LDL (LANDSCAPE DIGITAL LIBRARY)
A DIGITAL PHOTOGRAPHIC DATABASE OF A CASE STUDY AREA
IN THE RIVER PO VALLEY, NORTHERN ITALY

Davide Papotti, Dipartimento di Geografia, Universita di Padova, Via del Santo 26, 35123 Padova, Italy,
dpapotti@midway.uchicago.edu
Alberto Salarelli, Istituto di Biblioteconomia e Paleografia, Universita di Parma, Via D'Azeglio 85, 43100 Parma, Italy,
alberto.salarelli@unipr.it

Landscape: an interdisciplinary and complex object of study

The study of landscape requires an interdisciplinary approach. In the field of landscape studies there are two levels of interdisciplinarity: a “horizontal” and a “vertical” one. The horizontal dimension of interdisciplinarity comes from the fact that different fields of study analyze the landscape from complementary points of view. Among others, geography, architecture, and history of art, each with its own conceptual and methodological background, play a particular role in the tradition of landscape studies. Each discipline develops its own conception of landscape, with emphasis on different elements and different values. The “vertical” dimension of interdisciplinarity, on the other side, comes from the fact that a landscape is made of different layers whose interpretation require a specific competency in a discipline. The use of adjectives associated to the term is significant to understand the landscape in the richness of its meaning. One can speak, for instance, of "botanical landscapes”, "geological landscapes”, "cultural landscapes”, etc. All these characteristics make the landscape a complex object of study. Specific techniques of survey and collection have to be developed in order to grasp the landscape in its richness.

The revival of the scientific discussion about the concept of landscape and even the term’s popular "success" (its use in mass media, tourism marketing, real estate publicity, etc.) have been recently accompanied by the promotion of the concept at an institutional level. In the Italian context, for instance, it is important to mention the first *National Conference on Landscape* held in Rome in 1999; at a European scale, the reference goes to the *European Convention on Landscape* signed in 2000 (http://www.nature.coe.int/english/main/landscape/conv.htm).

Landscapes as cultural heritage

The attention to landscape is well rooted in western cultural tradition, and the theoretical debate on the importance of landscape runs through the twentieth century. In the Italian contest, the geographer Filippo Porena speaks, in an article published more than a century ago, of “the current fashion of the term landscape” [1892: 72]. From an institutional point of view, it is important to remember a law that dates back to 1939 (Law of June 29, n. 1947) entitled "Protection of Natural Heritage" focused on “panoramic values”, of a network of material “goods” characterized by a “specific aspects of esthetic and traditional value”. This law has been recently acknowledged in the set of laws concerning the protection of cultural heritage (October 29, 1999, n. 490). The recent shift in conservation policies from the attention given to single historic or natural monuments to the value attributed to landscape as a whole marks an important change of perspective [Veyret and Le Maotre 1996]. Exactly because landscape is considered a basic expression of a national, regional or local cultural heritage, it is important to develop techniques that allow to catalogue and to archive it.

The importance of visual inquiry in landscape studies

Studies on the concept of landscape have particularly emphasized its visual quality. A landscape exists where an eye is observing the territory [Collot 1986]. Within the vast available bibliography on landscape, a strong emphasis was put on its visual components and qualities, which have a primary role in shaping its perception [Bailly, Raffestin and Reymond 1980; Cosgrove 1996]. Among other attempts to classify and archive landscapes, scholars produced maps able to portray the visual limits of an area, identifying panoramic points, ridges and obstacles [Raveneau 1977]. The result is a map of the "visibility" of a landscape. Other important studies on visual components of a landscape come from the work of the *Netherlands Soil Survey Institute* [De Veer and Burrough 1978] where a complex system of classification of the landscapes according to their visual potentiality was developed. The concept of visibility lies at the basis of the very idea of landscape [Zerbi 1993: 168]. For this reason it is important to study and to critically examine the ways in which landscape can be observed and recorded by technical means.

Archiving landscapes?

