Christopher C. Angel, PhD

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EDUCATION

2017 Doctor of Philosophy in Environmental Dynamics, University of Arkansas, Fayetteville, (GPA 4.0)

dissertation title: Spatial Ordering of Nabataea: An Integrated Analysis of Nabataean Geography, Morphology, and Architecture in Petra

2008 Master's degree in Geography (MA), University of Arkansas, Fayetteville (specializations: Middle East & North African studies, urban planning, cartography, geographic information systems-GIS) Fall 2008, (GPA 3.8)

thesis title: Umm Sayhoun: a unique permanent Bedouin settlement in Southern Jordan

2006 Bachelor's degree in History and Political Science (BA) (minor: Philosophy) Secondary Education (GPA 3.7), Arkansas Tech University, Russellville, Arkansas

RELATED PROFESSIONAL EXPERIENCE

2020 to present – Research Assistant Professor, Senior Technical Lead; Center for Advanced Spatial Technologies, University of Arkansas – Fayetteville, AR

- Project planning and technical leadership for all development projects through Scrum/Agile implementations
- TransMap Hub (Tech Lead) – Big data platform for real-time maritime analysis (python, cassandra, Azure Cosmos DB, Apache Spark)
- Corona Atlas 2.0 (Tech Lead) – computer vision based processing and analysis of large satellite images (python, OpenCV)
- Rising Above in AR: Jerome extension (Co-PI) – Data archival platform for spatial, temporal, and contextual datasets regarding Rohwer and Jerome Japanese internment camps

2019 to 2020 – Senior Software Engineer/Consultant, Kite-string Technical Services, Bentonville, Arkansas (supervisor L. McClain, Jon Marquart)

- Tech-lead for python specific, Agile/Scrum development and release management within Walmart Labs – Health and Wellness
- Microsoft Azure, cloud-based synchronization techniques for data storage and retrieval
- Implemented CI/CD automation approaches for unit, quality, and E2E testing for multiple production pipelines
- Oversaw upgrades and integrated architecture of Python services

2013 to 2019 – Research Assistant, Center for Advanced Spatial Technologies, University of Arkansas – Fayetteville, Arkansas (supervisor J. Cothren, Ph.D.)

- Plant Imaging Consortium - NSF: lead developer, image processing, data management (Javascript, Python, PHP, OpenCV)
- DataARC - NSF: co-developer, data integration – spatial, temporal, and conceptual data types (Javascript)
- Corona Atlas (NEH): co-developer, geospatial processing, image processing, GIS data server (geoserver/openlayers)
- Sunspot: Corona Referencing System (NEH): lead developer, API development, orthorectification, computer vision
- Rohwer Reconstructed (NPS): lead developer, implementing GIS and 3d data, social, and temporal datasets (C#, Unity3d)
- Spatial Archaeometry Research Collaborations (NSF) – lead developer, application interface, UI/UX
- Old Davidsonville (ANCRC) – co-developer, (C#, Unity3d) UI/UX
- Various GIS processing and programming requirements as needed
- GIS Education: Developed and implemented new pedagogy for the EAST Initiative around a student-centered approach to spatial inquiry
- Co-taught the *Why of Where* series with themes in: Health, Water, Disasters, History, and Local Community (**158** students - 2014)
- Developed and managed **2** online courses for over **350** students

2009 to 2016 - Instructor, Department of Geosciences, University of Arkansas – Fayetteville, Arkansas (supervisor T. Paradise, Ph.D.)

- *Human Geography (Summer 2012; Summer 2015; Summer 2016)*
- *Conservation of Natural Resources (Summer 2013; Summer 2014)*
- *Urban Geography of the Developing World (Fall 2012)*
- *Introduction to Thematic Cartography (Fall 2010, Fall 2011)*
- Co-taught/assisted: *Geography of Middle East & North Africa (Fall 2012)*
- Co-taught/assisted: *Advanced Cartography & Production (Spring 2011)*
- Guest Lecture: *World Regional Geography (Spring 2015)*
- Guest Lecture: *Research Methods in Geography (Spring 2016)*

2015 – Instructor, King Fahd Center for Middle East Studies, University of Arkansas – Fayetteville, Arkansas (supervisor J. Gordon, Ph.D.)

- Taught *Introduction to Middle East Studies (Spring 2015)*

2009 to 2013 - Graduate Assistant, University of Arkansas – Fayetteville, Arkansas, King Fahd Center for Middle East Studies (supervisor T. Paradise, Ph.D.)

