

Ashes2Art: A Pedagogical Case Study in Digital Humanities

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Abstract

Ashes2Art, an innovative collaboration between Coastal Carolina University and Arkansas State University, is the digital reconstruction and documentation of ancient monuments and urban spaces by undergraduate students under close faculty supervision, and it is the only program of its kind. Students create 3D models based on published archaeological reports, build flythroughs and digital panoramas, take onsite photographs, write topical and site-specific essays, document their work with extensive primary and secondary source bibliographies, and provide lesson plans in accordance with national standards.

Beyond the implicit teaching and learning advantages associated with hands-on research and faculty-student collaboration, Ashes2Art aims to build a valuable online resource for discipline specialists and the general public. With the support of a Digital Start-Up Grant from the National Endowment for the Humanities, the program currently is examining the 4th century B.C.E. Greek sanctuary at Delphi.

Keywords

pedagogy, reconstructions, models, Greece, Delphi, Digital reconstructions

Ashes2Art (www.coastal.edu/ashes2art) is an innovative interdisciplinary and inter-university project that combines art history, archaeology, web design, 3D animation and digital panoramic photography to recreate monuments of the ancient past online. All work is designed and implemented by undergraduates for upper-level course credit at Coastal Carolina University and Arkansas State University under close faculty supervision. It focuses on a web-based, open-source presentation of its materials, and the current stage of the program examines 4th century B.C.E. Delphi, Greece. In addition to the essays, bibliographies, high resolution photographs, panoramas, 3D reconstructions, glossaries, databases and other resources that students create, they also design the website and provide pedagogical tools to secondary teachers in the forms of .pdf lesson plans, Powerpoint presentations and videos in various formats. Ashes2Art as a course in a Petri dish, a test case collaborative digital humanities project focused on world heritage. While other digital humanities programs with pedagogical interests frequently focus exclusively on end users, or utilize game engines as their primary platforms, Ashes2Art takes the inherent value of 3-D models and other technologies and inverts the pedagogical model so that

those technologies (including digital reconstructions, video flythroughs, digital photographic panoramas, web design and GIS databases) become more than a means of supplementing static images or engaging viewers, but are fundamental to the course and the learning process itself.

A well-known adage posits that a picture is worth a thousand words. If we accept this rather banal assessment as representing a certain truth about the inherent value of two-dimensional images (however inaccurate the statement's numerical conclusions may be), then what formulae might determine the value of three-dimensional images? What if the three-dimensional representations are active and immersive? Such questions underlie the movement in the last fifteen years or so of building digital representation models of archaeological data in a variety of formats. Some of those representations address three dimensional cataloguing and stratigraphic archiving of current excavations (Forte and Siliotti 1997; Georgopolous 2007)¹, while other efforts aim to rebuild lost monuments or urban centers, such as the Rome Reborn project at IATH (www.romereborn.virginia.edu). The pressing need for accuracy in digital reconstructions of monuments is assumed in the present paper, but it is not the

¹ And any number of papers published in the proceedings of the CAA, VAST, CIPA and Digital Humanities conferences.

focus of this discussion. Rather, this paper examines the pedagogical implications and opportunities of 3D reconstructions following an innovative methodology, and uses the Ashes2Art program as its primary exemplar.

Digital models pervade popular culture: The backdrops to major Hollywood movies such as *Gladiator* and *Troy* provide the breathtaking and quasi-believable contexts for plotlines and heroes, while other venues, including educational programs aired by the History Channel, PBS, the Discovery Channel, the BBC and others, utilize digital reconstructions and animated video to explain engineering issues, visualize three-dimensional space, and “wow” viewers. Digital reconstructions are not without their critics; as the SAVE project (Serving and Archiving Virtual Environments: www.iath.virginia.edu/save) and papers in the present conference and others attest, questions of accuracy, methodology, transparency, accessibility and availability are growing and legitimate concerns. Nevertheless, computer models and various other technologies have begun to find their way into university and secondary education classrooms as valuable tools for explaining, enhancing and disseminating complicated three-dimensional information. And they can be very effective.