Given the prevailing visual component of the object, photography is a privileged mean to archive landscapes. The use of photographs in this field has had mainly two outcomes:

a) geometrically planned and complete surveys of the territory from a zenithal point of view (satellite and aerial photographs)

b) selective archives of photographs focused on the aesthetic or cultural value of specific elements within the landscape.[1]

Aerial photographs

Most of western countries have completed surveys of their territories through aerial photographs. More series of surveys made at different times often testify of the evolution of landscapes in the last decades. Many cartographic products such as land use maps have been developed from the interpretation of aerial photographs. This kind of documentation, however, does not provide an immediately communicative image of the landscape, and the reading of the data require a quite sophisticated ability of interpretation.

Qualitative archives

Archives of landscape photographs usually collect the results of campaigns aimed at selecting "relevant" points of interests (a panoramic view, a monument, a single element of the historical and/or natural heritage of the area). The rendering of these analytic elements (single features in the landscape) has normally been considered a sufficiently realistic and adequate "portrait" of the territory [Cosgrove 1984].[2] An example of this policy is, in the Italian context, the so-called "Archive of Space" organized by the Province of Milan (Lombardy, Northern Italy) which is a photographic collection of the most interesting elements of the cultural heritage of the area. The survey campaigns allowed the photographers invited to collaborate in the project a high degree of freedom in the choice of how and what to portray (http://www.museofotografiacontemporanea.com/lcp_archiviodellospazio.php).

In this perspective the landscape is considered a system that is the sum of single noticeable elements more than an autonomous entity. What is often missing in these archives is a documentation of the so-called "ordinary landscapes",

[1] Zerbi distinguishes two main kinds of methods of research: "those using a real observer (with a precise position in time and space) and those which refer to an abstract observer, out of a normal field of vision. The first ones adopt a "terrestrial" point of view — oblique or even horizontal — while the others a "vertical" point of view" (1993: 151). This and the other translations from quotations in Italian are ours.

[2] As summarized in Zerbi: "From an analysis of the landscape as a resource one has narrowed the perspective to an analysis of the resources "in" the landscape" (1993: 152).

spaces that do not present any particular artistic or aesthetic value but nevertheless represent the everyday theatre of common work and leisure activities (on the interpretative metaphor of landscape as a theatre see Turri, 1998).

The renovated institutional interest in landscapes creates the necessity to make a "census" of the landscape heritage both for preservation purposes and for a better understanding of its complexity and richness. The new possibilities offered by the digital techniques of data collection open new perspectives also in this field. As Zerbi states, "the new instruments available to scholars seems to be able to renovate in depth this tradition of research. The limits of this tradition have been repeatedly emphasized by contemporary researchers, while on the contrary its strengths have not been adequately recognized: the integrated approach, the logic structure of the classifying methods, certain analytic categories adopted" [1993: 143]. It is therefore important to develop new techniques of landscape archiving while at the same time keeping in mind the existing tradition of studies in this field.

The LDL (Landscape Digital Library)

The goal of the LDL (Landscape Digital Library) project is the implementation of a Web accessible database (http://www.aldus.unipr.it/LDL) able to present with documentary evidence, in a new format and in a new perspective, a portion of a territory. The case study presented here as a test is related to a small area of the plain of the river Po valley (Northern Italy). In the future we plan to apply the LDL research criteria in other geographical contexts in order to test the method's validity in a variety of physical and human environments.

Methods of data collection for the LDL

The LDL is based on a collection of photographs taken following a systematic grid of survey points. This grid is identified through topographic cartography. The encounter of two UTM (Universal Transverse Mercator; an internationally adopted system of geographical reference) coordinates identifies on the map the exact point where the pictures are to be taken. Being this system based on a kilometric base, each point is one kilometer distant from the nearest ones (in the four cardinal points). Once the point has been identified (with the help of GPS instruments) the surveyor shoots four photographs, directing the digital camera (with a 50 mm objective focused for infinity) to the four cardinal points. The result will be of four pictures for each point, that will be identified by both UTM and geographical coordinates of the shooting point and by the direction (North, East, South, West). The point of view is that of a man's eye view, with a horizontal perspective from a height variable from 1.5 to 2 meters. A tolerance of nearly 10 meters is acceptable in the choice of the location from which to shoot the photographs (one has also to keep in mind the margin of error related to the GPS system in giving the coordinates). The goal of the database is to reproduce by specimens, taken according a systematic grid, the appearance of the landscape in a given area, including possible obstacles and barriers.

