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Project Director: Bruce Smith (brucesmi@usc.edu)

Institution: University of Southern California

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The Cambridge Word Shakespeare Encyclopedia:
An International Digital Resource for Study, Teaching, and Research

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Bruce R. Smith, University of Southern California
Katherine Rowe, Bryn Mawr College
Project Co-directors

The *Cambridge World Shakespeare Encyclopedia* (CWSE) an innovative digital reference source and workspace, supports collaboration among scholars, teachers, students and performers worldwide. This project addresses three challenges for the transnational humanities today. *Interoperability*: as a result of our NEH-supported planning, CWSE is now envisioned as part of a larger platform, *Cambridge World Shakespeare Online* (CWSO), designed to aggregate a wealth of dispersed resources from partner archives and also presses. *A dual-edition publishing model*: CWSO will balance subscription entitlements to published content with open access to primary texts and to secondary materials from public archives. *Sustainable growth in an international context*: CWSO will develop a growth model based on peer review, for a transnational field in which peer review remains the common currency of scholarly value. The international editorial team is nearing completion of core content for CWSE, commissioned by Cambridge University Press, who will build and host the site, making it sustainable. The Center for Transformative Scholarship (USC) supported prototype design and planning; Bryn Mawr College supported travel and clerical efforts.

Summary of findings

In the three key areas we investigated, we confirmed some expectations and opened new questions. None of the most significant challenges we identified are technical. With world enough and time, and with deep pockets, every element of our project design is readily implementable at the level of technology. The most significant challenges to moving forward will be institutional and cultural. Thus, the overall takeaway of our project is this: future NEH programming and PI planning should be directed as much at the human challenges and opportunities of digital scholarly development as at the technical ones.

Interoperability

Digital development in the humanities has generally been project-based, with resources developed in separate silos; notable exceptions include the NINES initiatives and new developments in shared platforms for medieval studies. A lack of systems-level thinking about how students, scholars and theater practitioners might move across different digital resources is particularly evident in Shakespeare studies. This represents perhaps the most significant challenge facing our field going forward, since none of our major digital initiatives were designed with an eye towards making their resources (secondary and archival materials) available in an integrated way. And yet, as we discovered by demonstrating our wireframes at conferences in the North-America, Europe and Asia, the natural working mode of Shakespeare students,

teachers, and performers requires precisely such free movement between primary and secondary materials.

We sought but could not identify other digital scholarly resources in the humanities that use a primary corpus (such as Shakespeare's works) as the gateway for interoperable collections. Within Shakespeare studies, we identified a high level of interest in such a resource. All the archives with whom we met identified a defined content-gateway such as the CWSO as a new and very exciting way to increase traffic in their holdings, of particular value for heritage institutions. Secondary and college students were the most frequently cited potential audience, with theater professionals and scholars as the next most-frequently cited audiences. The interface we proposed works on a model similar to the Juxta tool developed by the NINES group, toggling on/off color saturation in the typeface for plays and poems, with denser saturation representing the density of contextual holdings behind a particular word, word-cluster, or line.

As a field, Shakespeare studies centers on a relatively large and well-defined primary corpus of plays and poems. The production of modern editions has been the engine both of scholarly value for academic Shakespeareans and economic value for presses, whose business model depends on an exclusive relationships with lay, student, and academic readers. The dead hand of this publishing history retains a strong grip on digital scholarly communications in this field. An interoperable resource such as CWSO — taking a high-quality modern edition as its primary gateway and allowing readers to access secondary materials through their primary reading experience, line-by-line or image by image — puts direct pressure on that exclusive relationship.

A dual-edition publishing model

With this institutional history as context, CUP's commitment to an open online edition of the New Cambridge Shakespeare is both financially risky and tremendously valuable to the field — factors every scholar and editor knowledgeable about the field recognized at our international meetings. The publishing model proposed for CWSO, refined during this grant, focuses on public-private partnerships. An open workspace will use a "flat" (low-functionality) version of the *New Cambridge Shakespeare* texts as the gateway to public archives and free CWSE content; a more robust (higher-functionality) resource will be available by subscription to institutions, including access to holdings from partner archives that are subscription-only. CUP will conduct contract and entitlement-management conversations with a small group of launch partners (see activities summary below) in fall 2011. CUP has committed to developing the basic platform (integrated playtext and encyclopedia) and is seeking funding to support the additional of back-end translation functions enabling federation with partner archives and presses.

