WHITE PAPER

RECIPIENT: East Carolina University
FAIN: HAA-271718-20
PROJECT TITLE: Castle to Classrooms: Developing an Irish Castle in Virtual Reality

This collaborative Digital Humanities Advancement grant set out to adapt for teaching and public use in Virtual Reality a highly detailed 3-D digital model of Kilcolman Castle, the late-medieval Irish building compound best known for being the adopted home of the early modern English poet and colonial administrator Edmund Spenser (c.1552-1599). An extensive open-access website devoted to the castle, including a digital model of the main buildings, has already been developed at East Carolina University, Centering Spenser: A Digital Resource for Kilcolman Castle (http://core.ecu.edu/umc/Munster/index.html). The grant project Castle to Classrooms further developed that website’s digital model and other content by creating prototypes of seven open-access pedagogical modules in Virtual Reality based partly on them (Figures 1 and 2). Included with the module prototypes are extensive teaching resources that were also created by the grant collaborators with the VR tours in mind.

The project can be found here on a newly created homepage:

https://core.ecu.edu/herront/Castle-Classrooms/index.html

Figure 1: screenshot of banner for project homepage, showing exterior of digital model of Kilcolman Castle
The project was planned to run from Fall 2020 until the end of Fall 2021. A no-cost extension continued work through Spring and Summer 2022. This extension allowed the ITCS experts on the team, Doug Barnum and Laurie Godwin, to work further on the technical aspects of the module prototypes, while the contributors and PI further edited and tweaked the modules. Additional major changes to the technical platform of the project as well as minor troubleshooting edits to the content and navigation are ongoing (see below).

The goal of the project was (and is) to help students, teachers, and the general public better understand the life and works of Spenser within the context of the imperial and colonial developments he participated in and wrote about. The project aims to bolster the study of the humanities more generally, however, specifically medieval-renaissance, Irish, castle, colonial, and English-literature studies on the web, while deepening our understanding of Spenser, a highly controversial and essential figure in the development of both poetry and colonial theory.

As it was originally planned, four faculty experts in the subject of Spenser and/or early modern Ireland (including the PI) were to create, on an individual basis and in collaboration with each other, four discipline-specific “teaching module” prototypes keyed towards university curricula in a) history, b) architecture and archaeology, c) Spenser’s poetry and d) Spenser’s prose writing on Ireland. A fifth prototype teaching module was planned by North Carolina public-high-school English teacher Sara Painter that would be geared towards teaching Spenser’s poetry in high school.

Time, enthusiasm, and resources allowed the team to make two more modules than were originally planned. Instead of the planned four pedagogical VR modules for undergraduates and one for high-school students, five of the former and two of the latter were created during the period of the grant. The module titles are seen here in a
screenshot from the new homepage designed for the Castle to Classrooms project (Figure 3).

Figure 3: screenshot of list of Teaching Modules, including VR tours and teaching resources, from the project homepage

1) Archaeologist Vicky McAlister wrote two related modules that focus on archaeological, architectural and spatial features in the castle: Exploring the Archaeology and Architecture of Kilcolman Castle: Defense Tour and Exploring the Archaeology and Architecture of Kilcolman Castle: Residence Tour. Both use the time-honored technique of role-playing, as the tours are each conducted from the point of view of a fictional character (not necessarily a friendly one!). This approach helps lure in and keep students’ attention. Here is a screenshot of the opening page of McAlister’s “Defense” tour (Figure 4):

Figure 4: opening page of McAlister’s “Defense” tour
2) A third module, *Kilcolman: The History, Culture and Politics of an Early Modern Irish Castle*, was written and designed by historian Ruth Canning. It offers a historical tour that focuses on the cultural context of both English and Irish occupants, including particular attention to the experience of Spenser’s Irish noble predecessors who owned the castle before he did.

3) A fourth module, *Spenser’s Love Poetry in an Irish Context*, was written and designed by the PI, Thomas Herron, a literary scholar. It focuses on Spenser’s writing, especially the poetry, with a particular emphasis on the well-known sonnet sequence *Amoretti and Epithalamion* (1595) and its relation to Spenser’s cultural and domestic sphere in Ireland, including the experience of Spenser’s second wife, Elizabeth Boyle.

