

Clickable history

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Detail of the Byzantine Empire from a 14th-century world atlas created by Abraham and Jehuda Cresques. Credit: wikimedia

(Phys.org) —Geographic information systems – once limited to the domain of physical geographers – are emerging as a promising tool to study the past, as researchers are discovering for medieval history.

Almost nothing persists to reveal the existence of Jews in the Byzantine Empire – no buildings or synagogues, coins or seals, pots or pans, charms or amulets. Such evidence of everyday life simply hasn't survived for this now-vanished people, despite their living in a region that stretched from the southern Balkans, across Turkey to Crete and Cyprus for almost a millennium until the late 15th century.

Yet, evidence there is – if you look hard enough: inscribed on toppling tombstones, referenced in medieval travelogues and documented in fragments of Hebrew manuscripts that have only recently been deciphered. But because these threads are scattered so widely, often inaccessible or in fragments, Byzantine Jewry has been largely neglected in histories both of the Empire and of the faith.

Now, new research is not only filling these gaps – and, in so doing, showing how the Jewish population had a distinctive identity and unique culture – but is also breathing new life into the sources. The key to the approach is the use of a geographic information system (GIS). Similar to the advanced technology that underpins [Google Maps](#) and the global positioning systems now used in millions of cars, GIS combines a relational database with an [interactive map](#). Like these tools, the map is dynamic – when a question is asked of it, the system pulls data from the database to produce a map that gives specific information about a specific location at a specific time.

Although GIS has been around for some 50 years, its use in research had largely been restricted to the geographical sciences. Today, however, the tool is increasingly being used by researchers to map [behaviours](#) and events onto the landscape, whether it's the relationship between the built environment and obesity, or emergency planning for terrorist attacks and natural disasters.

And now, historians such as Professor Nicholas de Lange, who leads the study Mapping the Jewish Communities of the Byzantine Empire in the Faculty of Divinity, are turning to GIS as a means of managing and interrogating complex collections of data that relate to a defined location, and disseminating the information via the internet.

Maps have always been a lynchpin of historical study but, as de Lange explained, GIS and the advent of web maps are providing new scope for

visualising trends in historical data: "What's exciting about GIS is it allows us to move into a different dimension. Conventional maps are two dimensional – they show the situation in a geographical area at a given point in time. We are adding a third dimension that frees maps from being static snapshots – it can be viewed backwards and forwards in time, instantly revealing changes."

"The interactive nature of GIS is ideal for allowing researchers to investigate varied types of information quickly," added Dr Gethin Rees, who built the GIS-enabled database in collaboration with colleagues at the University of Umeå in Sweden. "Users can assess the relevance of particular places to particular Jewish individuals or communities, and compare the data over whatever time period best suits them." The resulting website was launched in March 2013 and is freely available to specialists and nonspecialists alike.

"We are trying to tell an historical story through the medium of a searchable map," said de Lange. "In a history book, the author will inevitably have made judgements about the data they decide to show on a map, and this information can become outdated. GIS circumvents this – our database aims to have all of the data that are currently available, and that becomes available in the future. Inclusivity is important because the relatively unexplored nature of the subject means that it's impossible to predict all the uses to which historians and other researchers will put the data."

To this end, research associate Dr Alexander Panayotov, with the assistance of three researchers based in Italy, Greece and Turkey, has been painstakingly assembling data that can be dated and located relating to the presence of Jewish communities in the Empire from 650 until the end of the 15th century.

One of the richest sources of information is the writings of the Jewish

traveller Benjamin of Tudela, who passed through Byzantium on his way to the Holy Land in the mid-12th century. His travelogue describes the location of Jewish communities, the number of Jews or Jewish households in each place, their communal leaders, social status, religious schools and sects.

Other sources of knowledge about Byzantine Jewish life include Hebrew inscriptions on tombstones that help to place individuals in specific locations at specific times; deeds, personal correspondence and legal documents, such as the marriage settlement and dowry in 1022 between Namer son of Elkanah and Eudokia daughter of Caleb, which provide social and economic history; and Hebrew manuscripts that contain the date and place of their writing. All the information these provide is being added to the growing database.

To date, around 1,000 separate sources have been analysed, describing over 1,000 individuals living at 150 locations and participating in 100 different occupations.

One of the greatest challenges the researchers have faced is the fact that GIS was designed for use with empirical data – facts and figures that are assured. "When you consider the age-related damage and fragility of many of the medieval sources, precision and reliability are sometimes compromised," explained Rees. "Given the scarcity of information, even such problematic data cannot be overlooked in a project of this type. Luckily GIS is capable of handling 'imperfect data' much better than conventional maps and it's possible to provide a digital indication of the uncertainty surrounding an event. That way, the user can judge whether to accept the evidence or not."

The Byzantine Empire is held by scholars to be an important historical link between the ancient empires of Greece and Rome – with their rich cultural and intellectual traditions – and the modern world. Some have

suggested that, without this link, the nature of European civilisation would have been very different.

"The [Jewish population](#) was a very interesting minority group in this time period," explained de Lange, whose research was funded by the European Research Council. "We have learned through this project that Jews were engaged not only in a wide range of trades, but also in farming, and even owned property and lands, unlike Jews in much of Latin Europe."

Thanks to the new digital resource, fresh insights can be gained into the involvement of Jews in trade, the effect of political change on their lives, the movement of Jewish communities around the Mediterranean and the factors that influenced the development of Jewish residential quarters in cities.

"Past scholarship tells us that historians have not been able to see some of these relationships clearly," Rees added. "For instance, the importance of silk has been over-emphasised, probably based on Benjamin of Tudela's interest in writing about this occupation. We now know that silk production makes up only a tiny fraction of the overall references to Jewish occupations."

Acknowledging that the use of GIS for historical research is still in comparative infancy, the researchers are aware that it's not easy to predict how the technology will develop. But by taking steps to ensure that their data are available in formats that allow others to link to the dataset and re-use it in the future, their hope is that it will interlock with other digital projects, to provide a seamless historical resource that criss-crosses time and place.

Provided by University of Cambridge

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