Donald H. Sanders, PhD

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Dr. Sanders is trained and educated as an architect, architectural historian, and archaeologist. He helped pioneer the discipline of virtual heritage in the early 1990s and continues to innovate in the field. His special interest is the application of nontraditional methods (including advanced computer graphics, virtual reality, and behavioral science techniques) to the study and visualization of the past, pushing the boundaries of conventional archaeological interpretation. Professional publications and conference papers have covered such topics as   alternative approaches (including those from semiotics, environment-behavior studies, ethnoarchaeology, and human geography) to the study of architecture in archaeological contexts; and the use of interactive computer graphics for the collection, analysis, and dissemination of information about ancient material culture for research, education, publication, broadcast, and museum display. He founded Learning Sites Inc., in 1996, and the Institute for the Visualization of History Inc., in 2001, to actualize these innovations. He continues to be an invited keynote speaker at venues around the world; and publications by him or about his companies have appeared in journals, newspapers, books, and magazines in nearly a dozen countries. Sanders is the Tartessos Prize winner in virtual heritage for 2015 and Corporate Vision Executive Award winner for 2016.

PUBLICATIONS

2023   *From Photography to 3D Models and Beyond: Visualizations in Archaeology*. Oxford: Archaeopress.

2023   with Shelley Wachsmann, "Reconstructing a Late Archaic-Period Dionysian Ship Cart," *Collection of Papers of the Faculty of Philosophy in Priština* 53.3:135-69.

2018   with Julian E. Reade, "In Pursuit of the 'missing' Central Palace of Tiglathpileser III at Nimrud," in Friedhelm Pedde & Nathanael Shelley, eds. *Assyromania and More. In Memoriam for Samuel M. Paley*, Marru 4. Münster: Zaphon Verlag.

2018   "Neural Networks, AI, Phone-based VR, Machine Learning, Computer Vision and the {CUNAT} Automated Translation App - not your father's archaeological toolkit," pp.1-5 in Alonzon C. Addison and Harold Thwaites, eds. *3rd Digital Heritage International Congress, DigitalHERITAGE 2018, held jointly with 2018 24th International Conference on Virtual Systems & Multimedia, {VSMM} 2018, San Francisco, CA, USA, October 26-30, 2018*. IEEE.

2017   with Steven Fine & Peter J. Schertz, "True Colors: digital reconstruction restores original brilliance to the Arch of Titus," *Biblical Archaeology Review* 43.3:28-35, 60-61.

2016   "The Present and Future of Virtual Heritage," pp.141-55 in M. G. Micale & D. Nadali, eds. *How Do We Want the Past to Be? On Methods and Instruments of Visualizing the Ancient Reality.* Piscataway NJ: Gorgias Press.

2015   "Advances in Virtual Heritage: conditions and caveats," in Gabriele Guidi, Roberto Scopigno, Juan Carlos Torres, Holger Graf, Fabio Remondino, Pere Brunet, Juan Barceló, Luciana Duranti, and

Susan Hazan. eds. *Proceedings of the 2nd International Congress on Digital Heritage 2015, Granada, Spain*. 2 vols. Piscataway, NJ: Institute of Electrical and Electronics Engineers, Inc.

2015   "Virtual Tour of the Palace of Nineveh: using modern technology to preserve antiquities in danger," pp.41-59 in Eyal Meiron, Editor, *City of David: studies of ancient Jerusalem. The 16th Annual Conference*, Jerusalem: Megalim: City of David Institute for Jerusalem Studies.

2014   with Cristina Corsi, Eben Gay, & Eleftheria Paliou, "Old problems and new challenges in archaeological sites data management. The REVEAL experience at Ammaia (Portugal)," in *Across Space and Time: CAA Conference Proceedings Perth 2013*, Philip Verhagen, ed., Amsterdam: Amsterdam University Press.

2014   "Virtual Heritage: Researching and Visualizing the Past in 3D," *Journal of Eastern Mediterranean Archaeology and Heritage Studies* v.2.1:30-47.

2013   "REVEAL: one future for heritage documentation," v. 2, pp.527-34 in Alonzo C. Addison, Gabriele Guidi, Livio De Luca, and Sofia Pescarin, eds., *Proceedings of the 2013 Digital Heritage International Congress*, Piscataway, NJ: Institute of Electrical and Electronics Engineers, Inc.

