

Advances in the Study of 16th-century Road Networks in the Iberian Peninsula: Applying SIGH to the History of Architecture [pt]

Patricia Ferreira-Lopes <patricia_dot_ferreira_at_juntadeandalucia_dot_es>, Escuela Técnica Superior de Arquitectura de la Universidad de Sevilla

Abstract

Recent research shows the potentiality of applying Geographic Information Systems (GIS) in cultural and historical studies. These studies have proven the benefits, flexibility and also the difficulties that the use of this technology brings to the humanities area. In the researches developed in the field of heritage documentation, it was observed that most of them support and claim the advantages to carry out analyses with GIS but cannot reach them because they are restricted to using the technology only to geolocate certain information. This problem deserves special attention because it limits the generation of knowledge from the data collected and processed. This article proposes an example of a study that contemplates the digitalization and analysis phase of an important source of documentation and cartography of Spain: *The Repertoire of all the ways of Spain in the year of grace of 1546*. The network of roads existing in the 16th century in the Iberian Peninsula was one of the main factors that helped the consolidation of commercial activities, the flow of knowledge and the constructive technical innovations in the new urban centres created. This paper proposes an analysis of the impact of these communication networks, through thematic maps, juxtaposition visualization, calculation of densities and calculation of the lowest cost path to study the terrestrial connections in the Peninsula. The result is a historical spatial data model capable of interrelating alphanumeric and/or physical-geographic data that enables a new perspective and source of information for researchers and professionals in different fields.

Note on Translation

For articles in languages other than English, DHQ provides an English-language abstract to support searching and discovery, and to enable those not fluent in the article's original language to get a basic understanding of its contents. In many cases, machine translation may be helpful for those seeking more detailed access. While DHQ does not typically have the resources to translate articles in full, we welcome contributions of effort from readers. If you are interested in translating any article into another language, please contact us at editors@digitalhumanities.org and we will be happy to work with you.

1

Works Cited

- Abrate et al. 2013** Abrate, M., Bacciu, C., Hast, A., Marchetti, A., Minutoli, S. e Tesconi, M. "GeoMemories-A Platform for Visualizing Historical, Environmental and Geospatial Changes in the Italian Landscape". *ISPRS International Journal of Geo-Information*, 2, (2013): 432-455.
- Alcázar Molina 1953** Alcázar Molina, C., "Las comunicaciones en la época de los Reyes Católicos". *Curso de conferencias sobre la política africana de los Reyes Católicos*, V, (1953): 55-70.
- Alonso Ruiz 2003** Alonso Ruiz, B. *Arquitectura tardogótica en Castilla: los Rasines*. Santander: Universidad de Cantabria (2003).
- Alonso Ruiz e Jiménez Martín 2009** Alonso Ruiz, B. e Jiménez Martín, A. *La traça de la Iglesia de Sevilla*. Sevilla: Cabildo Metropolitano (2009).

