Institution: The Open University	
Unit of Assessment: D29 Classics	
Title of case study: The Pelagios Network: developing methods, tools and communities for linking online historical resources	
Period when the underpinning research was undertaken: 2009-2019	
Details of staff conducting the underpinning research from the submitting unit:	

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Elton Barker	Professor in Greek Literature and Culture	2009-present

Period when the claimed impact occurred: 2014-2020	
Is this case study continued from a case study submitted in 2014? N	

1. Summary of the impact

Barker's research into the historical representation of space and place co-established Pelagios: a transdisciplinary initiative which weaves together stories held by objects and places, whether tangible (a statue in a museum) or virtual (a cloud database), by drawing digital connections between them. Pelagios's method sets the baseline for a global community of practice which has revolutionised how professional services, GLAMs (Galleries, Libraries, Archives and Museums), and creative industries publish and conceive of their data. Pelagios's co-created tools are used all around the world in GLAMs and Digital Humanities (DH) teaching and infrastructure. Pelagios's community of practice is so influential that it is now established as a registered charity (the 'Pelagios Network') with 30 partner organisations worldwide.

2. Underpinning research

Barker's AHRC-funded **Hestia** project (2009-2010 GBP39,475, 2013-2014 GBP63,896) developed a pioneering methodology for studying the ways space is conceived and represented in a non-modern text, using the *Histories* of Herodotus as a case study. This research, culminating in an Oxford University Press book, *New Worlds from Old Texts: Revisiting Ancient Space and Place,* argues for a paradigm shift in understanding how texts organise spatial information differently from maps. One chapter **[O1]** sets out a new method for conceiving of textual geography in terms of graphs of topological relations between places and the peoples who represent them. Another **[O2]** shows how this series of overlapping and increasingly complex relations challenges the notion of an abstract, mappable topography, leaving readers to grapple with the multidimensions of places and their ethical complexities. A third **[O3]** explores using digital tools for studying places in texts, to identify affordances and challenges of using contemporary technologies for representing non-cartographic spatial thinking.

Hestia demonstrated the research possibilities of exploring places in a single text. With two digital humanities grants from Google (2010-2012 GBP27,150 & GBP38,786), **Barker's Google Ancient Places** project investigated how this work could be scaled up to enable the study of place information across any number of digital texts. It found that: (i) identifying places in large text corpora required disambiguation: for example, 'Paris' the place needed to be distinguished from 'Paris' the person, Classical 'Athens' from 'Athens' Georgia, and so on; and (ii) disambiguation was best achieved by using Uniform Resource Identifiers (URIs)—character strings provided by global authorities (gazetteers) that are stable and unique to each place, such as the URI for 'Athens', https://pleiades.stoa.org/places/579885, produced by the ancient world gazetteer, Pleiades. (The most common form of URI is the Uniform Resource Locator (URL), or web address).

Building on this research, **Barker's** JISC-funded **Pelagios** pilot (2011-12 GBP44,00, GBP154,000) worked with internationally renowned curators of ancient world data online (Pleiades, the German Archaeological Institute, the Perseus Classical Library) to address problems facing Classical Studies as research pivots online—namely disciplinary division, the fragmentation of sources, and different data standards. With these partners **Pelagios** co-created

a lightweight but universally applicable method of linking online materials of different types (texts, images, databases), hosted by different global data providers. This method is based on the gazetteer URI: instead of compelling everyone to remodel their data according to some overarching ontology, the Pelagios method simply states that each provider should annotate the places mentioned in their data with the appropriate gazetteer URI record. By means of the *semantic annotation* of place references, Pelagios enables the resources hosted by different data providers to be interlinked, using the web technology of Linked Open Data (LOD) **[O4]**.