2013   with Jeffrey Jacobson, "The Vari House: digital puppeteering for history education," *Journal of Immersive Education*, v.1.

2013   "Gurob Ship-Cart Model in Virtual Reality," pp.207-18 in Shelley Wachsmann, *The Gurob Ship-Cart Model and Its Mediterranean Context*, College Station, TX: Texas A&M Press (joint winner of the Nautical Archaeology Society's Keith Muckelroy Award).

2012   "More than Pretty Pictures of the Past: an American perspective on virtual heritage," pp.37-56 in Anna Bentkowska-Kafel and Hugh Denard, eds., *Paradata and Transparency in Virtual Heritage*, Farnham, UK: Ashgate.

2011   "Enabling Archaeological Hypothesis Testing in Real Time using the REVEAL Documentation and Display System," *Virtual Archaeology Review* 2.4: 89–94.

2011   "Virtual Reconstruction of Maritime Sites and Artifacts," pp.305-26 in Alexis Catsambis, Ben Ford and Donny L. Hamilton, eds., *The Oxford Handbook of Maritime Archaeology*, Oxford: Oxford University Press.

2010   with Katharina Galor, Andrew Willis, David Cooper, Benjamin Kimia, Gabriel Taubin and Oren Tal, "Semi-automated Data Capture and Image Processing: new routes to interactive 3D mdoels," pp.179-88 in Maurizio Forte, Stefano Campana, and Claudia Liuzza, eds. Space, Time, Place. Third International Conference on Remote Sensing in Archaeology. 17th-21st August 2009, Tiruchirappalli, Tamil Nadu, India. BAR International Series 2118. Oxford: Archaeopress.

2008   "Why Do Virtual Heritage? case studies from the portfolio of a long-time practitioner," *Archaeology Magazine* online at http://www.archaeology.org/online/features/virtualheritage/

2005   "Imagine That: just how do they make computer pictures?" *DIG* 7.6: 28-31.

2004   with David W. J. Gill, "Theresa Goell (1901-1985)," pp.482-524 in Getzel M. Cohen & Martha Sharp Joukowsky, eds. *Breaking Ground: pioneering women archaeologists*. Ann Arbor: University of Michigan Press.

2003   with John Simmons & Arun K. Sood, "Cultural Crises and Virtual Heritage: the Institute for the Visualization of History and The Baghdad Museum Project," pp.118-28 in Hal Thwaites, ed., *Ninth International Conference on Virtual Systems and Multimedia--Hybrid Reality: Art,*

Technology and the Human Factor, 15-17 October 2003, Montreal, Canada. Montreal: VSMM and 3Dmt Center.

2002   "Virtual Archaeology and Museums: where are the exhibits?" pp.187-94 in Niccolucci, Franco, ed. *Virtual Archaeology; proceedings of the VAST Euroconference, Arezzo, 24-25 November, 2000*, ArcheoPress, Oxford (British Archaeological Reports, International Series #1075).

2001   "Persuade or Perish: moving virtual heritage beyond pretty pictures of the past," pp.236-245 in Hal Thwaites and Lon Addison, eds., *Enhanced Realities: augmented and unplugged -- Proceedings of the Seventh International Conference on Virtual Systems and Multimedia, 25-27 October, 2001*, IEEE Computer Society: Los Alamitos, California.

2001   "Modern Technology Deciphers Ancient Architecture," *Indian Architect & Builder*, Mar., pp.24-26.

2000   "CAD, Virtual Reality, and Cultural Heritage Preservation," *TIES Magazine*, Jan/Feb., pp.6-10.

2000   with Juan Barcelo and Maurizio Forte, *Virtual Reality in Archaeology*, British Archaeological Reports International Series #843, Archaeopress: Oxford.

1999   "Virtual Worlds for Archaeological Research and Education," in L. Dingwall, S. Exon, V. Gaffney, S. Laflin, and M. van Leusen, *Archaeology in the Age of the Internet - CAA97; Computer Applications and Quantitative Methods in Archaeology 25th Anniversary Conference*. *University of Birmingham. April 1997*, British Archaeological Reports #S750, Archaeopress: Oxford.