- Alonzo Ruiz 2010** Alonso Ruiz, B. eds. *Los últimos arquitectos del gótico*. Madrid: Ministerio de Ciencia e Innovación (2010).
- Azkarate et al. 2009** Azkarate, A., Barreiro, D., Criado, F., García Camino, I., Gutiérrez Lloret, S., Quirós, J.A. e Salvatierra, V., "La Arqueología hoy". Em Ortiz de Landaluze, A. L., eds. *Medio siglo de arqueología en el cantábrico oriental y su entorno*. Vitoria-Gasteiz Espanha (2009): 599-615.
- Bermúdez Sánchez 2004** Bermúdez Sánchez, J., "Creación de Rutinas o Macros con el Programa IDRISI: el Cálculo Acumulado de Visibilidades y Rutas Óptimas". Em Martín de La Cruz, J. C. e Lucena Martín, A. M^a., eds. *Actas del I Encuentro Internacional. Informática aplicada a la investigación y la gestión arqueológicas, Córdoba, Espanha* (2004): 407-418.
- Box 1999** Box, P. *GIS and Cultural Resource Management: A manual for Heritage Managers*, ed. Suki Dixon. Bangkok: UNESCO (1999).
- Cassatella e Carlone 2013** Cassatella C. e Carlone G. "GIS-based visual analysis for planning and designing historic urban landscapes: The case of Turin". *Digital Heritage International Congress (DigitalHeritage)*, 1, (2013): 45-52.
- Castells 1995** Castells, M. *La ciudad Informacional: tecnologías de la información, reestructuración económica y el proceso urbano-regional*. Madrid: Alianza Editorial (1995).
- Chaunu 1983** Chaunu, P. *Sevilla y América siglos XVI y XVII*. Utrera: Secretariado de publicaciones de la Universidad de Sevilla (1983).
- Crespo Solana 2014** Crespo Solana eds. *Spatio-Temporal Narratives. Historical GIS and the Study of Global Trading Networks (1500-1800)*. Newcastle: Cambridge Scholars Publishing (2014).
- De Montis e Caschili 2012** De Montis, A. e Caschili, S. "Nuraghes and landscape planning: Coupling viewshed with complex network analysis". *Landscape and Urban Planning*, 105(3), (2012): 315-324.
- Del Bosque González et al. 2012** Del Bosque González, I., Fernández Freire, C., Martín-Forero Morente, L., e Pérez Asensio, E. *Los sistemas de información geográfica y la investigación en ciencias humanas y sociales*. Madrid: Confederación Española de Centros de Estudios Locales (2012).
- Fairén Jiménez 2004** Fairén Jiménez, S. "¿Se hace camino al andar? Influencia de las variables medioambientales y culturales en el cálculo de caminos óptimos mediante SIG". *Trabajos de Prehistoria* 61 (2), (2004): 25-40.
- Ferreira Lopes 2018** Ferreira Lopes, P. "La transformación del proceso de investigación en Historia de la Arquitectura con el uso de las tecnologías digitales". *Artnodes*, 22 (2018): 61-72.
- Ferreira Lopes e Rozalem 2018** Ferreira Lopes, P. e Molina Rozalem, J.F. "Historical SDI, thematic maps and analysis of a complex network of medieval towers (13th-15th century) in the Moorish Strip". *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XLII-4, (2018): 177-183.
- Ferreira Lopes e Puerto 2018** Ferreira Lopes, P. e Pinto Puerto, F. "GIS and Graph models for social, temporal and spatial digital analysis in heritage: The case-study of Ancient Kingdom of Seville Late Gothic Production". *Digital Application in Archaeology and Cultural Heritage*, 9, (2018): 1-14.
- Ferreira Lopes et al. 2016** Ferreira Lopes, P., Pinto Puerto, F., Jimenez Mavillard, A. e Suarez, J. "Seeing Andalusia's Late Gothic heritage through GIS and Graphs". Em Digital Humanities 2016: Conference Abstracts. Kraków: Jagiellonian University & Pedagogical University, (2016): 501-504.
- Fisher et al. 1997** Fisher, P. F., Farrelly, C., Maddocks, A. e Ruggles, C. L. N. "Spatial analysis of visible areas from the Bronze Age cairns of Mull". *Journal of Archaeological Science*, 24 (1997): 581-592.
- Foresman 1997** Foresman, T. W., eds., *The History of Geographic Information Systems: Perspectives from Pioneers*. Prentice Hal (1997).
- Freire e Shor 2014** Freire, P. e Shor, I. *Miedo y osadía la cotidianidad del docente que se arriesga a practicar una pedagogía transformadora*. Buenos Aires: Siglo XXI Editores Argentina (2014).
- Gaffney e van Leusen 1995** Gaffney, V. e van Leusen, M. "Postscript-GIS, environmental determinism and archaeology: a parallel text". Em Lock, G. e Stancic, Z., eds. *Archaeology and geographical information systems: a European perspective*. London: Taylor and Francis (1995): 367-382.
- Gestoso e Pérez 1899** Gestoso e Pérez, J. *Ensayo de un diccionario de los artífices que florecieron en esta ciudad de Sevilla desde el siglo XIII hasta el XVIII. T. I*. Sevilla (1899).