In our planning and demonstration process, a significant gap in current digital Shakespeare resources became evident and with it, an opportunity to validate the dual publication model by testing a value-added function for CWSO. Actors, directors, artistic directors and theater librarians noted the absence of online resources for departments of drama and theater and of digital tools for use in the theater; high-school teachers noted the absence of any robust mobile script tool — despite the increasing dominance of mobile devices in the lives of our students. As a result of feedback from these different audiences, plans for CWSO now include a user-defined workspace in CWSO for theater practitioners, allowing allow manipulation of Shakespeare's scripts for actors' use and giving actors, directors, and designers one-click access to records of earlier productions, contextual materials. In partnership with the American Shakespeare Company in Staunton, Virginia we have submitted a Phase Two Startup grant to develop and test in production a mobile script-editing tool (MyShx), using the iPad as a delivery device. Such

a tool would make CWSO usable by professional and academic companies in the preparation and archiving of productions. Our key questions for this grant: will easy access to contextual materials and a dynamic script-editing environment redress the current gap in performance-related Shakespeare resources? Can such an environment add sufficient value during play production to make CWSO subscriptions attractive to theater companies, helping to generate the revenue that will make the maintenance of an open playtext and workspace sustainable for CUP in the long run?

Sustainable growth in an international context

Shakespeare studies is a broadly international field and a key question for our grant was how new modes of authoring, reading and research enabled by digital media will play in different academic cultures. A number of digital Shakespeare initiatives have emerged in Asia and Europe, as well as in North-America. We found expected differences across generations, with senior scholars somewhat less comfortable with new media environments than younger scholars; across all age groups we found a higher degree of comfort with archive tools than with multimedia authoring and scholarly-social-networking tools. But the most significant differences we noted had to do with tolerance for experimentation with scholarly protocols: new models of content-generation and peer review were entertained with somewhat more confidence in North-America and Europe than elsewhere (though not with general confidence in this field, which is just beginning to explore these developments). These findings have implications for the future growth of CWSE. Its 310 articles represent the beginning of a world Shakespeare reference work that needs to grow with the field. This is the arena of grant study in which we made the least progress, identifying the following opportunities for growth that might work separately or together: 1) feedback threads for commentary and expansion to the CWSE entries, available to those establishing a user account (free or subscription); 2) an ongoing editorial board to review submissions for new entries, on the model of a journal; 3) affiliation with international Shakespeare conference (ISC, SAA, BSA, JSS, DSG) to maintain international breadth of scholarly content.

Summary of activities

Of the five phases outlined in our grant application, all five had been accomplished by the end date of the grant, 31 March 2011:
- Refining the concept of the encyclopedia as an on-line resource
- Building a prototype (later adjusted to wireframes)
- Reviewing the wireframes
- Building and demonstrating the wireframes in an international context
- Documentation, assessment, and final dissemination.

In addition, as we note above three new phases of the project have been launched during the timeframe of the grant:
- Laying the groundwork for partnerships with research entities including the Folger Shakespeare Library, the British Library, the Department of Modern and Contemporary Performance at the Victoria and Albert Museum, the Global Shakespeare video archive at MIT, and ArtStor as "partner archives" on a federated site to be known as Cambridge World Shakespeare Online
- Planning collaboration with a professional theater company, the American Shakespeare Center, headquartered at Mary Baldwin College, Staunton, Virginia, to develop a software program combining the electronic resources of the encyclopedia with a fully

searchable and manipulatable script from the New Cambridge Shakespeare Edition, all in a format that can be downloaded on a handheld device and used by directors, designers, actors, and classroom students in designing, rehearsing, performing, and archiving a play in production
- Beginning negotiations with book publishers such as the University of Pennsylvania Press, University of Manchester Press, Macmillan, and Ashgate to federate their electronic scholarly content with CWSO.