Technical characteristics of the LDL

The files of the photographs are inserted in a database accessible through different research criteria. A series of elements of indexing will be applied to the database. These elements are not taken into consideration during the photographic campaign, but nevertheless they can be attached in the following process of assigned indexing.

The database is implemented using the DBMan package that is freely distributed by Gossamer Threads for a no-profit use (http://www.gossamer-threads.com/scripts/dbman). It is installed on a server Linux (http://www.linux.org/) that uses Red Hat 7.1 (Seawolf) distribution with kernel 2.4.2-2, even if the database can run

also on Windows or Mac platforms. As stated in the homepage of the product, “DBMan is a full-featured database manager that provides a Web interface to add, remove, modify or view records in a flatfile ASCII database. It supports an advanced user management system, as well as powerful permission system. An SQL version is also available for very large databases”.

Using the LDL

The database is accessible in two ways: from a cartographic image and by keywords.

In order to retrieve the image using the cartographic base one starts from a clickable image map (see picture n. 1). Then it is necessary to identify a precise point where the images were taken ("shooting point" identified by an intersection of the UTM grid lines). By clicking it one accesses a card (see picture n. 2) with the following information: UTM and geographical coordinates of the shooting point, date of the shot, previews of the four photographs taken from the point, and meaningful geographical information such as geographical names. From this cross-reference document one can visualize the full-size pictures or go back to the search screen

The second possibility is a search by keywords in the entire database (see picture n. 3). Thanks to the search options provided by DBMan it is possible to make searches within all the cards using one or more keywords appropriately connected by boolean operators.

The LDL characteristics and values

The LDL follows the tradition of studies above mentioned and tries to add a new technique in landscape archiving by introducing four significant innovative elements:

1) the criterion on which the photographic data collection is based is systematic and not selective. It records the "state of the art" of a landscape independently from its single features but rather following a predetermined pattern of frequency and orientation of the shots. In this way the LDL helps to overcome the problems created by an uneven distribution of attention: “The richest documentation is generally related to highly valued landscapes or to landscapes that are under the menace of substantial changes. On the other hand what is normally lacking is — in the great majority of cases — the study and knowledge of ordinary landscapes” [Zerbi 1993: 173]. The presence of four shooting points (that means sixteen pictures) every square kilometer provides a detailed coverage of the territory. To make a comparison, the system proposed by K. D. Fines proposed two points for each square kilometer [1968].

2) the reference system is based on cartography, and specifically on one of the most abstract elements of cartography (the UTM coordinates), which is not directly recognizable on the territory. This impartial distribution of shooting points guarantees a complete “coverage” of the territory.[3] By choosing such an abstract grid of reference, the documentation of the landscape, as repeatedly emphasized above, avoids the dangers of a subjective criterion of selections, but also encourages possible interactions between the cartographic archives and the photographic collections. Since the point where the pictures have been taken is easily identifiable on the maps, it is possible to give a new and easily accessible “visibility” — not mediated by symbols and by geometric scales of reproduction — to cartographic representation, a sort of parallel text to cartographic perspective. The reading of the maps can be systematically accompanied by samples

[3] The idea of using a mathematic grid was already suggested by Zerbi: “The contrary choice, may be open to criticism from a conceptual point of view, but certainly less criticizable as an operative tool, is to found the analysis on dimensionally similar units or even on rigorously equal units such as the kilometric grids. The map’s division into squares may also be a solution that could offer arrangements in interdisciplinary perspective, The advantages are