- Gregory 2005** Gregory, I. N. "The Great Britain Historical GIS". *Historical Geography* 33, (2005):132-134.
- Gregory e Ell 2007** Gregory, I. N. e Ell, Paul S. *Historical GIS technologies, Methodologies, and Scholarship*. Cambridge: Cambridge University Press (2007).
- Gregory e Healey 2007** Gregory, I. N. e Healey, R. G. "Historical GIS: structuring, mapping and analysing geographies of the past". *Progress in Human Geography* 31 (5), (2007): 638-653.
- Gregory et al. 2001** Gregory, I. N., Kemp, K. K., e Mostern, R. "Geographical Information and historical research: current progress and future directions". *History and Computing* 13 (1), (2001): 7-23.
- Hasensatb 1983** Hasensatb, R.J. *A preliminar cultural resource sensitivity analysis for flood control facilities construction in the Paissaic River basin of New Jersey*. Marietta: US Army Corps of Engineers (1983).
- Hernando e Ladero 2009** Hernando, M.D. e Ladero Quesada, M.A. "Caminos y ciudades en España de la Edad Media al siglo XVIII". *La España Medieval*, 32. (2009): 347-382.
- Herzog 2013** Herzog, I. "Theory and practice of cost functions". Em F. Contreras Cortés, M. Farjas e F.J. Melero, eds. *CAA2010: fusion of cultures: Proceedings of the 38th Annual Conference on Computer Applications and Quantitative Methods in Archaeology, Granada, Espanha, Abril 2010*. Oxford: Archaeopress (2013).
- Judge e Sebastian 1988** Judge, J.W. e Sebastian, L. eds. *Quantifying the present and predicting the past: theory, method and application of archaeological predictive modelling*. Denver: U.S. Department of Interior, Bureau of Land Management (1988).
- Knowles 2002** Knowles, A. K. eds., *Past Time, Past Place: GIS for History*. Redlands: ESRI Press (2002).
- Knowles e Hillier 2008** Knowles, A. K. e Hillier, A. eds., *Placing History: how maps, spatial data, and GIS are changing historical scholarship*. Redlands: ESRI Press (2008).
- Kvamme 1983** Kvamme, K.L. *A manual for predictive site location models: examples from the Grand Junction District Colorado*. Bureau of Land Management: Grand Junction District (1983).
- Kvamme 1990** Kvamme, K. L. "GIS algorithms and their effects on regional archaeological analyses". Em Allen, K. M. S., Green, S.W. y Zubrow, E. B.W., eds., *Interpreting Space: GIS and Archaeology*, London: Taylor & Francis (1990): 112-125.
- Lyster 2016** Lyster, C. *Learning from logistics. How Networks Change Our Cities*. Basel: Birkhauser (2016).
- McComick et al. 2013** McCormick et al. *Roman Road Network*. Harvard University (2013). <https://darmc.harvard.edu/data-availability>.
- Murrieta-Flores 2012** Murrieta-Flores, P. "Understanding human movement through spatial technologies. The role of natural areas of transit in the Late Prehistory of South-western Iberia". *Trabajos de Prehistoria*, 69(1), (2012)103-122. DOI: 10.3989/tp.2012.12082
- Murrieta-Flores et al. 2017** Murrieta-Flores, P., Donaldson, C. E., e Gregory, I. N. "GIS and literary history: advancing digital humanities research through the spatial analysis of historical travel writing and topographical literature". *Digital Humanities Quarterly*, 11(1), (2017).
- Pidal 1951** Pidal, G. M. *Repertorio de todos los caminos de España (hasta ahora nunca visto)*. Real Academia de Historia, Coleção Departamento de Cartografia e Artes Gráficas, assinatura: C-030-030, R: 01101 (1951).
- Rodríguez Estévez 1996** Rodríguez Estévez, J.C. "Los Canteros de la Obra Gótica de la Catedral de Sevilla (1433-1528)". *Laboratorio de Arte. Revista del Departamento de Historia del Arte*, 9 (1), (1996): 49-71.
- Rumeu de Armas 1974** Rumeu de Armas, A. *Itinerario de los Reyes Católicos, 1474-1516*. Madrid: Consejo Superior de Investigaciones Científicas (1974).
- Rumsey e Williams 2012** Rumsey, D. y Williams, M. "Historical Maps in GIS". Em Knowles, A. K. eds. *Past Time, Past Place: GIS for History*, Redlands, ESRI Press (2012): 1-18.
- Salvador e Vitti 2011** Salvador I. e Vitti A. "Survey, representation and analysis of a world war I complex system of surface and underground fortifications in the Gresta Valley – Italy". *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences - ISPRS Archives*, 38(5W16), (2011): 319-325.
- Schlögel e Arántegui 2007** Schlögel, K. e Arántegui, J. L. *En el espacio leemos el tiempo: sobre historia de la civilización y Geopolítica*. Madrid: Siruela (2007).