The major events in this process have been made possible by the NEH Digital Humanities Start-up Grant, by the University of Southern California's absorption of all overhead costs for the administration of the grant, by Bryn Mawr College's provision of additional travel and clerical-support funds to Katherine Rowe, and by Cambridge University Press's absorption of the technical development costs so far. The broad-based collaborative nature of CWSO remains one of its strengths. Each of the following eight events will be reported on separately in the sections below:
- A trial run of ideas for CWSE in a paper by co-director Katherine Rowe in a session on "Editing beyond the Author Function" organized by co-director Bruce Smith at the annual meeting of the Modern Language Association in Philadelphia in December 2009
- A three-day advisory forum at the University of Southern California in January 2010 that drew on the expertise of seventeen participants from the UK, Germany, and the USA to produce the design plan that now governs the project, which has been renamed Cambridge World Shakespeare Online
- A workshop entitled "Shakespeare 2.0" convened by the co-directors of CWSO at the annual meeting of the Shakespeare Association of America in Chicago in April 2010, a workshop that attracted as participants and auditors some of the top scholars in digital Shakespeare scholarship and helped to refine the model for CWSO developed at the January forum
- Katherine Rowe's invited participation in the Scholarly Communications Institute at the University of Virginia in July 2010, where the hybrid business model of "home edition"/"professional edition" were explored with other teams of scholars and university presses
- A series of meetings initiated by the co-directors in London in August 2010 to explore possible partnerships between CWSO and major archives, including the British Library, the British Museum, the London Metropolitan Archive, the Department of Contemporary and Modern Performance at the Victoria and Albert Museum, the performance archive at Shakespeare's Globe, and the performance archive of the Royal Shakespeare Company on deposit at The Shakespeare Centre in Stratford-upon-Avon
- Demonstration of wireframes of the prototype of CWSO at an unusually well-attended session at the biennial International Shakespeare Conference in Stratford-upon-Avon in August 2010
- Demonstration of wireframes of CWSO in a workshop at the annual meeting of the Shakespeare Society of Japan in Fukuoka, Japan, in October 2010
- Demonstration of wireframes of CWSO in a workshop at the World Shakespeare Congress in Prague, Czech Republic, in July 2011.

"Editing beyond the Author Function," MLA, 12/2009

This session brought together participants from a number of current digital projects in the humanities and provided a fertile environment for trying out ideas for CWSE in a paper by co-director Katherine Rowe. One idea in particular, the prospect of using CWSE as the node of

"federated archives" across a number of sites and research institutions, began to take firm shape in this session.

Advisory Forum, USC, 1/2010

The NEH grant, along with support from the Center for Transformative Scholarship at USC, the College of Letters, Arts, and Sciences at USC, and Cambridge University Press, facilitated a gathering of 17 experts and potential users of CWSO. In addition to the co-directors these participants included

- A. R. Braunmuller, University of California Los Angeles, Associate General Editor of *The New Cambridge Shakespeare*
- Michael Chaplin, Electronic Publishing Development Manager, Cambridge University Press
- Beatrice Rehl, Editorial Director for Academic and Professional Publishing Division, Cambridge University Press, Americas Branch, New York
- Sarah Stanton, Publishing Director for Humanities, Cambridge University Press, UK
- Zoe Borofsky, Center for Digital Humanities, University of California Los Angeles, Development Coordinator for the electronic *Encyclopedia of Egyptology*
- Philip Ethington, University of Southern California, co-director of USC Center for Transformative Scholarship, North American Editor and Multimedia Editor of the journal *Urban History,* co-recipient of MacArthur/HASTAC Digital Media and Learning Competition
- Andreas Kratky, University of Southern California, Visiting Assistant Professor, Interactive Media Division, USC School for Cinematic Arts
- Tara McPherson, University of Southern California, co-director of USC Center for Transformative Scholarship, editor of two anthologies on new technologies (one for MacArthur Digital Media and Learning)
- Jan Reiff, University of California Los Angeles, co-editor of the online *Encyclopedia of Chicago*
- Willeke Wendrich, University of California Los Angeles, editor in chief of the *online Encyclopedia of Egyptology*
- Sophie Lesinska, Director of Public Services, USC Libraries
- Laurie Fisher, PhD candidate in English, University of Southern California, with interests in production history
- Niels Herold, Associate Professor of English, Oakland University, Michigan, assistant editor of New Variorum *Coriolanus*, author of articles on historicism, pedagogy, and Shakespeare performances in prisons
- Sean Roberts, Assistant Professor of Art History, University of Southern California, specialist in the reception of artistic and negotiation of artistic technologies between early modern Christian and Islamic societies
- Matthew J. Smith, PhD candidate in English, University of Southern California, with interests in the history of religion and the history of science

