

## **Adventure Mapping**

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### **ABSTRACT**

The Lancelot Project applies GIS technology to analyze medieval manuscripts that chronicle the search for the Holy Grail. The manuscripts studied represent approximately 200 surviving manuscripts that were written and copied from about 1200 to 1550. They have significant differences in their treatment of religion, feudalism, politics, technology, geography, history and other factors depending on the location and date of manufacture. In this aspect of the project, the quests of knights in search of the Grail are mapped using the narratives of the manuscripts. These maps are compared across manuscripts and with existing maps of the day. This analysis will allow us to paint a picture of how the inhabitants of those times viewed their world and how that view changed with time. We believe that the techniques developed to relate reports to maps will prove useful in areas such as tourism, emergency response, and military command and control.

### **Introduction**

In an ongoing project funded through grants from the National Endowment for the Humanities and the Andrew W. Mellon Foundation, researchers at the Department of History of Art and Architecture and the Visual Information Systems Center (VISC) at the University of Pittsburgh are working with an international team of experts in Medieval manuscripts. The research group is exploring ways of using Geographic Information Systems (GIS) and other technologies to assist in the analysis and navigation of manuscripts. The Lancelot project, as we call it, currently has three components: The first involves using GIS as a tool to assist in the analysis of Medieval manuscripts. The second phase relates the stories portrayed in the manuscripts with maps of the day. In the third phase, we are mapping the locations where the manuscripts were manufactured (copied).

### **Lancelot**

The Lancelot project's goal is to analyze texts and pictures in manuscripts chronicling the chivalrous exploits of King Arthur's Knights and their search for the Holy Grail. The manuscripts studied were produced between 1200 and 1500 AD and were written in Old French. The manuscript copies were commissioned by royalty, wealthy merchants or other patrons. In general, the manuscript copies were not faithful reproductions of the original. Some manuscripts were not as detailed, particularly regarding illustrations, as the original, perhaps indicating that the patron was not wealthy enough to fund a complete copy. Some manuscripts differed in the portrayal of characters and story line. This might be the result of the patron's wishes or the scribe's preferences. Later manuscripts were adjusted to reflect changes in royal families, boundaries, and other features. The manuscripts give an interesting picture of how the world view of the people of the region changed over time.

The reasons for choosing this set of manuscripts are:

Surviving in close to 200 copies, most of them illustrated, it was one of the most popular stories of the Middle Ages.

They address important themes of relevance then and now: love, loyalty, friendship, valour and bravery, daring and courage, victory and triumph; and also treachery and betrayal, failure and cowardice, surrender and ignominy, punishment, death and destruction.

Their cast of characters includes personalities treated in great psychological depth and sophistication.

They provide insight into how people in the Middle Ages viewed their world and how that view changed over time.

They also have humour, absurdity, and fantasy.

The manuscripts contain many images and maps and are considered artistic works in themselves as shown below.



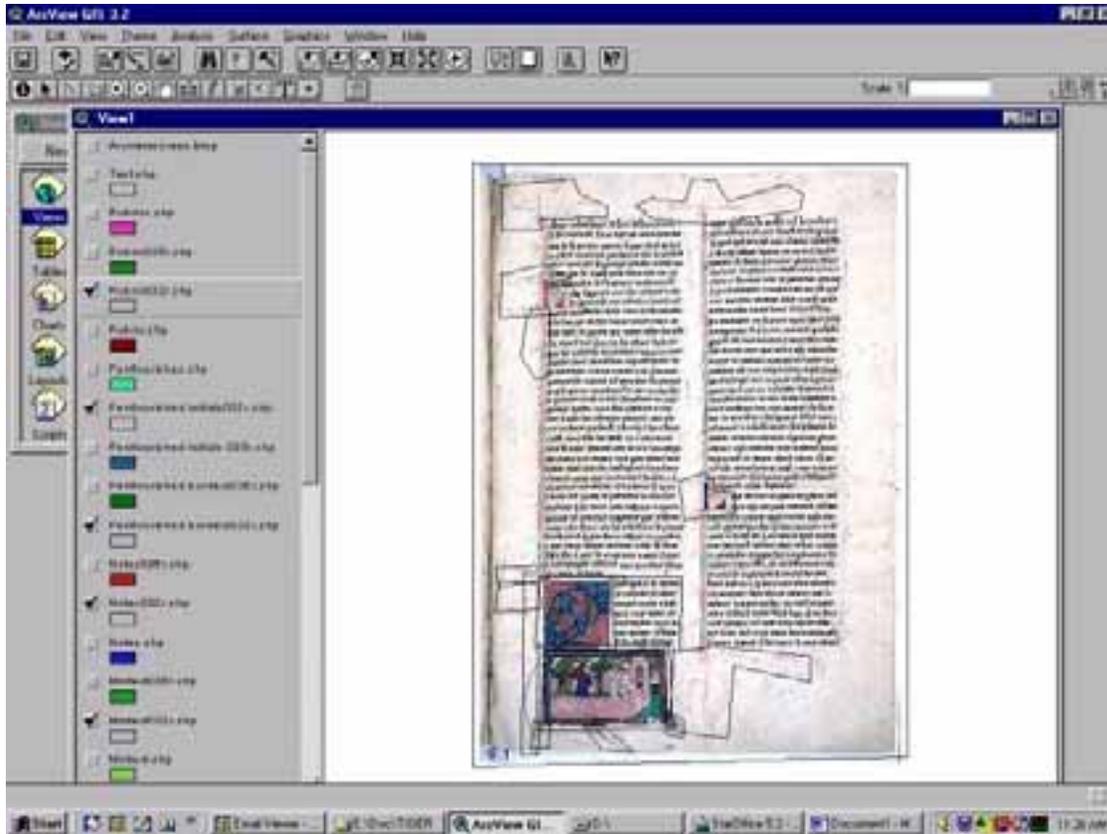
London, British Library, Royal 14.E.10.100