Winning three successive grants from the Andrew W. Mellon Foundation (from 2014 GBP382,434, GBP597,337 & GBP581,821), **Pelagios** developed three pathways to impact. First, we worked with researchers from across the world to co-create a new 'web annotation' format of LOD that facilitates the interlinking of historical resources from any discipline. The **Pelagios** format is now the de facto standard for Humanities LOD in disciplines as diverse as Australasian, African, Chinese, European, Latin American, and Middle Eastern studies, from antiquity to the present day. Second, with professional practitioners we co-created **Recogito**, a free open-source tool that enables the domain specialist or curator to annotate digital documents without coding expertise **[O4]**. Third, as its Community Director (2016-19), **Barker** grew **Pelagios**'s influence across disciplines and beyond academia by giving conference presentations and workshops, providing consultancy, and managing a 'small grants' programme, which supported networking and resource development within the **Pelagios** LOD ecosystem. Formalising this community of practice, and after research into similar community-based initiatives, **Barker** co-established the **Pelagios Network** as a formal Association according to UK Charity law in July 2019. As its General Secretary, **Barker** oversees the coordination of work, pooling of resources, and development in cooperation with interdependent Partners, each of whom supply a Memorandum of Understanding (MoU) that sets out their shared objectives. Success is demonstrated by the fact that the **Pelagios Network** currently has 30 global Partners.

3. References to the research

Pelagios has developed a method of, built software tools for, and established a formal association around, producing LOD: books, chapters and articles are ill-suited to publishing research of this nature (software development), which explains why there is only the one reference here to Pelagios **[O4]**.

O1. Bouzarovski, S. and **Barker, E**. (2016) Between east and west: movements and transformations in Herodotean topology. In: **Barker** et al. (eds.), *New Worlds from Old Texts: Revisiting Ancient Space and Place*. Oxford University Press, 155-179. https://doi.org/10.1093/acprof:oso/9780199664139.003.0008

O2. **Barker, E**. and Pelling, C. (2016) Space-Travelling in Herodotus Book 5. In: **Barker** et al. (eds.) *New Worlds from Old Texts: Revisiting Ancient Space and Place*. Oxford University Press, 225-252. https://doi.org/10.1093/acprof:oso/9780199664139.003.0010

O3. **Barker, E**., Isaksen, L., and Ogden, J. (2016) Telling stories with maps: digital experiments with Herodotean geography. In: **Barker** et al. (eds.), *New Worlds from Old Texts: Revisiting Ancient Space and Place*. Oxford University Press, 181-224. https://doi.org/10.1093/acprof:oso/9780199664139.003.0009

O4. Simon, R., **Barker, E**., Isaksen, L., and de Soto Cañamares, P. (2017) Linked Data Annotation Without the Pointy Brackets: Introducing Recogito 2. *Journal of Map & Geography Libraries*. Volume 13(1), 111-132. https://doi.org/10.1080/15420353.2017.1307303

All outputs were subject to blind peer review and have been certified as 2* or above.

4. Details of the impact

Impacts on practitioners and delivery of professional services and practice

As Community Director, **Barker** has worked with non-academic public organisations focused on the ancient world to extend **Pelagios**'s method into the design and delivery of their services. At workshops, on Zoom, and by email he has consulted with over thirty data curators to co-create best practice solutions that meet the needs of their various publics—specifically the challenge of making their data findable, accessible, interoperable and reusable. The Director of ToposText, a free website and mobile app of geolocated classical texts, explains how engaging with the **Pelagios** community "*changed [his] life*", empowering him to overcome the challenge posed by an otherwise "*impenetrable jargon designed by and for a narrow caste of DH [Digital Humanities] specialists*" **[C1.1]**. Adopting **Pelagios**'s method has helped him to "*reorganize the ToposText website with stable URLs and more standard metadata*" and thereby incorporate his resource "*in a complex international ecosystem of shared information*". The Director of Data Science at the American Numismatics Society in turn describes how collaboration with **Pelagios** has enabled him to achieve his goal of "*mak[ing] the cultural heritage materials of our once-esoteric discipline more accessible to the public*" **[C1.2]**. He concludes: "*Pelagios has been fundamental in the mainstreaming of our discipline*".