of the landscape appearance as portrayed by photographs. The fact that the UTM grid of reference is universally adopted makes the system potentially adoptable everywhere in the world. The fact that UTM coordinates can be identified on most kinds of topographic cartography (in the Italian context both on the State cartography produced by the Geographical Military Institute (IGMI) and on the cartography produced by regional agencies) makes the LDL system a flexible tool applicable to different cartographic supports. The contemporary reference to geographical coordinates (latitude and longitude) constantly allows to shi from one system to the other when necessary, The GPS instrument used during the survey campaigns gives the possibility to mark the coordinates in both the systems.
3) the point of view of the photographs is a horizontal one, similar to the one perceived by the human eye, and not zenithal, as the one of aerial photographs. The human perceptive component is therefore just guided and "limited" by technical constraints, but is not erased by the artificial point of view typical of an aerial photograph. The LDL provides samples of a perspective of visual perception that is "ordinary". The very camera objective (50 mm) is considered by many scholars close to the field of vision on which a human eye concentrates (not considering the peripheral vision) [Miossec, 1977].
4) The specific characteristics of the documentation in digital format (flexibility in use, possibility to simulate different alternative scenarios through programs of landscape modeling, possibility to send the images and data through Internet) guarantee the specific "value added" of this system when compared to a traditional survey made by analogical means ("traditional" photography).

Limits of the LDL

As any other articulated set of choices, inevitably, also the LDL has some limits of its own:
1) it does not go beyond the visual inspection of the landscape. As all the other visual records, it does not include the global sensorial perception of the landscape experienced on the field (a mix of visual, olfactory, auditive data).
2) it records a horizontal perspective whose extension can be limited by random obstacles. It can happen that from the selected shooting point the perspective is blocked by some natural or artificial obstacle. It has to be remembered, however, that the LDL does not look for specific panoramic perspectives or visual privileged points. The presence of visual blocks and obstacles (such as walls, fences, hedges) is as meaningful to the data collection as a pleasant scenic view from a hill. As the aerial photographs, the LDL survey system needs a predetermined set of meteorological conditions that provide a standard of homogeneity to the shoots (atmospheric visibility, light conditions, absence of fog, snow, rain, etc.). To overcome this limit, in some cases and for specific purposes, one could think of making available in the data base different shots taken from the same point of view in different seasons and with different meteorological conditions.
3) it represents a static record of the situation at a precise time and does not provide documentation on the dynamic aspects of the landscape. As Giuseppe Papagno suggests, "landscape — with this word we mean everything that is existing and as well perceived in a territory — becomes a quadri-dimensional archive, a true "time archive", in which, beyond the three classical dimensions, one has to add the fourth, time, that is inscribed in its materials in a durable way […]" [2000: 297]. The possibility to repeat the photographic campaigns at pre-determined time intervals, though, gives the LDL the possibility to follow the evolution of a landscape though time.

---

immediately evident: possibility of exchange of primary information and of secondary data coming from the work of various professionals" (1993: 174).

4) it does not grasp directly the invisible values of landscape that, as Simon Schama states, “is constructed as an excavation below our conventional sight-level to recover the veins of myth and memory that lie beneath the surface” [1995: 14]. The LDL, in this perspective, could be used a supporting database for the organization of related archives of paintings, literary quotations, scientific descriptions, travel diaries to which it could provide a cartographic and at the same time visual support of reference.

In keeping in mind these limits, it has to be remembered that a global inquiry on the nature of landscape goes beyond the goals of the LDL. Its systematic documentation pattern, which is more similar to a quantitative "census" of the landscape appearances than to a qualitative selection, aims to provide a basic iconographic survey of the landscape. This visual archive has a value in itself as a documentation of the aspects of a territory, and also aims to support other forms of documentation already available both to scholars and to professionals, such as cartography. The LDL, while on one hand providing a complete survey, can be a starting point for further analyses and inquiries that will interpret and study its data.

Possible uses of the LDL

Many are the potential users of the digital documentation of the LDL, belonging to different fields of research: the geographer that studies the forms of the territory, the technicians and engineers that are specialists in the evaluation of environmental impact, the historians interested in architecture or in agricultural systems, the landscape architects. Tourist agencies and local tourist promotion offices could also benefit from the LDL by making available to prospective visitors an “impartial” documentation of a specific region, that one could browse through as in a virtual tour of the territory. Last but not least, the LDL could assume an important didactic role if used in schools: it provides an archive of pictures that can be used to study the students’ area of residence, to prepare field trips, to study other regions. As mentioned above, a specific value would be added to the LDL through the repetition of the survey at pre-determined time intervals (five or more years, for example). The comparison of the images belonging to the different campaigns would make available an accurate portray of the evolution of the landscape.