4) A fifth module, *Spenser’s Use of Famine as a Weapon of War in A View of the Present State of Ireland*, was written and designed by historian Prof. Susannah Ottaway. It explores Spenser’s policy tract in prose, *A View of the Present State of Ireland*, in relation to Kilcolman, the surrounding Munster Plantation and the crisis of famine and rebellion that engulfed the plantation at the end of the sixteenth century.

5) Two modules were written for high-school students by teacher Sara Painter: the first of these, *English Renaissance Poetry in a Castle Setting: an introduction to the Sonnet and the Pastoral Genre for high-school students*, has a self-explanatory title. It explores generic aspects of Spenser’s love poetry, some of which relate directly to the North Carolina state curriculum Painter teaches with. Painter took a novel approach towards utilizing the castle-tour format in her second module, *Exploring Spenser’s Poetry in his Irish Castle: a scavenger hunt for high-school students*. In this module, students work in pairs to find scattered parts of a Spenserian sonnet in different rooms of the castle, and then they puzzle out how to assemble them into a whole.

All seven modules use reproductions of primary sources such as original documents, texts, and illustrations, which accompany pop-up explanations in the castle model (Figures 5a and 5b). In one case, voice-overs are included for the tour.

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**Figures 5a-b**: example of an activated object (an Irish mantle) with pop-up text in the tower cellar

As planned in the grant proposal, the modules have accompanying suggestions on how to use them in teaching as well as some sample exercises. These teaching resources are presented in their own section of the individual modules linked from the homepage (*cf. above*), where they appear attached to the VR modules themselves.
The format of the homepage and these teaching pages were designed by technical consultant Laurie Godwin as her main contribution to the grant. Likewise, the VR portions the modules were filled in and programmed over many painstaking weeks and hours by technical consultant Doug Barnum. The process of creating the project involved repeated Zoom/Teams calls with all parties on a regular basis and active, regular consultation. Both technicians gave crucial input into the project from the beginning, and the grant would not have achieved what it did within its budgetary means had either or both Barnum and/or Godwin not been full-time employees at ECU with ample time and internal support available to help with our project.

**Technical Complications and Advantageous Discoveries**

As with nearly all long-term DH projects, the technological sands shifted under our feet. In particular, WondaVR, the software company we were working with to provide our program platform for the VR tours, recently (Fall 2021) decided to shift its operations from its older application, “Studio”, in which we did all our programming, to a newer platform, “Spaces.” This will occur by their proposed deadline of November 15, 2022. All of our programming and content in the modules will be shifted to the new application, without cost to us but with some delay. The new platform on Spaces will preserve the basic “look” and content of the modules as they are, while adding additional features. For example, Spaces will function much like Second Life, in that it will allows for multiple-user interaction in the program space (the castle) in real time using avatars: hence, with Oculus/Meta-type VR headsets on, an entire class of 20-30 users will be able to tour through any one of the prototype modules and interact with it in tandem with each other and while listening (or not) to the teacher’s real-time instruction. Entire classes can be led by a teacher in this way.

Also, it is anticipated that individual teacher-users —if properly trained and granted access to our prototype modules and/or to a blank version of the castle via WondaVR subscription— will be able to add their own content to the castle interior in Spaces and thus custom-tailor the modules more to their own needs/preferences in teaching. My goal is to make such training for faculty and librarians a centerpiece of an application for a future stage (“Stage 3”) NEH Digital Advancement grant, so as to continue our current efforts.

A significant downside to the shift from Studio to Spaces by WondaVR is that WondaVR is discontinuing the ability of individual users to access the modules on their individual phones. This was a key attractive feature of our grant in the first place: anyone with a phone and some directions from the teacher/website can enter a module using a WondaVR Studio on his/her/their phone, switch on its stereoscopic view setting, and place the phone in a “Google cardboard”-type holder, thus providing an individual VR experience. The phone apparatus in this way functions like a VR headset but at a fraction of the cost of a commercial VR headset (cardboard headsets cost ca. $5-$25, depending on the type and quality, etc.). This greatly lessens the cost and increases the access of the VR experience.