Impacts on understanding, learning and participation

Pelagios's success in co-creating the open-source tool **Recogito** is demonstrated by its subsequent impact on the design and delivery of curricula in Digital Classics, as well as Digital Humanities (DH) more broadly, across the world. **Recogito** forms an integral part of the DH syllabus at different UK institutions (e.g. King's College London **[C1.10]**, Exeter and Lancaster), universities internationally (in e.g. the US **[C1.11]**, Europe and Australia), as well as the online Sunoikesis programme **[C1.12**; for a full listing, see **C2.5-C6]**. A lecturer at Boğaziçi University (Istanbul) "*found [Recogito] to be an excellent resource for introducing students to digital humanities tools*", so much so that they "*translated the Recogito tutorial into Turkish*" in order to "*[continue] to use it [in] subsequent research projects*" **[C1.3]**. **Recogito** has over 7,000 users (making collectively almost 5.6 million annotations), each of whom, by virtue of using the tool, will have changed the way that they learn and engage with digital data **[C2.3, C6]**. A further sign of **Recogito**'s impact is the accolade of "*best tool*" as voted by both the international Digital Humanities and Open Publishing global communities **[C2.3]**, whose number exceeds the tens of thousands.

As Community Director, **Barker** has extended the reach and significance of **Recogito** and the adoption of **Pelagios**'s method of linking data. As well as offering consultancy (see above), **Barker** initiated and managed a small grants programme, which supported the development of **Pelagios**-based tools and/or the take-up of **Pelagios** protocols. By funding this work, **Pelagios** has had a direct impact on 25 institutions in 14 countries, including Germany, the US, Israel, Australia, Croatia, and Argentina **[C3]**. Europeana, the European Commission's Digital Service Infrastructure for Europe's online cultural heritage, has validated the significance, reach and impact of **Pelagios** by dedicating a special issue of its research and development publication to reporting on the work of these small grants **[C4, C2.4]**.

A researcher at the Institute of Bibliographic Research and Textual Criticism in Argentina was one such holder of a small grant. In this context, where "*digital infrastructures are sometimes obsolete*", **Pelagios** has helped her and others like her ultimately overcome "*barriers*" of "*language and lack of institutional and financial support*" **[C1.4]**. Because of small grants, they "*could start [their] own DH projects with no infrastructure*" and "*develop projects that were important for [their] community in Argentina*". In turn, **Recogito**, by being not only "*very intuitive and ready-to-use*" but also multilingual, "*is now a tool very much used in Argentina*", and has "*helped [them] to build [their] own community of Recogito users/users interested to collaborate in [their] projects*". Above all, "*Pelagios has been a global hub that facilitated projects in an open and collaborative community*",

because of which they "*could work and interact with many groups from abroad*" with "*which they had many interests in common but […] had never realised*".

Impacts on creativity, culture and society

Barker's promotion of **Pelagios**'s tools and method has had significant impact on GLAM institutions, by helping them curate their collections more effectively and improve their reach. Following **Barker's** keynote at a 2017 library conference in Greece, an audience member, a librarian at the Czech digital library Manuscriptorium, got in contact: they have since adopted **Recogito** as a tool for annotating their corpora, which, along with **Pelagios**'s LOD method more generally, has "*simplified [their] process of creating mark-up used for georeferencing*" **[C1.5]**. As another librarian at the British Library explains, workshops at the library's 2019 *Season of Place* facilitated the adoption of **Recogito** as a "*valuable toolkit*" for staff members to address the "*technical challenge*" of "*building bridges between text and geography*". Recogito "*annotations help the Library to improve the discoverability of [their] collections and to foster new research perspectives*" **[C1.6]**. This initial interest became formalised within the **Pelagios** small-grant programme, as the British Library established a working group to scope out designs for "*visualising data in time and space on web maps*" that would be of considerable benefit to curators and their publics. **Recogito** continues to be used as a "*powerful yet easy to use*" tool without which "*it would not have been possible to upskill [their] staff*" **[C.1.6]**.