We plan to propose to public administrations in Italy the adoption of the LDL system of survey. The setting of a LDL database would provide local governments with updated photographic archives of their territories and would constitute the basis of an international standard of data related to landscape: “we have also conducted an inquiry on the potential users of landscape information (State offices and local authorities, public and private consultants, agencies and institutes that are at different levels interested in landscape) and on their needs. During this research we encountered a vast demand for a great variety of data at different scales and for their possible uses (indexes of landscape vulnerability, their suitability for specific uses, preferences expressed by users, evaluations for preservation and planning goals)” [Zerbi 1993: 158]. The LDL could help in satisfying part of this shared “need for landscape”.

Bibliographic references

Bailly Antoine, Raffestin Claude, and Henri Reymond, "Les concepts du paysage: problиmatique et reprиsentations", *L’Espace Gйographique*, 4, 1980, 277-286.
Collot Michel, "Points de vue sur la perception des paysages", *L’Espace Gйographique*, 3, 1986, pp. 211-217.
Cosgrove Denis E., *Social Formation and Symbolic Landscape*, London, Croom Helm, 1984.

———, *Geography and Vision*, London, Royal Holloway - University of London, 1996.

De Veer A. A. and Burrough Peter A., “Physiognomic Landscape Mapping in the Netherlands”, *Landscape Planning*, 5, pp. 45-62.

Fines K. D. “Landscape Evaluation: a Research Project in East Sussex”, *Regional Studies*, 2, 1968, pp. 41-55.

Miossec Jean Marie, "L’image touristique comme introduction a la gĭographie du tourisme", *Annales de gŭographie*, 86, pp. 55-70.

Papagno Giuseppe, "L'archivio del paesaggio. Problemi e tecniche d'analisi", in *Id*., *Un modello per la storia. Materiale, Attivita, Funzione*, Reggio Emilia (Italy), Diabasis, pp. 285-301.

Porena Filippo, "Il paesaggio nella geografia", *Bollettino della Societa Geografica Italiana*, XXIX, pp. 72-91.

Raveneau Jean, “Analyses morphologique, classification et protection des paysages: Le cas de Charlevoix”, *Cahiers de Gŭographie de Quŭbec*, XXI, 53-54, pp. 135-186.