Ashes2Art began conceptually in fall 2003, when professor Arne Flaten (Art History) compiled an online resource for art history survey students comprised of sites that provided panoramas, digital reconstructions and flythroughs of ancient monuments in Europe, Egypt and the Near East (ww2.coastal.edu/arflaten/Virtualtours.html). Projects ranging from Persepolis to Ephesus, from Karnak and Thebes to Santa Maria Maggiore, from Bronze Age Troy to medieval Bologna, displayed an extraordinary range of creative approaches to integrating technologies with archaeology, art history and the humanities.² It seemed plausible that a program that integrated these technologies might be implemented at Coastal Carolina University. Flaten approached professor Paul Olsen (Graphic Design) with the idea and the project was begun. The immediate concerns were to determine: the course focus, its format, its structure, available technologies,

how to implement the concept, and to assess hardware and software purchases. In spring 2005 it was advertised as a “Special Topics” course at CCU to be offered the following fall, crosslisted between Art History and Art Studio.

The project began with twelve students. The initial offering examined Renaissance Florence; as a Renaissance scholar, it was the city with which Flaten was most familiar, and one that provided a relatively simple way to gauge the efficacy of such a program. It did not aim to reconstruct any monuments digitally, but it did allow the faculty to determine whether or not a course of this nature was feasible. In preparation, Olsen and Flaten shot digital panoramic photographs at several locations in Florence at the end of a study abroad program to Italy in May 2005. The following fall, armed with a Macintosh lab, the latest versions of Photoshop, Flash, Dreamweaver, 3D Studio Max and some basic stitching software (Panoweaver and Tourweaver) students wrote essays, stitched panoramas, designed the website, built an animated three-dimensional map of the city, and incorporated the materials into a Flash-based online resource. That stage of the project was completed during the fall semester of 2005, and the online results were sufficiently encouraging to continue (www.coastal.edu/ashes2art/florence/index.html).

The following May, professors Olsen and Flaten took students to Greece and western Turkey (including Delphi, Athens, Delos, Crete, Rhodes and Ephesus) as part of a study abroad program, and shot digital panoramas at various sites, including the Acropolis in Athens, the Palace at Knossos in Crete, and the stadium at Delphi. During that same summer, Flaten participated in a summer institute at UCLA sponsored by the National Endowment for the Humanities focusing on digital models of Rome under the direction of Professors Diane Favro and Sander Goldberg (www.etc.ucla.edu/neh). Over the course of the institute, Flaten met Dr. Alyson Gill, an Art Historian specializing in Ancient Greece at Arkansas State University. The idea for inter-university collaboration was born, and the decision was made to examine Delphi, Greece for the next stage.

² Among others: www.persepolis3d.com/structur.htm; sailturkey.com/panoramas/ephesus/hadrian.html; www.thebanmappingproject.com; www.world-heritage-tour.org/africa/north-africa/egypt/luxor/valley-of-the-kings/sety-i/map.html; www.cvrlab.org/humnet/index.html; library.thinkquest.org/CO119366/eng/virt.htm; www.comune.bologna.it/girabologna.

In spring 2007, Ashes2Art was offered for upper-level credit simultaneously at Coastal Carolina University and Arkansas State University under the direction of Flaten, Olsen and Gill. Students compiled extensive primary and secondary source bibliographies, wrote essays, and built digital models of the tholos temple of Athena Pronaia (CCU; *Figs 1, 5 and 6*) and the gymnasium complex (ASU).³ During that semester, Ashes2Art gained copyright permissions for the entire collection of digital images related to Delphi from Archivision (www.archivision.com), and Arkansas State received copyright permission to publish online various images relating to objects in the Museum of Fine Arts, Boston.