The result of three days of reports from developers of similar projects, suggestions from potential users of CWSO, brainstorming sessions, break-out groups, and input from the commissioning editors and the chief digital development manager at Cambridge University Press was a design in which the *Cambridge World Shakespeare Encyclopedia* will be only one element, a design that has inspired us to rename the project *Cambridge World Shakespeare Online.* As the design now stands, CWSO will bring together five resources:

- edited texts of Shakespeare's plays and poems from the New Cambridge Shakespeare, to serve as a gateway for
- the 310 articles in the *Cambridge World Shakespeare Encyclopedia*
- electronic editions of Cambridge University Press's other books on Shakespeare, plus selected other books from CUP's list in early modern studies
- content from partner archives that choose to share their resources through CWSO's gateway of Shakespeare's works
- links to printed books and electronic books both within Cambridge University Press and outside, in presses that have substantial lists in early modern studies but do not themselves publish editions of Shakespeare's works

The over-all goal will be the creation of an integrated search site in a carefully delimited subject area (Shakespeare and resources that support reading, research, and performance preparation) that will provide users with high-quality, field-specific hits. Ideally these tools will include all of the following:

- open, personalized workspaces for registered users
- interfaces that provide alternate ways into federated resources, depending on the user's needs, preferences, and subscription entitlements
- collaborative filtering ("Searchers who chose this term also looked for . . .")
- alternative displays of search results, according to a user's preference: content sectors, faceted searching, and font-color saturation in the primary texts, to indicate depth of secondary holdings in partner archives and press holdings
- persistence (the site will keep track of what has been added since the user last visited)
- RSS feeds (software that helps users keep track of streams of data)
- capacity to manipulate Shakespeare's texts (e.g., creating "tracks" that show only one character's speeches, cutting the text for performance purposes and depositing the cuts in a storage space from which they can be retrieved, searching the text for particular words and grouping together speeches that contain those words)
- social-networking possibilities (including capacity for toggling onto other users' annotations and manipulations of Shakespeare's texts)

One practical result of the January forum was Cambridge University Press's taking on the task of developing wireframes that could be used in presenting CWSO to potential collaborators and potential users. Intensive work on these wireframes, by an international team, went on during spring 2010, so that a demonstration model was available for presentations in the UK and in Japan during summer and fall 2010.

"Shakespeare 2.0," Shakespeare Association of America, 4/2010

Attracting as participants and auditors some of the top scholars in digital Shakespeare scholarship, this workshop focused on key challenges scholars face in translating our core practices into digital environments: scholarly vetting, the definition of expertise, collaborative authorship, defining communities of users.

Scholarly Communication Institute, University of Virginia, 7/2010

Several teams of scholars and university presses presented hybrid business models at SCI 2010, where the paradigm of free "home edition" and revenue-generating "professional edition"

was broadly discussed as both a viable principle and a significant challenge. We are pursuing this model for the CWSO, focusing on establishing a phased development process of ongoing grant-seeking and defined commitments from CUP.

Meetings in the UK to explore "federated archives" within CWSO

The co-directors met with curators and development officers at a number of high-profile research archives in the UK, including the British Library, the British Museum, the London Metropolitan Archive, the Department of Contemporary and Modern Performance at the Victoria and Albert Museum, the performance archive at Shakespeare's Globe, and the performance archive of the Royal Shakespeare Company. The result of these meetings has been commitments in principle by the British Library (including the performance archive of the National Theatre) and the Department of Contemporary and Modern Performance at the V&A to make digital files of their holdings (book pages, manuscripts, prints, photographs, sound files, and video files) directly available through searches within CWSO. Both of these institutions have agreed to join with CWSO in further grant applications toward technical development that will make these interlinks possible. The British Library is already well advanced in making its resources available electronically; the V&A Department of Contemporary and Modern Performance, despite its massive holdings, has hardly begun, so that participation in CWSO would be a significant boost to its efforts. The Folger Shakespeare Library, ArtStor, and the Global Shakespeare video archive at MIT have also indicated their interest in joining the project. As of the date of this report (June 25, 2011), negotiations with book publishers outside Cambridge University Press has just begun. The University of Pennsylvania Press has already indicated its interest. When these negotiations have concluded, the co-directors of CWSO plan to apply for further funding from the NEH and possibly the Mellon Foundation.