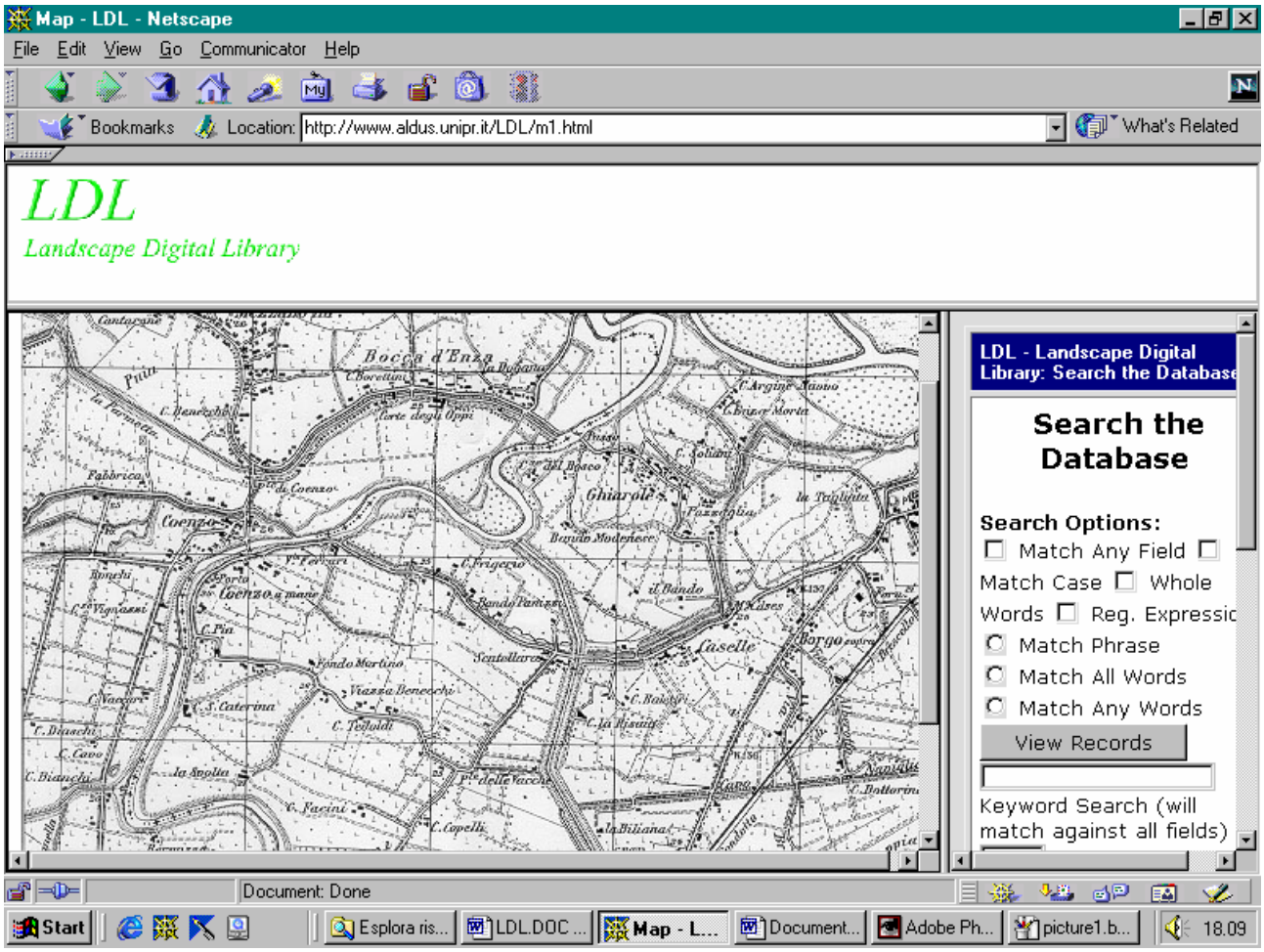
Schama Simon, *Landscape and memory*, New York, A.A. Knopf, 1995.