1997   "Nemrud Dagi," pp.123-26 entry in Eric M. Meyers, ed., *The Oxford Encyclopedia of Archaeology in the Near East*. Vol. 4. Oxford: Oxford University Press.

1997   "Archaeological Virtual Worlds for Public Education," *Computers in the Social Sciences Journal*, 5.3.

1997   with Eben Gay. "Virtual Reality and the Internet in the Service of Education: the premise and the promise," *EduPort Newsletter*, v.2, #1.

1996   *Nemrud Dagi: The Results of the American Excavations Directed by Theresa Goell*, Eisenbraun's, Winona Lake IN.

1990   "Behavioral Conventions and Archaeology: methods for the analysis of ancient architecture," in S. Kent, ed., *Domestic Architecture and the Use of Space*, Cambridge University Press.

1988   "Architecture: the neglected artifact," pp.489-98 in E. B. French and K. A. Wardle, eds., *Problems in Prehistory*, Bristol Classical Press, Bristol, England.

1985   "Ancient Behavior and the Built Environment: applying environmental psychology methods and theories to archaeological contexts," p.296-305 in S. Klein et al., eds., *Environmental Change / Social Change: proceedings of the sixteenth annual conference of the Environmental Design Research Association*. Washington DC: Environmental Design Research Association.

1978   with D. Potts, Ali S. Mughannum, & J. Frye, "Comprehensive Archaeological Survey Program: preliminary report on the second phase of the Eastern Province Survey 1397/1977," *Atlal – the Journal of Saudi Arabian Archaeology* 2:7-27.

CONFERENCES: PRESENTATIONS & SOFTWARE DEMONSTRATIONS

2020   National Arts Club international speakers' series (online Zoom lecture; invited speaker).

2018   Creating and Recreating Nineveh conference, Leiden, the Netherlands (invited speaker).

2018   Third International Congress on Digital Heritage, San Francisco (speaker).

2018   Archaeological Institute of America annual meeting, Boston (exhibitor).

2017   American Schools of Oriental Research annual meeting, Boston (exhibitor).

2017   Arch of Titus: from Jerusalem to Rome, and back conference, New York City (invited speaker).

2016   NYU Washington DC conference on Protecting Cultural Heritage in an Uncertain Time (invited speaker).

2015   Second International Congress on Digital Heritage, Granada, Spain (invited panelist, speaker, session chair; Tartessos Prize winner).

2015   National Arts Club international speakers' series, NYC (invited speaker).

2015   City of David archaeology conference, Jerusalem (keynote speaker).

2014   Archaeological Institute of America annual meeting, Chicago (exhibition booth and on-site demos).

2014   Society for American Archaeology, annual meeting, Austin, TX (speaker).

2013   Society for American Archaeology, annual meeting, Honolulu, HI (invited speaker).

2013   First International Congress on Digital Heritage, Marseille (invited speaker, session chair).

2012   Theoretical Archaeology Group, annual meeting, Buffalo, NY (invited speaker).

2012   High-Tech Heritage conference, Amherst, MA (speaker).

2012   Archaeological Institute of America annual meeting, Philadelphia (exhibitor).

2012   Oriental Institute symposium, Picturing the Past, Chicago (invited speaker).

2011   Society for American Archaeology annual meeting, Sacramento CA (speaker).

2010   National Arts Club international speakers' series, NYC (invited speaker).

2010   Arqueologica 2.0, Sevilla, Spain (invited speaker, session chair, panelist).

2008   The Preservation of Cultural Heritage: New Methods and Applications, Ankara, Turkey (invited speaker).

2007   Mountain-Plains Museum Association annual meeting, Fargo, ND (invited speaker and session co-chair).

2006   King's College Symposium, Making 3D Visual Research Outcomes Transparent, London (invited speaker).

2006   Computer Applications in Archaeology, Fargo, ND (invited speaker and session chair).

2006   Canadian Federation of the Social Sciences and Humanities, the Canadian Committee for History and Computing, and the Society for Digital Humanities, Toronto (invited speaker).