A similar trajectory is evident in the experience of the Heritage Information Strategy Adviser at Historic England (HE). HE first participated in **Barker's** AHRC-funded GLAM network workshop in March 2020, which set out to explore how **Pelagios** LOD can help virtually reunite objects exhibited in different collections around the world. As a result of this event, **Barker** was invited to give a keynote presentation at the COST Action Saving European Archaeology from the Digital Dark Age Exploratory Workshop (120 professional members representing 42 countries). HE are now planning to use **Recogito** "*to enhance the re-usability of The Library of Unpublished Fieldwork Reports*" **[C1.7]**, which has over 30,000 monthly users (researchers, students, cultural heritage curators), and are becoming a formal partner of the **Pelagios Network** to "*further solidify and advance the important ongoing work in this area*".

Impacts on the growth of heritage organisations

In 2019, **Barker** formalised **Pelagios**'s principle of an open, collaborative and decentralised development of methods and tools by co-founding the **Pelagios Network**. An official association of equal and interdependent partners under UK charity law, this free Network requires only one thing from a potential partner: an agreed workplan or 'MoU'. By virtue of fulfilling this requirement, however, each and every partner of the **Pelagios Network** has agreed to change their working practice based on the **Pelagios** protocol and commit to at least two one-hour meetings per month. All the practitioners mentioned in this case study have signed MoUs **[C5]**. Currently the **Pelagios Network** has 30 partner organisations worldwide, with on average 3 new partners joining every month.

By making access to its wide-ranging skills-base free of charge, as well as continuing to develop free opensource user-friendly software, the **Pelagios Network** is reducing both financial barriers and technical constraints to using LOD. The impact on the cultural economy is particularly significant among smaller organisations, lacking the financial and/or technical support to do the work otherwise. According to HE's Heritage Information Strategy Adviser, already "*the Pelagios Network has been a very effective forum for enabling collective discussions about innovative LOD research and for exploring wider uses of open data and open software solutions, along with associated issues of sustainability*", while **Recogito** is "*unlocking much of [the] potential [of archived material], based on years of knowledge and testing*" **[C1.7]**. The Associate Producer at Ubisoft Massive, and participant in the Swedish-based Cultural Heritage Incubator programme, notes that "*Recogito offers a solid and proven base to build upon, while also keeping in mind the high standards required from academic researchers*" **[C1.8]**. "*Partnering with Pelagios*" has given her "*an invaluable headstart […], saved valuable months of prototyping time and […] provided a*

clear visual benchmark for future tools". As a partner, "*gaining access to the collective knowledge in the network gives [her] confidence in taking the right decisions and avoid reinventing the wheel for each new feature*".

Lastly, the "*Pelagios ethos*" of "*loosely coupled, standards-coordinated collaborative scholarship*" **[C1.9]** is providing the basis for a new kind of DH enterprise. Performant, a not-for-profit company, which co-designs software tools with HEIs to support research and teaching, has "*begun to craft [their] proposals and budgets both to take advantage of the technical leadership and data models which Pelagios has championed, and to provide for participation in the Pelagios Network as those projects mature*" **[C1.9]**. For them, Pelagios is much more than a DH initiative: "*In an environment of limited funding for the digital humanities, and sometimes divergent and/or competitive, rather than cooperative and interoperable digital scholarship, the Pelagios Network has articulated, and is demonstrating, a model for collaborative digital scholarship*". As such, "*it's a strategic advantage for [them] to follow Pelagios' sterling example of collaboration and interoperability, and to participate in the growing and increasingly vibrant ecosystem, that the Pelagios Network is becoming*".

5. Sources to corroborate the impact

C1. Testimonials from named individuals in cultural heritage in support of Pelagios, its method, tools and community.

C2. Recogito description and links, funding, awards and stats, publications (including third-party), teaching, reviews and recommendations.

C3. Details of Pelagios small grant holders (2016-2019).

C4. Europeana Letter of Support, explaining its collaboration with, and special publication dedicated to, Pelagios.

C5. Pelagios Network Partners with signed Memoranda of Understanding.