Pleiades: the un-GIS for ancient geography
Proposal abstract for a DH2011 poster/demo (889 words)

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Pleiades (http://pleiades.stoa.org) is an open-access digital gazetteer for ancient history. It has recently been described in an important report from the Council on Library and Information Resources as a "prominent digital project ... within the realm of classical geography."[1] It provides stable Uniform Resource Identifiers (URIs) and helpful Atom, HTML, JSON, and KML representations for tens of thousands (and growing) of geographic entities.[2] It invites scholars, students and enthusiasts worldwide freely to use, create and share historical-geographic information related to these entities via its web application. Built on the Classical Atlas Project (1988-2000), which produced the *Barrington Atlas of the Greek and Roman World* (Princeton, 2000), Pleiades is co-organized by the Institute for the Study of the Ancient World (NYU) and the Ancient World Mapping Center (UNC Chapel Hill). With fresh funding from the National Endowment for the Humanities (2010-2013), Pleiades is beginning to expand beyond its classical Greco-Roman roots and is establishing lines of interoperability with a number of other web-based resources treating the geographical, textual, visual and physical culture of antiquity.

The poster proposed here, to be accompanied by hands-on software demonstrations, will summarize conceptual models and functionality with an emphasis on both recent achievements and on-going challenges. It represents a substantive follow-up to the authors' treatment in *Digital Humanities Quarterly* in early 2009[3] and to Elliott's general presentation of the project at DH2009. The poster will emphasize significant changes since these reports, in both approach and scale, that we believe are of significant interest to digital humanities practitioners and scholars across subdisciplines.

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[1]Alison Babeau, *"Rome Wasn't Digitized in a Day": Building a Cyberinfrastructure for Digital Classicists,* version 1.2 (9/29/2010), CLIR draft report: http://www.clir.org/activities/details/infrastructure.html.
[2]HTML: Hypertext Markup Language (http://www.w3.org/html/); JSON: JavaScript Object Notation (http://www.json.org/); KML: Keyhole Markup Language (http://code.google.com/apis/kml/).
[3]Tom Elliott and Sean Gillies, "Digital Geography and the Classics," *Digital Humanities Quarterly* 3 (2009): http://digitalhumanities.org/dhq/vol/003/1/000031/000031.html. Much of the description in this article reflects late 2007 project state.

The poster will foreground a unique aspect of the Pleiades effort: its "un-GIS" approach to historical geography. Where conventional Geographic Information System (GIS) data models privilege geometry – requiring a point, line or polygon with which to associate such "attribute data" as toponyms, time periods and the like – Pleiades embraces the inevitable sparseness, ambiguity, and contingency of historical knowledge. Pleiades models historical geography as a graph of relationships between conceptual places/spaces, names, locations and time periods rather than as layered views of tables containing measured locations with associated descriptive data fields. This model opens up a range of flexible capabilities not afforded by a traditional GIS approach, including:

- Identification and representation of geographic features that have no known locations, or that can be located only vaguely, roughly, or in relationship to each other
- Representation of the connectedness of features
- Change of location or properties of a feature over time
- Aggregation of temporally varying features into conceptual places or spaces that reflect ancient practice or modern scholarly method
- Stable identifiers for features, places and names that can be addressed directly by other web applications and cited reliably by students and scholars

The features listed above don't come for free. They bring extra complexity, and this additional complexity might be considered a weakness of the un-GIS approach (or not, as we'd like discuss with poster session attendees):

- Vocabularies for describing vague or rough locations are immature
- Algorithms for reasoning on vague or rough locations are immature or proprietary
- Relative locations need closure at some level if analysis is to be permitted, and there is uncertainty about where to stop
- Vocabularies for describing connectedness are immature
- Time adds both technical and social complexity; whether by physics or human nature, time and space are connected in many ways

This poster will illustrate our approaches to handling these complex issues. We are actively collaborating with other projects to find promising vocabularies and bring them to maturity (see further below). Moreover, we are evaluating event-based conceptual models (like that proposed by Mostern and Johnson[4]) that embrace the inseparability of time and space.

Pleiades' web-oriented approach – especially its emphasis on stable URIs and multiple standard formats for content serialization – opens up a wide range of interoperability options. Current collaborations in this domain will be highlighted, including:

- Ancient World Image Bank: http://www.nyu.edu/isaw/awib/
- Digital Atlas of Roman and Medieval Civilization: http://darmc.harvard.edu/
- Google Ancient Places: http://www.ecs.soton.ac.uk/about/news/332

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[4]R. Mostern and I. Johnson, "From named place to naming event: creating gazetteers for history," *International Journal of Geographical Information Science,* 22 (2008), 1091-1108. doi:10.1080/13658810701851438.

- Epigraphische Datenbank Heidelberg: http://www.uni-heidelberg.de/institute/sonst/adw/edh/
- The Inscriptions of Roman Cyrenaica: http://ircyr.kcl.ac.uk/
- Open Encyclopedia of Classical Sites: cf. in http://googleblog.blogspot.com/2010/07/our-commitment-to-digital-humanities.html
- Nomisma.org: http://nomisma.org/
- Papyri.info: http://papyri.info
- The Portable Antiquities Scheme: http://finds.org.uk/

At a moment when interest in Humanities GIS is growing (the so-called spatial turn), this poster is especially germane.[5] Critical engagement with the methodological and theoretical facilities and inadequacies of GIS is essential if we are fully to integrate spatial approaches into the humanist's toolkit and evaluate the products of their use in research, teaching and outreach. The perspective of the Pleiades team is firmly rooted in practice, arising from extended, hands-on work with a large, complex collection of historical information that exemplifies many of the challenges and opportunities humanists face daily, as well as hard-earned experience in conventional GIS projects. We believe that our critique of conventional GIS, and the alternative approach that has arisen from it, can inform the design of other humanities projects and provoke further innovation. Moreover, as the realization of the Pleiades model has been predicated upon an embrace of web-based interoperability and "crowd-sourced" content curation, this poster speaks directly to the DH2010 conference theme of "big-tent digital humanities."

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[5]On the spatial turn and its implications for the humanities, see Abby Smith Rumsey's summary and report on the UVA Scholarly Communications Institute 7: Spatial Technology and the Humanities, June 28-30 2009: http://www.uvasci.org/archive/spatial-technologies-and-methodologies-2009/.