### **Phase 1: Manuscript Analysis**

Slides of the manuscripts used in our pilot analysis were acquired from the British Library (London), The Bodleian Library (Oxford), The Bibliotheca Philosophica Hermitage (Amsterdam), and The John Rylands Library (Manchester). The slides were scanned at high resolution to produce digitized images.

The project is unique because the research group, for the first time, used Geographic Information System (GIS) software to assist in the analysis of textual and pictorial content. Essentially, manuscript folios (images) are used as a kind of “base map” and the ArcView GIS system was employed to delineate, classify and interrelate text, images and other components of the manuscript. Our expert team consisted of researchers with

extensive knowledge of language, history, art, manuscripts and other areas. ArcView was also employed to provide a basis for annotating and navigating the manuscripts. Below is shown a typical manuscript page with its key areas for analysis identified by colored perimeter polygons.



Each polygon identifies a feature or component of the document for analysis. Polygons of the same color proscribe components of the same type. We developed an extensive classification methodology for the components of the manuscript. Some examples of components that can be identified in the above image are:

- Penflourishes (margins)
- Margin Notes
- Miniatures (illustrations)
- Rubrics
- Champie Initials
- Penflourished Initials

Associated with each component is a data base record that defines the characteristics of the component and provides analytical commentary on the component. Each component analysis is linked to the expert(s) who provided the analysis. This multi-faceted representation of the manuscript allows parts of the manuscript to be retrieved in dramatically different ways. For example, by using the GIS in a spatial mode one can access pages similar to how one might browse a book. By using the data base query



Illustrations showing the same episode in other copies will not necessarily present a comparably text-dependent picture. We are looking at which, where and how, in the hopes of moving a step closer to understanding why.

Unraveling the links between and among the different types of information about the *Lancelot-Graal* is our narrow aim in this project, but as an intellectual exercise our tools and methodologies are generalizable to all kinds of other areas of conceptualization and analysis beyond the limits of humanities disciplines.

Medieval manuscripts are now inaccessible to all but a small audience of scholars. They are carefully preserved, with restricted access, in research libraries. Disseminating the contents of those originals while preserving them from direct handling is thus an important by-product of this project.

## **Implications**

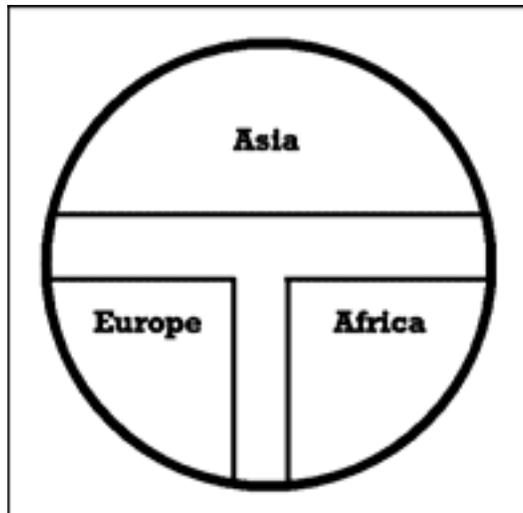
The structural principles which we are devising and applying to the study of these manuscripts, texts, and pictures will demonstrate a method of multi-layered analysis that will have wide application potential. We believe that the tools and techniques that we are perfecting will have applications in the analysis of other types/languages of manuscripts, art and artifacts. We also believe that the work of our research has application in systems analysis, industrial and other design, facilities layout and several other areas.