- Co-taught/assisted: *Urban Geography (Spring 2012)*
- Teaching Assistant: *Geography of the Middle East & North Africa (Fall 2011)*
- Teaching Assistant: *Hazards and Perceptions of Risk (Spring 2011)*

2008 Research Assistant, Center for Advanced Spatial Technologies (CAST), University of Arkansas, Fayetteville, Arkansas (supervisor M. Williamson)

- *Geospatial pedagogical support for K-12 learners in the EAST Initiative*
- *Advanced training in 3-D visualization and development*
- *Training and education in geospatial and web technologies*

2008 GIS Analyst II, Benton County Assessor's Office, Bentonville, Arkansas (supervisor E. Bowen)

- *High performance analysis on large datasets*
- *VBA programming, Python Scripting and ArcObjects*
- *Cartographic representation and interpretation of city ordinances*
- *Advanced problem solving and innovative solutions for geomatics*

2008 G.I.S. Specialist-Cartographer, Northwest Arkansas Regional Planning Commission (NWRPC), Springdale, Arkansas (supervisor R. McLarty)

- *GIS vector layouts*
- *Digitization and street plans*
- *Cartographic representation and interpretation of city ordinances*
- *Management and manipulation of large datasets for Arkansas*

2006 Graduate Research Assistant, Center for Advanced Spatial Technologies (CAST), University of Arkansas, Fayetteville, Arkansas (supervisor M. Williamson)

- *GIS and Web Design Education Specialist*
- *Creating and editing of websites*
- *Innovative development in project-based learning*

2005 Teaching Intern, Russellville Junior High School, Russellville, Arkansas

- *Gained experience in a professional education environment*
- *Perfected teaching skills at the secondary education level*
- *Developed oral and communication skills*

PUBLICATIONS

Paradise, T.R., C.C. Angel (2015). "Nabataean Architecture and the Sun: a landmark discovery using GIS in Petra, Jordan" ArcUser. Esri Press. (accepted, forthcoming Winter 2015)

Angel, C.C. (2015). "Urbanization." The Islamic World: An Encyclopedia of History, Culture, and Society. M.E. Sharpe (accepted; forthcoming)

Angel, C.C. (2015). "Natural Resources." The Islamic World: An Encyclopedia of History, Culture, and Society. M.E. Sharpe (accepted; forthcoming)

Angel, C.C. (2015). "Jordan." *The Islamic World: An Encyclopedia of History, Culture, and Society.* *M.E. Sharpe (accepted; forthcoming)*

Angel, C.C. (2012). "Umm Sayhoun: Culture, History and Geography." *Archaeological Heritage Management at Petra: Drive to Development or Destruction.* *Springer Press: 105-118*

Angel, C.C. (2011). "Umm Sayhoun: Geography and History of a Permanent Bedouin Settlement above Petra, Jordan" Annual of the Department of Antiquities of Jordan, *ADAJ: 55.*

GRANTS AWARDED

2019 $269,202: Rising Above in AR: Japanese American Incarceration at Rohwer and Jerome; US DoI: National Parks Service (Co-PI)

2013 $2000: Fulbright College of Arts & Sciences with the King Fahd Middle East Studies Center, University of Arkansas, Fayetteville: dissertation research supplement

2009-13 $80,000: Walton Foundation, Bentonville, Arkansas, Doctoral Academy Fellow, for Exemplary Geographic Research in Petra, Jordan disbursed over four years ($20,000 each year)

2011 $3,200: Fulbright College of Arts & Sciences with the King Fahd Middle East Studies Center, University of Arkansas, Fayetteville: dissertation research award.

2008 $1,900: Fulbright College of Arts & Sciences, University of Arkansas, Fayetteville plenary presentation, World Archaeology Congress, Dublin, Ireland, June-July 2008

2007 $1,950: Middle East Research Consortia with the King Fahd Center for Middle East Studies, University of Arkansas, Fayetteville. Fieldwork support, Summer 2007

PRESENTATIONS

2018 *'Sometimes a map is not enough – lessons learned from developing the dataARC data discovery interface' Computer Applications and Quantitative Methods in Archaeology (CAA), Tübingen, Germany (March 2018)*

2017 *'The Corona Atlas 2.0: Crowd-sourcing Satellite Image Acquisition and Orthorectification.'* Arkansas GIS Users Forum, 2017

2017 *'Intermediate Python for GIS.'* Arkansas GIS Users Forum, 2017.