2005   Workshop on Digital Archaeology, Mussourie, India (invited session and summation speaker).

2004   Computer Applications in Archaeology, Prato, Italy (session chair).

2004   Archaeological Institute of America annual conference, San Francisco (speaker).

2003   XVI International Congress of Classical Archaeology, Boston (exhibitor).

2002   Eureka! European Commission Workshop on Advancing Archaeological Sites, Thessaloniki, Greece (keynote speaker).

2001   Virtual Systems and Multimedia annual conference, Berkeley.

2001   Society for American Archaeology annual conference, New Orleans (speaker).

2001   Eureka! European Commission Workshop on Advancing Archaeological Sites, Chania, Crete (keynote speaker).

2000   Virtual Systems and Multimedia annual conference, Gifu, Japan (keynote speaker).

2000   VAST - Euroconference on Virtual Archaeology, Arezzo, Italy (keynote speaker).

2000   Society for American Archaeology annual conference, Philadelphia (speaker).

2000   SIGGRAPH Campfires Retreat on Computer Graphics and Archaeology, Snowbird, Utah (invited participant).

2000   Conference entitled *Ancient Studies: New Technology: The World Wide Web and Scholarly Research, Communication, and Publication in Ancient, Byzantine, and Medieval Studies*, Salve Regina University, Newport, Rhode Island (speaker).

1999   Society for American Archaeology annual conference, Chicago (exhibitor).

1999   Museum Computer Network annual conference, Philadelphia (speaker).

1999   International Cultural Heritage Informatics Meetings, Washington, DC (speaker).

1999   Archaeological Institute of Archaeology annual conference, Dallas (speaker).

1999   American Schools of Oriental Research annual conference, Cambridge, MA (exhibitor).

1998   XLVe Rencontre Assyriologique Internationale, Boston (exhibitor).

1998   Computer Applications in Archaeology, Barcelona, Spain (invited speaker and session chair).

1997   The Virtual Dig: computers and the pursuit of the past, symposium, Philadelphia (invited exhibitor).

1997   Computer Applications in Archaeology, Birmingham, England (speaker).

1997   Archaeological Institute of America Conference, Chicago (exhibitor).

1996   Nortel Institute, Excellence in Education Conference, Dallas (invited speaker).

1996   Association for the Advancement of Computing in Education, Ed-Media/ Ed-Telecomm '96, Boston (exhibitor).

1995   Virtual Reality World '95, Boston (exhibitor).

1995   Virtual Heritage '95-The First Annual Virtual Heritage Conference, Bath, England.

1995   National Cable Television Association, Cable in the Classroom symposium, Dallas (speaker).

1995   American Society for Oriental Research/Society for Biblical Literature joint annual meeting, Philadelphia (speaker).

1994   American Anthropological Association, annual conference, Atlanta (speaker: "Ancient Spaces, Ancient Behavior: the dynamic duo").

1994   Society of American Archaeology, annual conference, Los Angeles (speaker: "Theoretical and Computer-Aided Modeling of Ancient Built Environments").

1994   Society for the Preservation of New England Antiquities joint hosting with the Boston Center for International Visitors, Preserving Cairo's Cultural Heritage conference (speaker).

1994   Boston Computer Society, annual megameeting, University of Massachusetts, Boston Harbor Campus (exhibitor).

1994   SIGGRAPH, Orlando (exhibitor).

1991   Symposium in honor of Stephen Gardner, NYC (speaker: "Perceptions of the Pointed Arch: representations of Gothic architecture from Villard to video disk").

1988   International Nemrud Dagi Symposium, Adana, Turkey (invited speaker: "The Nemrud Dagi Publication Project").

1986   American Schools of Oriental Research annual conference, Atlanta (speaker: Alternative Approaches to Architectural Analysis in Archaeology: semiotics and behavior-environment studies").

1985   Environmental Design Research Association annual conference, NYC (speaker: "Ancient Behavior and the Built Environment: applying environmental psychology methods and theories to archaeological contexts").

1984   Archaeological Institute of America Conference, Toronto (speaker: "Architectural Analysis in Archaeology: the potential value of environmental psychology").

