

<p>Institution: The Open University</p>
<p>Unit of Assessment: D31 Classics</p>
<p>Title of case study: Digital Classics – transforming standards and access to data on the ancient world</p>
<p>1. Summary of the impact</p> <p>The Digital Classics research group has been instrumental in transforming the cultural capital of the ancient world online, through changing the way that information about the ancient world is found and can be used. It builds transferable tools and has established a set of international standards for exploring and visualising the ancient world online. For example, Barker’s Google Ancient Places (GAP) project has built an innovative web platform for reading texts spatially while the Pelagios network, using the infrastructure of the Internet, links data from international archives and museums in creating a world wide web of antiquity.</p>
<p>2. Underpinning research</p> <p>Digital Classics is a rapidly growing discipline at the OU with connections across the Arts Faculty as well as to a wide range of international higher education institutions. With external funding from various government agencies, commercial bodies, and major international partners, we develop and use new digital tools for investigating the geography of the ancient world, changing how information can be accessed and used. Work focuses primarily on three ongoing projects.</p> <p>Hestia uses an innovative methodology for studying the spatial relations embedded within a literary text. It was initially funded in 2008–10 by the AHRC, with follow-on funding awarded from 2013. With Herodotus’s <i>Histories</i> as the test case, the team uses digital technology and develops web-mapping tools, replacing the usual cartographic representations of space as points on a map with an understanding of space as a contact zone of connections between places and peoples.</p> <p>Hestia’s experimental approach uses:</p> <ol style="list-style-type: none"> 1. Geographical Information Systems (GIS), through which users can query and map all the spatial data in the text; 2. Google Earth, which allows users to locate and find out about places mentioned in Herodotus; 3. a narrative timeline showing places appearing and ‘fading from memory’ as the ‘reader’ moves through the text or along a ‘timeline’ of book chapters. <p>All data and maps generated are open so interested users, including schools, can find out about Herodotus’s world for themselves. Our technologies have considerable reuse potential in other humanities/social sciences disciplines.</p> <p>GAP builds on Hestia by developing the means of automatically finding places not just in a single text but, in principle, in any text across large text corpora (e.g. Google Books). It then visualises the results. It has been funded successively from 2011 under Google’s Digital Humanities Research Awards.</p> <p>Using the ancient world as a test case, GAP addresses two primary concerns related to online resources: discoverability and usability. Our specialist software tools identify what places are mentioned where, and how often, within a given text, and then resolve those results to a digital gazetteer, displaying their locations on a map. We have developed an intuitive reading interface called GapVis, where users can see at a glance the total distribution of place references. They can also move through the narrative and see locations appearing and ‘fading from memory’, and focus on individual places including their relationships to other locations mentioned ‘in the same breath’. GapVis is freely available online and extensible to any narrative with geospatial content.</p> <p>Funded by successive JISC programmes, Pelagios develops the infrastructure through which online material about the ancient world can be brought together. By developing a common schema and providing community guidelines for referring to place data, whether archaeological, literary or visual, Pelagios enables people or groups (whether academic or not) to join the network, making</p>

their own resources more discoverable and, therefore, more valuable. In turn, the **Pelagios** network empowers both professionals and the general enthusiast to discover the cities of antiquity and explore the rich interconnections between them.

3. References to the research

1. Barker, E., Bouzarovski, S., Pelling, C. & Isaksen, L. (2010) 'Mapping an ancient historian in a digital age: the Herodotus Encoded Space-Text-Image Archive (HESTIA)', *Leeds International Classical Studies*, vol. 9, at <http://www.leeds.ac.uk/classics/lics/>, article no. 1.
2. Barker, E., Bouzarovski, S., Pelling, C. & Isaksen, L. (2012) 'On using a digital text in modern humanities research: the case of Herodotus's Histories', in Dunn, S. and Mahony, S. (eds) *Digital Classicist Supplement: Bulletin of the Institute of Classical Studies*, Oxford.
3. Isaksen, L., Barker, E., Byrne, K. & Kansa, E. (2012) 'GAP: a neogeo approach to classical resources', in *Leonardo*, vol. 45, no. 1, pp. 82–3.
4. Simon, R., Barker, E. & Isaksen, L. (2012) 'Exploring Pelagios: a visual browser for geo-tagged datasets', in E. Agirre, K. Fernie, A. Otegi & M. Stevenson (eds), *International Workshop on Supporting Users' Exploration of Digital Libraries*, Paphos, Cyprus, 23–27 September, pp. 29–34.
5. Barker, E. (2013), 'All mod cons: power, openness and text in a digital turn', in L. Hardwick & S. Harrison (eds), *Classics in the Modern World: A 'Democratic Turn'?*, Oxford: Oxford University Press.
6. Pelagios research has been distilled and published on the open-source code site, Git Hub at <https://github.com/pelagios/pelagios-cookbook/wiki>