All the archives with whom we met identified a defined content-gateway such as the CWSO as a new and potentially very exciting way to increase traffic in their holdings. Secondary and college students were the most frequently-cited potential audience, with theater professionals and scholars as the next most-frequently cited audiences.

Demonstration of prototype at the International Shakespeare Conference, 8/2010

General enthusiasm for CWSO, as well as specific suggestions for users' interfaces and content, were generated by a demonstration of the wireframes for CWSO before an audience of 50 people at the International Shakespeare Conference in Stratford-upon-Avon in August. Among the participants were a director and an actor from the Royal Shakespeare Company, who offered concrete, practical ideas about how a theater-practitioners' interface could be designed that would make CWSO usable by professional and academic companies in the preparation and archiving of productions. The USC librarian who participated in the January Advisory Forum had noted the absence of online resources for departments of drama and theater. Further discussions with high-school teachers identified a parallel gap: the lack of any robust script tool to take advantage of the increasing dominance of mobile devices in the lives of our students. To fill this gap in scholarly, teaching, and performance resources CWSO will include a tool for theater practitioners, allowing easy editing of Shakespeare's scripts and giving actors, directors, and designers one-click access to acting scripts across 400 years and to records of earlier productions. At the conference preliminary discussion about collaboration on this aspect of CWSO was begun with representatives of the American Shakespeare Company, headquartered at Mary Baldwin University in Staunton, Virginia, and affiliated with an MA program in Shakespeare studies.

Demonstration of CWSO wireframes at the Shakespeare Society of Japan, 10/2010

Although outside the chronological frame of this report, the workshop on "Shakespeare and Next-Generation Open Web Technology" that the co-directors of CWSO ran at the annual meeting of the Shakespeare Society of Japan belongs with the sequence of events outlined in this report. Future presentations of CWSO at national professional meetings will be concerned with fine-tuning and technical execution of the plans that have been developed between December 2009 and October 2010. Among the participants in the SSJ workshop were the co-directors of A | S | I | A, an ambitious pan-Asian performance archive that is being launched from the University of Singapore in November 2010. As with the presentation of CWSO at the International Shakespeare Conference in August, an unusually large number of auditors were attracted to this workshop at SSJ. Among the topics discussed by participants and auditors were challenges of editing and scholarly oversight connected with additions to the database, once projects like CWSO and A | S | I | A are in use.

Demonstration of CWSO wireframes at the World Shakespeare Congress, Prague, 7/2011

A few weeks after the submission of this report, the co-directors will run a workshop on the first day of the World Shakespeare Congress in Prague, Czech Republic. Held every five years, this congress brings together an international gathering of Shakespeare scholars that replicates precisely the international cast of contributors to the Cambridge World Shakespeare Encyclopedia and the international user base that CWSO is designed to reach. The workshop format will allow feedback from scholars from countries and cultures not consulted so far, including India, Pakistan, South Africa, Russia, and Eastern Europe. The results of this workshop will be twofold: to advance our thinking about viable models for sustaining the growth of scholarly content for CWSE; to refine our understanding of the challenges and opportunities of interoperability for digital Shakespeare resources, going forward.

Future plans

Impetus from the Phase One Digital Humanities Start-up Grant has energized the three new projects outlined at the beginning of this report. The co-directors hope that a Phase Two NEH grant will help to fund development of beta software to be trialed by the American Shakespeare Theater, targeted to professional theater practitioners and secondary students performing Shakespeare inside and out of class. Discussions with the Mellon Foundation have been opened with regard to an application that would fund the technical requirements for interlinking the encyclopedia, texts of the New Cambridge Shakespeare Editions, with the digital resources of partner archives and presses. The co-directors expect work on this phase of the project to begin in 2012. Content development for CWSE will wrap this coming winter. A publication date for the print edition of the *Cambridge World Shakespeare Encyclopedia* and for launching Cambridge World Shakespeare Online has been set for 2014.