PUBLISHED DRAWINGS

1989   Ancient Corinth excavation drawings in H. S. Robinson, *Temple Hill*, Corinth Excavations v.17. Princeton: Princeton University Press.

1988   Schematic chapel drawings in Mary D. Edwards, "The Chapel of S. Felice in Padua as *Gesamtkunstwerk*," *Journal of the Society of Architectural Historians* 47.2:160-76.

1987   Underdrawing reconstruction in W. E. Wallace, " 'Dal disegno allo spazio': Michelangelo's Drawings for the Fortifications of Florence," *Journal of the Society of Architectural Historians* 46.2:119-34.

1987   Reconstruction section drawing of Suger's choir at the church at St. Denis in S. McKnight Crosby & P. Blum, *The Royal Abbey of St. Denis. New Haven*, CT: Yale University Press.

1986   Reconstruction section drawing of Suger's choir at the church of St. Denis in William W. Clark, "Suger's Church at Saint-Denis: the state of the research," pp.105-30 in Paula Lieber Gerson, ed. *Abbot Suger and Saint-Denis*. New York: Metropolitan Museum of Art Publications.

1984   Reconstruction drawing in W. W. Clark, Jr. & R. Mark, "The First Flying Buttresses: a new reconstruction of the nave of Notre Dame de Paris," *Art Bulletin* 66:47-64.

1983   Excavation drawings in S. M. S. al-Radi, "Phlamoudhi Vounari: a sanctuary site in Cyprus," *Studies in Mediterranean Archaeology* v.65. Goteberg, Germany: Astroms Verlag.

1983   Plans of Laon Cathedral in W. W. Clark, Jr. & R. King, *The Cathedral of Notre Dame at Laon. I – The Architecture*. Courtauld Institute Illustration Archives, London: Miller.

1980   View of St. Lucien, Beauvais in Stephen Gardner, "Notes on a View of St. Lucien at Beauvais," *Gazette des Beaux-Arts*, Nov: 149-56.

1979, 1976, 1975   Ancient Corinth excavation drawings in *Archaeological Reports* #25, #22, #21.

1978   Eastern Province excavation and survey drawings in D. Potts, Ali S. Mughannum, D. H. Sanders & J. Frye, "Comprehensive Archaeological Survey Program: preliminary report on the second phase of the Eastern Province Survey 1397/1977," *Atlal – the Journal of Saudi Arabian Archaeology* 2:7-27.

1976   Ancient Corinth excavation drawings in H. S. Robinson, "Excavations at Corinth, Temple Hill, 1968-72," *Hesperia* 45.3:203-39.

1976   Ancient Corinth excavation drawings in H. S. Robinson, "Temple Hill Corinth," pp.239-60 in U. Jantzen, ed., *Neue Forschungen in griechischen Heiligtumern*. Tubingen: Wasmuth.

1974   Ancient Corinth excavation drawings in H. S. Robinson, "Faculty Voice: excavations at ancient Corinth," *Men of Adelbert* 6.2:6-11.

PROFESSIONAL EXPERIENCE

Founder and Trustee, Institute for the Visualization of History (ongoing since 2001; www.vizin.org) a unique, educational nonprofit 501(c)(3) organization focusing on innovative methods of presenting, to the widest possible public, historic monuments, sites, and events through vivid visual experiences, especially by means of advanced computer graphics.

Founder and President, Learning Sites, Inc. (ongoing since 1996; www.learningsites.com); world leader in virtual heritage.

Editor, The *Art & Architecture Thesaurus* (online and Oxford University Press, 1990 and 1993, for the J. Paul Getty Trust, Getty Information Institute; 9 years), a text and electronic vocabulary control project, developing information retrieval and terminology standardization for museums, archives, and libraries.

Editor, Nemrud Dagi Publication Project (12 years; 1984 until publication in 1996), excavation report on the Hellenistic site of Nemrud Dagi, Turkey.

Field Architect, Case Western Reserve University Temple Hill excavations, Ancient Corinth, Greece (16 summer seasons; 1972-88) and Harvard University Saudi Arabia Field Survey (1 year; 1977).

Lecturer in architectural history and archaeology Columbia University Graduate School of Architecture and Planning (1 year), New York University Department of Classics (2 years), Wright State University Art Department, Dayton, Ohio (1 year).