Grants (*indicates Barker as PI)

2013–2015: £331,482.48 awarded by The Andrew W. Mellon Foundation to E. Barker for Pelagios phase 3: Early Geospatial Documents

*2013–2014: £64,084 awarded by the Arts and Humanities Research Council (AHRC) to E. Barker as follow-on funding for successful projects, 'Hestia 2: Reading Texts Spatially'.

2011–2013: \$US50,000, awarded by Google Research Awards Program: Digital Humanities Research Grant, 'GAP2', to L. Isaksen (PI), E. Barker, Co-I.

*2011–2012: £153,496 awarded by JISC: Resource and Discovery Programme to E. Barker for 'Pelagios2'.

*2011: £44,006 awarded by JISC: Geospatial Engagement and Community Outreach programme, to E. Barker for 'Pelagios: Enable Linked Ancient Geodata in Open Systems'.

*2011–2012: \$US35,000 awarded by Google Research Awards Program: Digital Humanities Research Grant to E. Barker for 'Google Ancient Places (GAP)'.

*2008–2010: £66,724 awarded by the Arts and Humanities Research Council (AHRC) to E. Barker (with Bouzarovski, Pelling and Isaksen) for Early Career Fellowship, 'Network, relation, flow: imaginations of space in Herodotus' History' (Hestia)'.

4. Details of the impact

Digital Classics builds capacity in heritage organisations, enhances school curricula, establishes best practice, and develops web infrastructure.

Hestia's experimentation with data visualisation has attracted the interest of cultural heritage groups and government agencies who need to present big and often messy data in ways that make sense to users while neither reducing complexity nor presenting a misleading picture. English Heritage, Ordnance Survey and Hampshire County Council all participated in the Hestia2 July 2013 workshop on using network visualisations to analyse spatial relationships in data records.

Hestia's 'outreach' potential in using different web-mapping technologies for reading texts visually has been documented in two outreach publications (in *Amphora*, the American Philological

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Association outreach magazine, and *Iris* schools magazine). Results from using Hestia in a US public high school in Virginia, as an example of active learning within a 'lab school', were presented at 'Classics in the Modern World: a Democratic Turn?' at The Open University in June 2010 (underpinning research item 5). The school students contributed highly positive feedback, reflecting on their own learning and suggesting improvements. In July 2013 Hestia partnered with the Classics Charity *Iris* and the commercial digital pioneers L–P Archaeology to use Hestia's resources for teaching ancient history in state schools in Bolton and London (1).

Hestia has been presented at a number of prestigious international meetings to establish best practice and formulate policy in the Digital Humanities:

- the *European Science Foundation Standing Committee for the Humanities* Strasbourg workshop on 'Research Communities and Research Infrastructures in the Humanities' (2);
- the European FP7-project NeDiMAH work group on evaluating visualisation methods and tools in Digital Humanities research and teaching;
- the Scholarly Communications and Information Technology (SCIT) Program in New York, funded and organised by the Andrew W. Mellon Foundation, setting the Mellon's future strategy on funding electronic resources for the dissemination and interpretation of classical texts.

The **GAP** project's search mechanism—the means by which it automatically 'discovers' places in a text—has been adopted by the Mellon Foundation-funded Project Bamboo, as an exemplar text-mining service for scholars, librarians and information technologists (3).