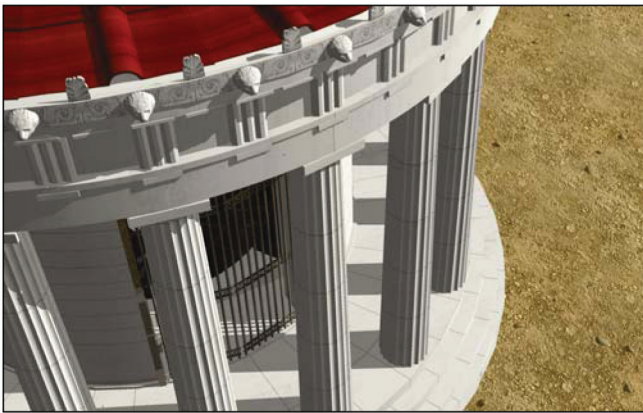


Fig. 1. Digital model of the tholos temple of Athena Pronaia, Greg Schultz, Coastal Carolina University, 2007.

In addition to generous support from Coastal Carolina University and Arkansas State University, the project was awarded a Digital Start Up Grant from the National Endowment for the Humanities to continue our work for 2007–2008. Through the American School of Classical Studies in Athens, the project secured permission from the Hellenic Ministry of Culture to shoot digital photographic panoramas from a variety of vantage points (including inside the temples) at Delphi, Olympia, Nemea, Isthmia, Corinth, Epidauros and Aegina. With those permissions in hand, faculty from CCU and ASU took selected students to Greece in summer 2007 (with student travel grants) and shot panoramic

photographs (*Fig. 2*); a total of thirty eight panoramas were shot with the double-fisheye approach (19 at Delphi alone) and several other panoramas at Delphi were photographed with the 16-shot method.⁴ During fall of 2007 students at both universities continued to build digital models and stitch panoramas together on their own time using RealViz stitching software (Flaten and Gill 2007). Recognizing the potential of the program, the administrations at both Coastal Carolina University and Arkansas State University have been extremely supportive: both programs were awarded funds by their respective universities to build project-specific computer modeling labs to accommodate the growing complexity of the digital models, the websites and the project itself (totaling over \$150K)⁵.



Fig. 2. Alexi Lamm (ASU), Caroline Smith (CCU), Arne Flaten, Alyson Gill, Paul Olsen, Brandon Lockett (CCU) at Olympia, 2007.

Spring 2008 witnessed a return to Delphi for the third installment of Ashes2Art. All of the panoramic photographs that were shot in summer 2007 have been “cleaned up” (seam lines corrected) in Photoshop, and stitched together (with parameters to determine tilt, angle, field of view, etc.). The program is now

³ Respectively, <http://www.coastal.edu/ashes2art/delphi2/index.html>; and <http://clt.astate.edu/digitaldelphi/Home2.html>

⁴ Fisheye shots: Nikon Coolpix 5700, Manfrotto 3047 leveling head, Manfrotto 3046 tripod, Nikon 180-degree fisheye lens, Kaidan camera mount. 16-shot method by Curtis Steele at ASU: Nikon D-80, AF-Fisheye Nikkor 10.5mm 1:2.8 lens, Manfrotto tripod with Manfrotto panorama head. For detail shots: Nikon D200

⁵ CCU: 10 stations of Dell Precision 690 workstation, Quad Core Xeon Proc. X5355 2.66GHz, 8GB RAM, Vista Ultimate 64bit, SLI config w/2X768MB PCIe x16 nVidia Quadro FX4600 video cards, 2x 750GB SATA 3.0Gb/s HardDrive with Raid 0; licenses for Autodesk 3D Studio Max, Mudbox, Adobe Design Suite Premium, RealViz ImageModeler 4.0, RealViz VTour 1.1. ASU: 15 stations of Dell (same specs.)

awaiting permission from the Hellenic Ministry of Culture to publish the panoramas online as it continues to supplement the websites and augment their resources. Digital models are being built of the Temple of Apollo, the Treasury of the Athenians (Fig. 3), the Stoa of the Athenians, the xystos and the

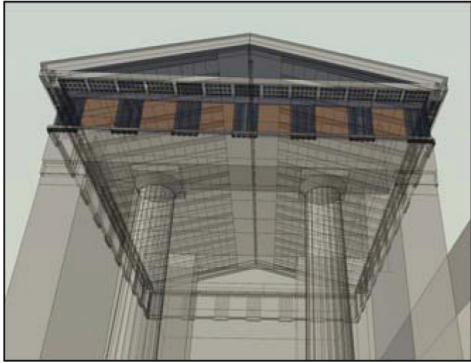


Fig. 3. Preliminary model of the Treasury of the Athenians, Brandon Lockett, Coastal Carolina University, 2007.