## **Phase 2: Maps**

We have just begun the second phase of our project, the comparative mapping of manuscript episodes (quests). As stated previously, the manuscripts provide some insights as to the nature and importance of geography of the time and how it developed. This is important because cartography was undergoing significant evolution during this same period. The Crusades and the establishment of trade in spices, silk and other goods created a very strong demand for quality maps. The nature, content and structure of maps were also informed by these ventures. Maps became more global and their precision increased.

Medieval maps differ dramatically from the types of maps that we use today. Scale, direction and other characteristics were not viewed as important as they are today. Very often populations, mythical places, landmarks and other entities were included in maps.

A common map type of the early Medieval times was the T-O map named so because it looks like the letter "T" inside the letter "O". The structure of the T-O map is shown below



In this map style (circa 1300), the world is depicted in a circular fashion. Contrary to popular belief, a predominant view of the world at that time was that it was spherical. Christopher Columbus' journey was about finding trade routes to Asia not proving that the world was not flat. Here the world is portrayed as a hemisphere with the three known "continents", Asia, Europe and Africa. Asia is shown at the top because the map is oriented toward the east, and it was perceived to be the largest. The "T" area of the map represented the seas, the Mediterranean, Red and Black Seas, the Don River and the Sea of Azov. It was believed by some Medieval cartographers the bottom hemisphere was totally covered by water.

Perhaps the most famous surviving Medieval map is the Hereford map produced in the 13<sup>th</sup> century shown below. This map depicts the town of Hereford England and its vicinity. This map is distinctive because it shows numerous landmarks, people, animals and other features. As maps progressed throughout the Middle Ages, they developed to show more features and in the latter Middle Ages, became more geographically accurate.



We are in the process of codifying the descriptions of the quests of the King Arthur's Knights in maps. We are comparing these maps with today's maps and with maps of their times. We hope to ask some critical research questions such as:

How similar/different are the mapped journey descriptions of the manuscripts and maps of their times?

How similar/different are the mapped journey descriptions of the manuscripts and maps of today?

How have the journey descriptions of the manuscripts changed over time?

Do these changes reflect changes in the world knowledge of the Medieval inhabitants?

### Phase 3: Manuscript Migration

In the 300 or so year in which the manuscripts under study were produced, copies of the manuscripts were carried across Europe. Some of these were due to royal weddings and the emigration of wealth merchants. In many cases, these manuscripts were copied by scribes in their workshops.

In the third phase of the project, we are exploring the effects of the spread of manuscript copies across. Since we know that the manuscript copies were often "localized" by their scribes, we are interested in the geographic, political, social and other information encoded in those localizations.

The table below gives the approximate dates and locations of the manuscripts in our study.

Year	Location
c. 1210-20?	North France ?
c. 1220	Paris
c. 1230	Thérouanne?
c. 1230	Thérouanne?
c. 1250	Paris
c. 1250	Paris ?
c. 1250 ?	Paris ?

c. 1250 ?	uncertain
c. 1250 ?	uncertain
c. 1270-1300 ?	Bologna or Venice ?
c. 1275	London
1274	Douai ?
c. 1285	Douai
c. 1285	Douai
c. 1280 ?	Ghent or Thérouanne ?
c. 1280	Thérouanne or Cambrai ?
1286	Thérouanne or Cambrai ?
c. 1290	Thérouanne or Cambrai ?
1288	Genoa
c. 1290	Genoa
c.1280-1300	Bologna ?
c. 1290	Acre, Italy, or Cyprus ?
c. 1290	Thérouanne
c. 1290-1310	Metz or Verdun
c. 1300	Metz ?
c. 1300	London ?
c.1300-1310	Paris
c. 1310	Arras ?
c. 1310	Arras ?
c. 1310	Arras ?
c. 1310	Arras or Tournai
1316-17	Saint-Omer, Tournai, or Ghent
c. 1315	Amiens or Laon ?
1319	Avignon
c. 1315-35	Paris
c. 1325-50 ?	Mantua ?
c. 1330	Paris
c. 1330-50	Tournai or Ghent

c. 1340	Paris
c. 1340-50	Paris
1344 1351	Tournai
1357	Tournai ?
c. 1380	Milan
c. 1400-1410	Paris ?
1405 c. 1404 and c. 1465	Paris
c. 1450-55	Angers or Poitiers
c. 1450-60	Tours-Angers
1446	Mantua
c. 1450	Paris
c. 1450	Paris ?
c. 1450	Paris ?
1470 c. 1475	Central France
1479	Bruges
c. 1480	Champagne ?
c. 1480-85	Poitiers
1480-82	Bourges ?
1504	Paris ?

As the table shows, it appears that the manuscripts originates in Northern France in the early 13<sup>th</sup> century and migrated to England and Italy. In later years, manuscript workshops were producing copies throughout France and Northern Italy. The map below shows this graphically



We hope to relate the information gleaned from comparing the geographic descriptions of these widely distributed maps to maps of the day to shed even more light on the origins of and development of the profession of mapmaking.

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