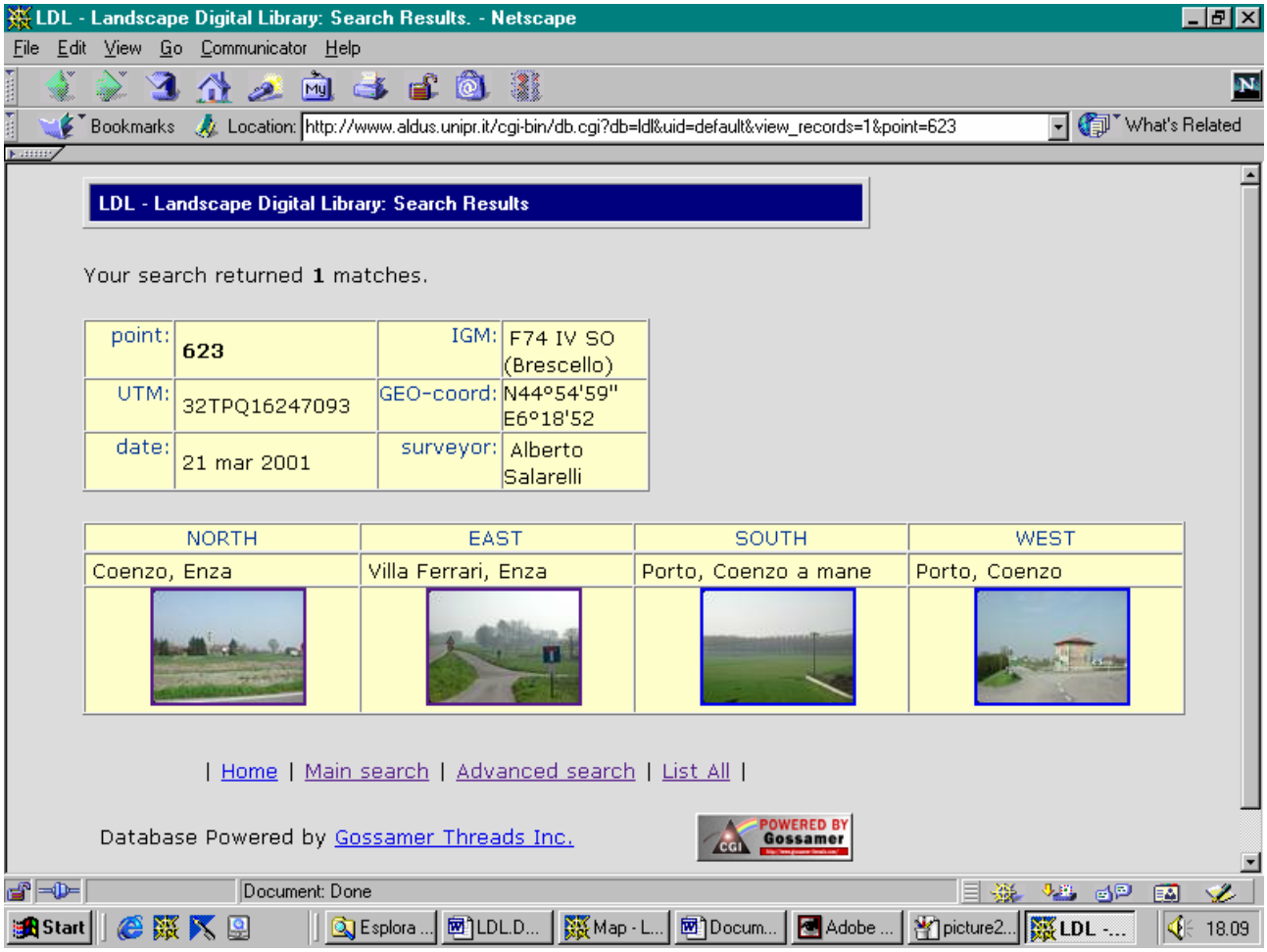
Turri Eugenio, *Il paesaggio come teatro*, Venice, Marsilio, 1998.