The GAP project has featured in the media and on a number of influential blogs (4), attracting widespread praise for its pedagogical potential. It was also one of four examples chosen by Google to be showcased at its June 2012 Geo Teachers Institute in London. GAP has contributed to the Amicus Brief compiled by digital humanities scholars and law professors and submitted in support of the defendants in the Authors Guild vs. HathiTrust case of the US Southern District Court of New York (5). Citing this brief, the trial court ruling found that certain uses of digitised university library books to enhance search, scholarship, and access qualify as fair use, a ruling that dramatically impacts and enables the future of this work.

Going beyond establishing best practice, **Pelagios** has been developing ancient-world web infrastructure for academic and non-academic data providers alike and has impact beyond ancient world data. For example JISC identifies Pelagios's decentralised, open annotation approach as a model for future web practice, featuring it in the policy document 'Preliminary highlights from the JISC Discovery programme' (6). This sets out the plan for future investment in digital infrastructure projects, as an example of 'greater impact through linking'.

The open-data service technology that Pelagios has championed is now the de facto international standard for open linked geospatial data concerning the ancient world. Impact is measured not just by the growing number of partners whom Pelagios has attracted but also by the process that each group undertakes to become a partner: by adopting the Pelagios system, partner organisations must change the way they structure their data. This means that Pelagios's research has achieved the impact of transforming the nature of the data held and provided by all of these organisations, and the way in which they work and even conceptualise their activity.

In addition to work with the British Library (7) the spectrum of organisations extends beyond the academic research community to include: regional and national museums (e.g. the Ure Museum, the British Museum); a national database (Arachne); a private learned society (Nomisma), a digital library (Perseus); an aggregator service (CLAROS); the government-funded Portable Antiquities Scheme (including meetings with staff from the British Museum and presentations at the Linked Ancient World Data Institute seminar series in New York (8)); and an equally diverse array of voluntary partners and interest groups (Ports Antiques; Regnum Francorum Online; SquinchPix; the open-access Ancient History Encyclopedia (9)). Pelagios was the subject of a keynote presentation at a meeting of Wikipedia in Germany, for bringing together scholarly research and public resources (10).

5. Sources to corroborate the impact

1. Evidence of impact in schools and in the cultural heritage sector through the Southampton

Impact case study (REF3b)

- seminar: <http://hestia.open.ac.uk/blog/>
2. European Science Foundation policy briefing document, 'Research infrastructure in the digital humanities', September 2011, case study on Hestia, pp. 16–18 at http://www.esf.org/fileadmin/Public_documents/Publications/spb42_RI_DigitalHumanities.pdf
 3. GapVis at Project Bamboo, a registry of digital research tools allowing users to find and compare resources: <http://dirt.projectbamboo.org/resources/gapvis>
 4. 'Zoom around this detailed map of the ancient world', Smithsonian blog post at <http://blogs.smithsonianmag.com/smartnews/2012/10/zoom-around-this-detailed-map-of-the-ancient-world/>
 5. 'HathiTrust Opinion' at <http://www.scribd.com/doc/109647049/HathiTrust-Opinion>, (PDF), p. 13 with n.4.
 6. 'Greater impact through linking', <http://blog.discovery.ac.uk/2012/11/15/some-preliminary-highlights-from-the-discovery-programme/>
 7. Letter from Lead Curator, Digital Mapping, British Library: 'The result of our involvement in the Pelagios research will be to increase access to and expand research use of our growing digital collections'.
 8. Letter from ICT Advisor, British Museum: 'The Pelagios project has definitely changed the working practice and delivery of Portable Antiquities Scheme web resources and I hope that the project gets the plaudits that it deserves. The team are dynamic, helpful and definitely in the vanguard of linked and open data within the Classical World'.
 9. Letter from Director and Founder of the Ancient History Encyclopedia: 'the Pelagios data displayed in our atlas is exposed to a huge audience. We also know that it is being used in class by many teachers around the globe'.
 10. 'Wikidata traf Archäologie' at: http://de.wikipedia.org/wiki/Wikipedia:Wikidata_trifft_Arch%C3%A4ologie_2013.