- Serra Desfilis 2011** Serra Desfilis, A. "La arquitectura del tardogótico en la Corona de Aragón Intercambios y trayectorias". Em Alonso Ruiz, B. eds. *La arquitectura tardogótica castellana entre Europa y América*. Madrid: Silex, (2011): 459-490.
- Serra Desfilis 2016** Serra Desfilis, A. "La logia abierta transferencias y movilidad en la arquitectura tardogótica hispánica". Em Alonso Ruiz, B., Rodríguez Estévez, J.C. eds., *1514 Arquitectos tardogóticos en la encrucijada*. Sevilla: Universidad de Sevilla, (2016) 339-352.
- Silva 1989** Silva, J.C.V. *O tardo-gótico em Portugal: a arquitectura no Alentejo*. Lisboa: Livros Horizonte (1989).
- Soja 2010** Soja, E. *Postmodern geographies. The reassertion of space in critical social theory*. London: Verso (2010).
- Terpstra e Rose 2016** Terpstra N. e Rose, C. eds. *Mapping Space, Sense, and Movement in Florence: Historical GIS and the early modern city*. Abingdon: Routledge (2016).
- Uriol Salcedo 1985** Uriol Salcedo, José I. "Las calzadas romanas y los caminos del siglo XVI" *Revista de Obras Públicas*, 3237 (1985): 553-563.
- Uriol Salcedo 1990** Uriol Salcedo, José I. *Historia de los caminos de España I. Hasta el siglo XIX*. Madrid: Colegio de Ingenieros de Caminos, Canales y Puertos (1990).
- Van Leusen 1993** Van Leusen, P. M. "Cartographic modelling in a cell-based GIS". Em Andresen, J., Madsen, T. e Scollar, I. eds. *Computing the Past: Computer Applications and Quantitative Methods in Archaeology*, Aarhus: Aarhus University Press (1993): 105-123.
- Verhagen 2018** Verhagen, P. "Spatial Analysis in Archaeology: moving into New Territories". Em Siart C., Forbriger M. e Bubenzer O. eds. *Digital Archaeology, Nature Science in Archaeology*. Cham: Springer (2018).
- Verhagen et al. 2013** Verhagen, P., Nuninger, L., Tourneux, F.P., Bertoncello, F., Jeneson, K. "Introducing the human factor in predictive modelling: a work in progress". Em Earl, G., Sly, T., Chrysanthi, A., Murrieta-Flores, P., Papadopoulos, C., Romanowka, I., Wheatley, D. eds. *Archaeology in the digital era. Papers from the 40th annual conference of computer applications and quantitative methods in archaeology (CAA), Southampton, 26-29 March 2012*. Amsterdam: Amsterdam University Press (2013): 379-388.
- Verhagen et al. 2016** Verhagen, P., Nuninger, L., Bertoncello, F., Castrorao Barba, A. "Estimating the "memory of landscape" to predict changes in archaeological settlement patterns". Em Campana, S., Scopigno, R., Carpentiero, G., Cirillo, M. eds. *CAA 2015. Keep the revolution going. Proceedings of the 43rd annual conference on computer applications and quantitative methods in Archaeology, Siena*. Oxford: Archaeopress (2016): 623-636
- Villuga 1546** Villuga, J. *Repertorio de todos los caminos de España en el año de gracia de 1543*. Barcelona: Institut Cartogràfic i Geològic de Catalunya, R: RL 3419 (1543).
- Villuga 1902** Villuga, J. *Reportorio de todos los caminos de España; hasta agora nunca visto en el qll allará qlquier viaje q quierá andar muy puechosopa todos los caminantes*. New York: De Vinne Press (1902).
<https://archive.org/details/reportoriodeltodo00vill>.
- Villuga 1950** Villuga, J. *Repertorio de todos los caminos de España*. Madrid: Reimpresiones Bibliográficas (1950).
- Wheatley 2004** Wheatley, D. "Making space for an archaeology of place". *Internet Archaeology* 15.
- Whitley et al. 2010** Whitley, T.G., Moore, G., Goel, G., Jackson, D. "Beyond the marsh: settlement choice, perception and spatial decision-making on the Georgia coastal plain". Em Fisher, B., Crawford J., Kollers, D. eds. *CAA 2009. Making history interactive. Computer applications and quantitative methods in archaeology. Proceedings of the 37th conference, Williamsburg, VA, US*. Oxford: Archaeopress (2010): 380-390.
- von Lünen e Travis 2012** von Lünen, A. e Travis, C. *History and GIS: epistemologies, considerations and reflections*. Cham: Springer Science & Business Media (2012).