Nonetheless, use of phones to display the modules has its own problems: we discovered in test runs with our classrooms that different students have differently sized phones, and so not all fit in whatever brand of cardboard holders happened to be ordered for the class. Moreover, many students have phones but some (few) do not, or what they have are outmoded and not compatible with WondaVR in the first place (a more common issue). Others might run out of power during a class period. So, what is gained in accessibility might often be lost due to instrument variability.

One solution, in turn, is to encourage institutional purchase of commercial VR headsets to allow use by classes on
a case-by-case basis. In this case, purchasing twenty $300-apiece Oculus/Meta Quest headsets is likely to be as expensive as purchasing twenty new phones, and the headsets won’t need to be adapted to anything, as they will be built exclusively for VR use. The *Castle to Classrooms* modules for them will be available via open access through ECU’s own institutional subscription to WondaVR. (If faculty in other institutions eventually want to edit and create their own content using the castle modules as a basis, they will have to pay for an annual subscription to WondaVR for access.) Such headsets will have to be donated or bought in numbers by school/university libraries, but once purchased, they can be made regularly available for individual and group checkout and properly maintained by the library that owns them.

As a consequence, the future move to Spaces for the VR component of our project is by no means a major setback for our project. Indeed, there are major advantages to switching to Spaces, as noted above. Whatever the fate of their use with VR headsets, the modules as completed are and will be openly accessible on compatible browsers (like Firefox, but not Safari) in flat screen-format on all desktops and laptops for the foreseeable future.

Another technical issue worth noting is how, due to the labor involved in installation of extensive voice-overs for typed content in the modules, only Canning’s module currently has such voice-over capability. Such computerized voices (in the case of Canning’s module, with an Irish accent) are passable but still not as good as real human voices that could, at some future date, be recorded and installed into the modules.

*Responses of audiences and users to the prototypes*

Student and faculty users tried out the VR modules at various stages of development. These included students in Vicky McAlister’s public history courses at Southeastern Missouri University; high-school students in Sara Painter’s honors classes at South-Central High School in Pitt County, NC; students at Carleton College, MN; graduate students engaged by Herron and Barnum on an ad hoc basis at East Carolina University, and faculty members in various conference venues pre- and post-Covid pandemic, including literary scholars, historians and archaeologists. Responses to the VR experience are uniformly and enthusiastically positive: there is a real “wow” effect when users first walk through the castle and all are intrigued to continue their tours, whether or not they pause to read the pop-up texts, etc.

One drawback among all users, however, is the difficulty of keeping a VR headset on for long and paying close attention to details while doing so; the headsets are certainly not conducive to reading long passages or closely parsing poetry. Most users tend not to want to have the headset on for longer than twenty to thirty minutes. As a result, we tailored most of our individual castle “stations” (i.e., sites of pop-up materials) to take five minutes or less to work through, with the understanding that entire modules can be paused and re-commenced as needed by the users.

*Uncompleted Items and Desiderata*

A prototype “Virtual Gallery” of copied and assembled objects from the castle, with descriptions and explanations, *etc.*, had been planned in the grant proposal by Herron and Barnum for use on Oculus Rift devices in particular. The Oculus Rift VR experience uses the powerful gaming software Unreal Engine to allow users to walk around, see, pick up, and closely investigate most objects featured in situ in the castle. The hope was to use this particular technology to group many objects from the castle into one “Gallery” space for the purpose of closer investigation, comparison, and cross-reference. Students could then move on to exploring the castle in WondaVR. While Barnum did experiment further with using the castle model in the Oculus Rift, this aspect was
overly ambitious given the complexity of that technology and given the energy and time necessary for all the other components of the grant (including the additional “bonus” modules created by McAlister and Painter). Oculus Rift headsets also require attachment to desktop computers fitted out with special gaming boards, so they are expensive machines to purchase and maintain (ECU’s VR Lab has a few such machines, but not all universities do). It is nonetheless hoped that further work can be put into a more extensive tour of the castle in Unreal Engine on Oculus Rift in the future, along the content lines of the existing modules created for WondaVR Studio/Spaces.