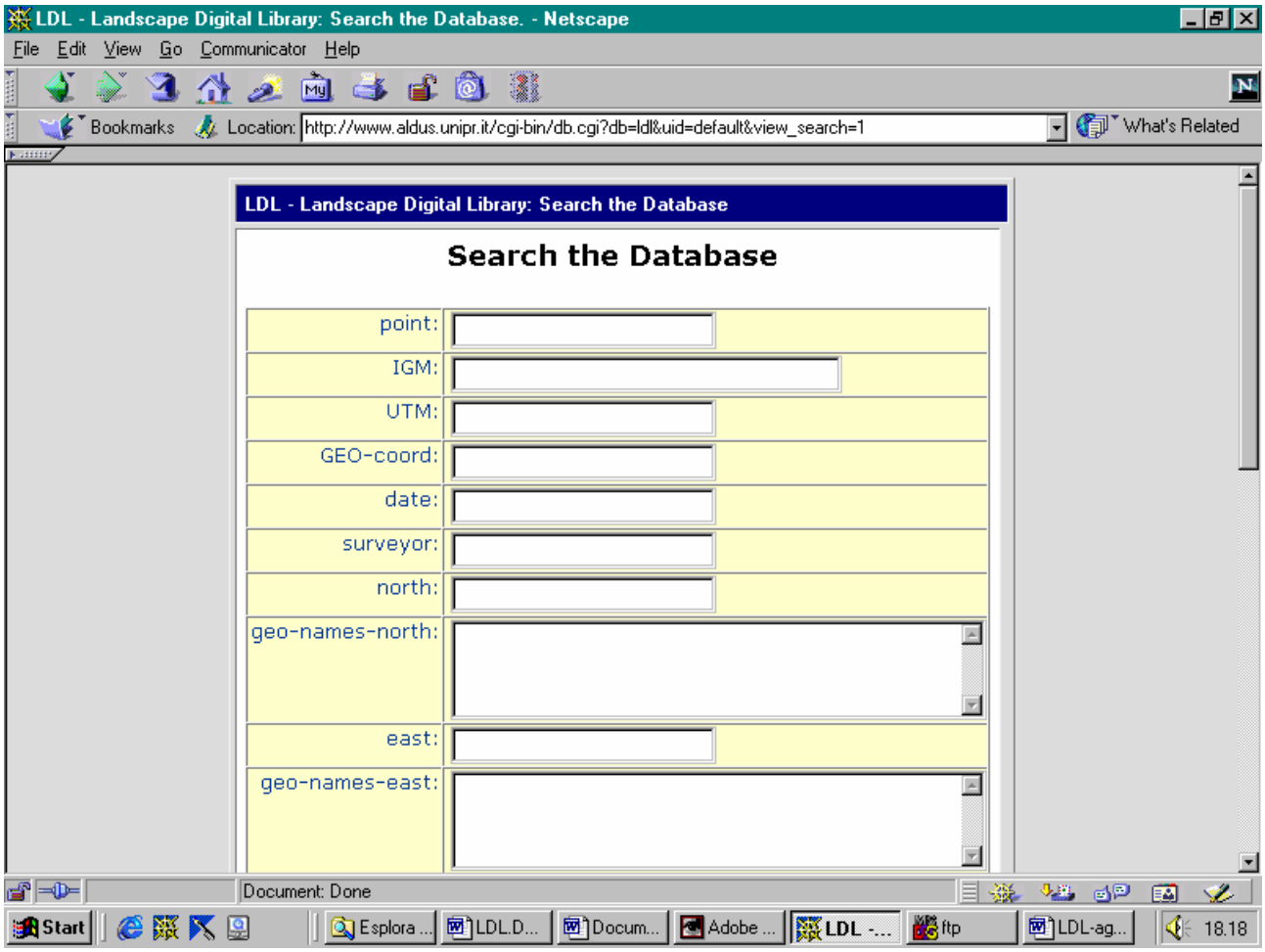
Veyret Yvette and Anne Le Maotre, “Rĭflexions sur le paysage: paysage et patrimoine historique. Quelques fonctions du paysage”, *L’information Gŭographique*, 1996, 60, pp. 177-183.

Zerbi Maria Chiara, *Paesaggi della geografia*, Turin, Giappichelli, 1993.

Zunica Marcello, “Dal mito del paesaggio al pragmatismo dell’ambiente”, in *Il paesaggio tra ricerca e progetto*, edited by Maria Chiara Zerbi, Turin, Giappichelli, 1994, pp. 149-165.




LDL - Landscape Digital Library: Search Results. - Netscape
File Edit View Go Communicator Help
Bookmarks Location: http://www.aldus.unipr.it/cgi-bin/db.cgi?db=ldl&uid=default&view_records=1&point=623
What's Related
LDL - Landscape Digital Library: Search Results
Your search returned 1 matches.
point: 623
IGM: F74 IV SO (Brescello)
UTM: 32TPQ16247093
GEO-coord: N44°54'59" E6°18'52
date: 21 mar 2001
surveyor: Alberto Salarelli
NORTH
Coenzo, Enza
EAST
Villa Ferrari, Enza
SOUTH
Porto, Coenzo a mane
WEST
Porto, Coenzo
| Home | Main search | Advanced search | List All |
Database Powered by Gossamer Threads Inc.
POWERED BY Gossamer
Document: Done
Start
Esplora ...
LDL.D...
Map - L...
Docum...
Adobe ...
picture2...
LDL -...
18.09


LDL - Landscape Digital Library: Search the Database. - Netscape
File Edit View Go Communicator Help
Bookmarks Location: http://www.aldus.unipr.it/cgi-bin/db.cgi?db=ldl&uid=default&view_search=1
What's Related
LDL - Landscape Digital Library: Search the Database
Search the Database
point:
IGM:
UTM:
GEO-coord:
date:
surveyor:
north:
geo-names-north:
east:
geo-names-east:
Document: Done
Start
Esplora ...
LDL.D...
Docum...
Adobe ...
LDL -...
ftp
LDL-ag...
18.18