2015 *'Computing and Informatics Core.'* Annual Meeting of the Plant Imaging Consortium, NSF EPSCoR. (May 2015)

2015 *'Visualizing Cultural Heritage.'* EAST Conference 2015. (March 2015)

2015 *'Data Mining: Finding data for your GIS projects.'* EAST Summer Seminar. (July 2015)

2014 *'Urban Form, Function, and Meaning in Petra, Jordan.'* Invited Presentation for Prince Turki Al Faisal of Saudi Arabia, hosted by Fulbright College of Arts & Sciences and King Fahd Center for Middle East Studies. (November 2014)

2014 *'An Integrated Analysis of Nabataean Urban Geography, Morphology, Spatial Patterns, and Architecture in Petra, Jordan.'* University of Arkansas Research Conference, hosted by Department of Geosciences, UA Fayetteville. (October 2014)

2014 *'GIS Publishing 101'.* EAST Summer Seminar. (July 2014)

2014 *'Integrating the "Why of Where" Approach in EAST GIS Projects'.* EAST Conference 2014. (March 2014)

2013 *'Holistic Assessment of Nabataean Urban Geography and Morphology in Petra, Jordan'.* Association of American Geographers International Conference (AAG April 2013)

2012 *'Preliminary Assessment of Nabataean Urban Morphology in Petra, Jordan'.* Invited presentation, American Association for the Advancement of Science Conference, Southwestern & Rocky Mountain Division, (AAAS 2012)

2011 *'Umm Sayhoun: Evolution and Morphology of a Bedouin town above Petra, Jordan'*. Association of American Geographers International Conference (AAG April 2011)

2010 *'Evolution and Morphology of a Bedouin town above Petra, Jordan.'* Association of American Geographers International Conference (AAG April 2010)

2008 *'Umm Sayhoun: a Bedouin settlement in Southern Jordan'*. Invited presentation: Landscape Preservation/ICAHM, 6th World Archaeological Congress, Dublin (June).

HONORS, AWARDS & AFFILIATIONS

2019 *Outstanding Achievement in Preservation Education – "Rising Above – Rohwer Reconstructed: Interpreting Place through Experience" website*, Arkansas Preservation Awards

2017 *Sir Richard Burton – Geographer of the Year*, Gamma Theta Upsilon (GTU), University of Arkansas Chapter

2012 *Exemplary Field Work* – Gamma Theta Upsilon (GTU), University of Arkansas Chapter

2010 *GIS Analyst of the Year* – Gamma Theta Upsilon (GTU), University of Arkansas Chapter

2009 *Cartographer of the Year* – Gamma Theta Upsilon (GTU), University of Arkansas Chapter

2006 Graduate with honors, Cum Laude*: Arkansas Tech University*

2003-6 Dean's List: *University of Arkansas, Arkansas Tech University*

COMPUTER and EQUIPMENT CAPABILITIES

- Spatial experience (13 years exp.): *ESRI ArcGIS 10.x Desktop (ArcInfo plus extensions: spatial analyst, 3d analyst, and network analyst), GeoServer, OpenLayers, Leaflet, WMS, WFS, Idrisi: Selva Edition (or higher), Remote Sensing Applications and Theory, & qGIS*

- Development (11+ years exp): *PHP, Python 3.x scripting (esp. ArcPy, OpenCV), MySQL, PostgreSQL 10.x, PostGIS 2.x, Javascript, VueJS 2.x, JQuery, HTML5, CSS3, Bootstrap 4.x+, Unity 3d developer using C#, XML and JSON RESTful API construction, OOP Design Patterns and SOLID principles*

- Cloud services: Microsoft Azure (log analytics/app insights); Amazon AWS EC2

- General & graphics software: *Microsoft Office 2007 or higher, Adobe Creative Cloud (esp. Illustrator, Photoshop, & Dreamweaver)*

- Field Equipment: *Spectral reflectance camera, near-infrared camera and lens, surveyor's transit and theodolite, Brunton pocket transit, laser range-finder, digital thermistor and hydrometer*

PUBLIC PROJECTS

- Rising Above – *Rohwer Reconstructed*: http://risingabove.cast.uark.edu/
- Osage Minerals Council Spatial Data: http://osageminerals.org
- ATS Court Record Repository: http://atscorr.cast.uark.edu/
- Plant Imaging Consortium: http://pic.cast.uark.edu/
- DataARC: http://beta.data-arc.org
- Corona Atlas & Referencing System: http://corona.cast.uark.edu/
- Spatial Archaeometry Research Collaborations: http://sparc.cast.uark.edu/
- Davidsonville Interactive: http://davidsonville.cast.uark.edu/

LANGUAGE CAPABILITIES

- *Certificate for Intermediate Arabic, Languages in Action (LIA Institute: supérieur award), Sousse, Tunisia (2010)*

References available on request
(academic, professional and character available)

Map portfolio available on request
(digital and hardcopy available)

Revised October 2019