gymnasium complex. Among other materials, Coastal Carolina University has integrated .pdf lesson plans for secondary education teachers in accordance with the National Standards for Visual Arts, as well as short educational and flythrough videos (in various formats, downloadable to desktops, cellphones, iPods and other personal media players). At Arkansas State, students are building a searchable database to be populated with a wide variety of materials, including photographs, excavation reports, digital models and GIS data. The project directors return to Greece in summer 2008 with selected students (again with student travel grant support) for more research, panoramas, and armed with GPS units. Flaten and Gill have presented papers on the project or chaired sessions at a wide range of local, regional, national and international conferences. Equally important from a pedagogical point of view, their students are participating in conferences and workshops aimed at integrating technologies into humanities classrooms.

The course has changed substantially in the three times it has been offered. Students may take the course multiple times (under various prefixes), and those who return function as mentors (with stipends) for incoming participants. In this way, the continuity of the concept is preserved and students assume roles as teachers. It should be emphasized, again, that all work is designed and created by undergraduate students. As mentioned earlier, the trial phase of Ashes2Art at Coastal Carolina dealt

with Renaissance Florence. It did not attempt to reconstruct buildings and the concept was relatively simple: labor intensive, yes; ambitious, certainly, but the technologies (with the exception of panorama stitching software) were relatively familiar to upper-level graphic design students. Structurally, that initial course divided the city of Florence into three *piazze*: the Piazza della Signoria, the Piazza del Duomo, and the Piazza del'Annunziata. Most students were placed into one of the three locations depending on interest, and research and writing skills. A few students with advanced skills in web design and Flash animation worked on the overall website, the animated map of Florence, Flash animation sequences, and building the skins for the digital panoramas. The results of the course were very positive, but student evaluations suggested that some participants would have liked more exposure to the technologies (as opposed to researching and writing essays exclusively in some cases).

When Ashes2Art was offered a second time, in spring 2007, those concerns and several others were addressed. This next phase focused on a new location, 4th century B.C.E. Delphi, Greece, a site where, as opposed to Florence, the monuments were no longer extant. More importantly, the project had expanded to include Arkansas State University, and its collaborative agenda now included the accurate construction of digital models of various monuments at Delphi (Fig. 4), which necessitated access to the most accurate archaeological reports. In this case, those reports are the continuing series published over the past century by the French Archaeological School at Athens, the *Fouilles de Delphes* (now largely available online: cefael.efa.gr/site.php). Model builders began with plans and elevations based on the excavation reports, compared those findings



Fig. 4. Yaw Odame and Greg Schultz, Coastal Carolina University, 2007.

with other sources (monument-specific studies, and general surveys such as Dinsmoor 1973; Lawrence 1957), and carefully constructed digital wireframe models. For the tholos temple of Athena Pronaia (*Figs 1, 5 and 6*), earlier measurements were compared with more recent studies (Bommelaer 1997; Ito 1997), and other elements, including the roof, lion-head waterspouts, triglyphs, mutules, guttae and acroteria were built and added to the structure. Textures taken from detailed onsite photographs of the extant marble blocks were applied to the outer surface. Students researched various contemporaneous roof types to determine whether Laconian, Corinthian or Sicilian tiling was most appropriate, and an alternate model with a two-tiered roof was built to address disparate scholarly opinions (*Figs 5 and 6*).



Fig. 5. Digital model of the tholos temple of Athena Pronaia from the South, Greg Schultz, Coastal Carolina University, 2007.



Fig. 6. Alternate model of the tholos temple of Athena Pronaia from the South, Greg Schultz, Coastal Carolina University, 2007.