Another positive facet resulting from the project is how it opened our eyes to how much more of the landscape surrounding Kilcolman Castle could and should be digitally modeled in hypothetical reconstruction as an extension of existing structures. As any castle expert or architect will tell you, a castle’s surrounding landscape is essential to its geographical, social and historical significance. By promoting VR modelling in this regard, our project could encourage future archeological survey of the site’s surroundings and contribute to new research on Kilcolman Castle, as well as inspire innovative aspects of castle studies more generally. Similarly, given the growing attention to cooking, cuisine, foodways and agriculture in medieval and early modern studies, it would be fascinating to model a hypothetical working period kitchen into the Kilcolman Castle compound for future exploration in VR.

*Benefit to the PI’s Institution, Community, and Wider Field in Digital Humanities, including Auxiliary Projects involving Personnel Outside the Scope of the Grant*

Work on *Castle to Classrooms* has helped to revive a dormant VR-interest working group at the PI’s institution, East Carolina University. For example, in April, 2022, the castle project was featured in ECU’s VR Lab along with other open-source programming (like *Anne Frank House*, *Nefertari*, and *Virtual Angkor Wat*) as part of a “VR Expo” for humanities and social science faculty and students in particular (up to that point, the Lab had mainly been used by the science and medical communities at ECU). The VR working group at ECU has also begun featuring once-a-semester presentations on campus of individual faculty projects, both in and outside of traditional humanities fields. The benefit to interdisciplinary programming and research at ECU is significant.

Secondly, graduate students assigned to Herron at ECU have, as part of their regular assignments, done light editing work on the castle project; they also worked closely with Barnum to learn the technical methods of WondaVR for the same.

Outside of ECU, collaborator Susannah Ottaway at Carleton College has involved her undergraduate students in researching material for her history module; one of these students accompanied her to Ireland for in-situ research into the history and agricultural surroundings of Kilcolman Castle.

Third, all contributors —most extensively Ruth Canning and Vicky McAlister— have incorporated the modules-in-progress in their classrooms in some regard in the last two years, with great success. Teacher Sara Painter successfully taught lessons in renaissance poetry in her high school honors English classes using her modules-in-progress. This bodes well for future instructional uses.

Fourth, Thomas Maurer, an advanced graduate student in medieval history at University of Tennessee-Knoxville, spent part of his summer 2021 working closely with Herron and Barnum in ECU’s VR Lab as a visiting intern funded and directed by UT-Knoxville; Maurer’s project involved creating a hypothetical public history project that could involve VR aspects of Kilcolman Castle. It is hoped that he will continue this project down the road.
Finally, our work-in-progress was presented by Herron, Barnum, McAlister, and other contributors at various conferences in the last two years. Word is out among the academic community about the project. Now that the VR modules have been successfully created in prototype, our hope is to further polish, disseminate, market and teach the modules to a much wider audience of faculty members in the future. Herron will be looking at grant opportunities to do so, including a Stage 3 NEH Digital Advancement grant.

Conclusion

The modules, as created, successfully highlight and even recreate for students the rich cultural diversity and sometimes tragic history of Kilcolman Castle over time. The modules lead students back to the information on the Centering Spenser website as well as to other sources on Spenser and/or early modern Ireland provided by the contributors. Practical guides and suggestions for teaching strategies using the VR modules are also included in this project. The teaching modules can function as exciting learning experiences for the general public as well, being easily and openly accessible on the web, attractively designed, and adapted to VR use on computers and headsets.

Kilcolman Castle is on private property in the countryside and difficult to access. To do so is impractical and financially prohibitive for most students and many academics. Yet, it is an important cultural site. VR modules of the castle take viewers “there” who could never otherwise experience the real place nor, perhaps, experience any castle at all in real life. I am highly grateful to the NEH for supporting this project.

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