sumscorp.com/develop/>
- ³⁸ Archivi Portal: <http://www.archivi.beniculturali.it/sitoenglish.html>
- ³⁹ Museums and memory institutions will invariably be worried that such devices could "rob" them of their potential income from high quality images in the form of postcards, posters etc. A solution would be that these institutions simply rent visitors a custom ade device that allows only specific connections to memory institutions and does not allow users to make pirate images.
- ⁴⁰ Dictionary:
http://en.wikisource.org/wiki/Dictionary_of_Christian_Biography_and_Literature_to_the_End_of_the_Sixth_Century/Dictionary/C/Columbanus,_abbat_of_Luxeuil_and_Bobbio
- ⁴¹ Monastero: <http://www.cattolici.org/monasteriositalia.htm>. Such lists are often lacking. For instance , the site just mentioned omits Farfa: <http://www.abbaziadifarfa.it/>
- ⁴² Sacred Sites: http://www.sacredsites.com/europe/ireland/skellig_michael.html
- ⁴³ Sacred Sites: Mont Saint Michel:
http://www.sacredsites.com/europe/england/stmichaels_mount.html
- ⁴⁴ Warburg Library: <http://warburg.sas.ac.uk/mnemosyne/Gateway.htm>

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- ⁴⁵ Sala 7: <http://www.polomuseale.firenze.it/musei/uffizi/visita/opere.asp?idSala=6>
- ⁴⁶ Le opere di Paolo Uccello: <http://www.linktour.it/Arte/Opere.asp?di=Paolo+Uccello>
- ⁴⁷ JSTOR: [http://links.jstor.org/sici?sici=1062-0516\(194110\)58%3A4%3C421%3AIVPP%3E2.0.CO%3B2-D](http://links.jstor.org/sici?sici=1062-0516(194110)58%3A4%3C421%3AIVPP%3E2.0.CO%3B2-D)
- Cf. a list of JSTOR journals: <http://www.jstor.org/about/asII.list.html>