Unlike the earlier version of Ashes2Art, this stage of the course was divided by technology, not location: students were grouped into those working on: a) panoramas, b) web design, c) digital reconstructions, and d) research/essay writing. Professor Gill at ASU built a password-protected blog site for students at both universities to post questions and answers, useful information on Delphi, and links for software downloads and patches. Students were responsible for their specific field or topic, but in an attempt to address previous student concerns, students were required to submit projects in other fields as well (including simple models of Delphi monuments built with Google SketchUp, stitched panoramas, and research papers that might be used on the website). The directors felt that this platform would allow everyone exposure to all the components of the course in an extraordinary interdisciplinary template. With support from the Center for Effective Teaching and Learning at Coastal Carolina, an assessment tool was

developed to evaluate our revised methodology and the course in general.

The responses from those surveys at the end of the semester told the directors what they had sensed: in their pedagogical zeal everyone's energy and skill had been spread too thin. The new approach also had underestimated the learning curve for modeling programs such as 3D Studio Max. It was determined that the course would continue to focus on Delphi for the next several years, but it would be restructured to address efficiency.

That summer, 2007, the project directors at CCU and ASU took four students from the spring's Ashes2Art course to Delphi (and various other locations in Greece) and shot 38 new panoramas, as mentioned above. When the course was offered

for a third time in spring 2008 (at both institutions), a second Scholarship of Teaching and Learning Grant allowed Flaten and Olsen to provide stipends for those students at CCU who had already taken the course to act as mentors and group leaders for the next round of students. At CCU enrollment in the course was restricted: students could only register with the consent of the directors. This allowed faculty to assess the skills of the students and to provide them with an

overview of the course and its rigorous expectations before the semester began. For spring 2008 groups were organized under the following headings: a) web design and video; b) reconstructions; c) art education; d) panoramas and essays. Under the supervision of student group leaders, and in consultation with the Ashes2Art directors, each group determined its goals for the semester, and placed those goals on a regressive timeline. Each group then worked backwards from the end of term to determine weekly deadlines. All of the deadlines (and goals) had to coordinate with those of the other groups. For example, students working on the Temple of Apollo wanted to include essays, videos, 3D reconstructions, panoramas and lesson plans, so web design deadlines were dependent upon the productivity, efficiency and timing of each of the other components (groups). Students were free to contribute to groups other than their primary one (and they frequently did), but their main responsibility was to the agenda of their specific

group, and the group work was the sole determinant for their grade.

Each week, group leaders and participants presented on their group status, discussed any changes in direction, and proposed revised deadlines. New deadlines affected various other groups, so adjustments were made. Every other week or so, lectures on a certain aspect of Greek culture, history or architecture were given by faculty and quizzes on Greek architectural terms were administered.

In spring 2008 two new sites related to Ashes2Art and Delphi were launched: one by Coastal Carolina and one by Arkansas State. Because this is an ongoing project, many elements are still missing or incomplete, but the basics are there: No panoramas are available for public viewing yet (as discussed above, we are waiting for permission from the Hellenic Ministry of Culture), only a few videos are available, and various essays and reconstructions are in progress. To ensure that students at both schools have similar learning opportunities, the two sites are built and designed separately and link to each other in useful ways. For example, ASU is working on the gymnasium complex, so if one is on Coastal's Ashes2Art page, he or she can click on the gymnasium component of the interactive map, and go to that section of the Arkansas State project.

The course will be offered again in 2009 and every spring for the foreseeable future. It can be taken for upper level credit in Art History, Art Studio or Computer Science, and at Coastal Carolina, Ashes2Art is now part of the Honors Program. A growing number of feeder courses are aimed at better preparing students, including courses in GIS (through the Department of Geography) and 3D Studio Max. Potential projects for the future may include other Pan Hellenic sites, but we are also exploring several locations around the Mediterranean, including North Africa, Turkey and Italy, and in the United States we are looking to apply the program's unique pedagogical methodology to Colonial history and Native American sites.

Ashes2Art is an extraordinary opportunity for teaching and learning with practically limitless potential, and it provides a valuable resource with a wide range of materials for discipline specialists and the general public. Under Dr. Gill's direction, students at Arkansas State are building a comprehensive GIS database to house a wide variety of materials related to Delphi, including full-text primary sources. The directors of Ashes2Art remain committed to its

undergraduate pedagogical origins, to providing accurate and accessible reconstructions, and to expanding its tools and resources to accommodate specialists and students.

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