Draughtsman, Laurence Rubin Architect, Boston MA (1973-75).

Draughtsman, Ritchie Associates, Chestnut Hill MA (Jan. 1971; June 1 – July 31, 1971; Jan. 1972).

Draughtsman, Coppee-Rust, Bruxelles, Belgium (Jan. 1970)

Draughtsman, Architectural Associates, Framingham MA (July – mid-Aug. 1969).

Delivery Boy, Charrette Corporation (Fred Stone Reprographics), Cambridge MA (July 27 – Aug. 31, 1968).

RECENT AWARDS

Corporate Vision Executive Award (2016)

Tartessos Prize in virtual archaeology (2015)

NSF SBIR TECP award (2015); NSF SBIR Phase II award (2013-2015); NSF SBIR Phase I award (2012); subawardee NSF III-CXT (2009-2013).

PROFESSIONAL AFFILIATIONS

Member: Society for American Archaeology; Archaeological Institute of America; Computer Applications and Quantitative Methods in Archaeology; Virtual Systems and Multimedia

Editorial board: *International Journal of Heritage in the Digital Era*

Scientific committee: International Society of Virtual Systems and Multimedia

International program committee: International Congress on Digital Heritage

EDUCATION

MA, MPhil, PhD, Columbia University, Department of Art History and Archaeology.
BArch, Case Western Reserve University, School of Architecture.

The Institute for the Visualization of History (VIZIN) and Learning Sites (the two companies founded and run by Donald H. Sanders) design and develop educational and research software using interactive three-dimensional digital models that are based on actual archaeological evidence and that are reconstructed to the highest standards of scholarship. The companies integrate archaeological and historical data with advanced computer graphics to further education, data analysis, and the preservation of cultural heritage information. The companies aim to create a globally integrated and interactive network of linked virtual worlds that can be used for teaching, research, archaeological fieldwork, museum exhibitions, and on-site interpretation centers.

VIZIN and Learning Sites are not graphics houses, but companies with professional staffs of archaeologists, art historians, architectural historians, architects, graphic artists, information scientists, and programmers. The working teams know and understand the needs and language appropriate to the study of the ancient world.

The software developed by VIZIN and Learning Sites become dynamic media for promoting awareness of past civilizations, understanding of different cultures, and appreciation of different places, peoples, and their cultural heritage. The companies are committed to producing serious educational and research tools as they work toward virtual reality-based schooling aids and digital archaeology for the 21st century.

VIZIN and Learning Sites clients include: the Metropolitan Museum of Art (New York City); Bryn Mawr College; Dallas Museum of Art; the University at Buffalo, State University of New York; Ministry of Education, Republic of Egypt; Ekip Film, Ltd., Istanbul, Turkey; Denver Art Museum; Southern Methodist University; Ashmolean Museum, Oxford; Thames & Hudson Publishers; Dalton School (New York City); Superintendency of Antiquities, Catania, Sicily; Hood Museum, Dartmouth College; Williams College Museum of Art; Education Development Center; University of South Florida; Texas A&M University; Brown University; Archaeological Institute of America; Dickinson College; Old Sturbridge Village; the Global Heritage Fund; and the National Geographic Society.

VIZIN and Learning Sites three-dimensional digital worlds include: ancient settlement at Byblos, Lebanon; Domitian's palace, Rome; the temples at Jebel Barkal, Sudan; the Vari House, Attica, Greece; the sanctuary of Antiochus I at Nemrud Dagi, Turkey; the funerary chapel of Ka(i)pura, Saqqara, Egypt; the Northwest Palace of Ashurnasirpal II and the Central Palace, Nimrud, Iraq; the site of Tel Brak, Syria; the site of Tsoungiza, ancient Nemea, Greece; the Acropolis, Athens, Greece; the Palace at Til Barsib, Syria; Tenochtitlan, old Mexico City, Mexico; the House of Many Colors, Olynthus, Greece; the shipwrecks at Tantura Lagoon, Israel; Medieval Venice; the Kyrenia shipwreck, Cyprus; the battle monument at Actium, Greece; citadel and gates at Nineveh, Iraq; and the House 7, Halieis, Greece.