

White Paper Report

Report ID: 100838

Application Number: HD5108810

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Institution: Illinois State University

Reporting Period: 9/1/2010-2/28/2013

Report Due: 5/31/2013

Date Submitted: 3/18/2014

Building a Better Back-End: Editor, Author, and Reader Tools for Scholarly Multimedia
Final White Paper (Grant #HD-51088-10)

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Submitted March 18, 2014

Project Activities

The original proposal for this Level II Digital Humanities Start-Up Grant was to modify the open-source, editorial-management system Open Journal Systems (OJS) for use with scholarly multimedia. The goal was to build PHP-based plug-ins that would facilitate synchronous and asynchronous review of multimodal webtexts, which includes adding metadata to the author upload functions, maintaining linked file structures of webtexts through the versioning system of OJS, and capturing nondiscursive synchronous review data such as sticky notes and drawings on screencaptures of interactive webtext submissions. A second set of goals, to build remix and citation tools for readers, had to be set aside early on due to the scope of the review plug-in deliverable.

Brief Background on Scholarly Multimedia

Scholarly multimedia (also called webtexts) are article- or book-length digital pieces of peer-reviewed scholarship designed using hypertextual and media-rich elements to enact an author's argument. They incorporate interactivity, digital media, and different argumentation strategies such as visual juxtaposition and associational logic and are composed using webpages with links, animations, images, audio, video, scripts, databases, multimedia, and other design elements. These publications are unique in that each webtext is individually designed, which makes basic editorial processes such as reviewing, copy- and design-editing, publishing, and indexing significantly more complicated than print-based or linear (e.g. PDF-like) scholarship. The oldest, continuously published journal for webtexts is *Kairos: Rhetoric, Technology, and Pedagogy* (<http://kairos.technorhetoric.net>). The PI and two of the grant's consultants are *Kairos* editors and drew on their combined 30 years of expertise with the journal to inform the deliverables of this project.

Project Purpose and Original Scope

Editors, authors, readers, and publishers need media-specific tools to help them engage with and promote scholarly multimedia, but the unique editorial processes for scholarly multimedia---such as the lack of feasibility to blind review; the need for collaborative review processes; and the added layers of copy-editing that attend to usability, accessibility, sustainability, and rhetorical appropriateness of a webtext's design---inhibit this growth. Creating tools that display a webtext submission within a review system (instead of downloading it for offline review, as OJS does) allows editors to offer reviewers the opportunity to

- synchronously chat about a webtext as they interact with it,
- put sticky notes on areas of the design that may need attention,
- dis/agree with other reviewer's comments in a similar manner to Facebook's "like" (and the much-called-for "dislike") button,
- vote to Accept/Accept with Revisions/Revise and Resubmit/Reject, and
- track which reviewers receive feedback from their co-reviewers (using a game-like badge-system
- for their logins/avatars to promote the creative play inherent in scholarly multimedia) and to see which kinds of webtext content they prefer responding to, which would help editors further support reviewers' disciplinary and technical expertise when assignments are needed.

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The team's goal with this grant was to build an a/synchronous webtext review plug-in that we would distribute through Open Journal Systems's Plug-ins Gallery. (We called this the Kairos-OJS plug-in.) In addition, we wanted to build plug-ins for increased implementation of metadata for media elements, better indexing and bibliography management tools (i.e., cross-support of scholarly multimedia with Zotero), and citation tools for individual media elements or portions of elements (e.g., citing a 30-second clip from within a 2-minute podcast), among others.

Major activities completed

2010

Fourth Quarter

- PI (Cheryl Ball) and primary consultants (Douglas Eyman and Kathie Gossett) met several times, and once with programmer (Steven Potts).
- Team (PI, consultants) created technical specs and wireframes for its revised version of OJS.
- Team (PI, consultants) created metadata schema with crosswalk between OJS, Dublin Core, and *Kairos* (the scholarly multimedia journal used as the test-case for this NEH project). The metadata schema helped us to figure out what new fields we would need to build in OJS to accommodate the reader tools we had proposed.

2011

First Quarter

- PI worked with her digital publishing undergraduate class to mine metadata from all the back issues of *Kairos*.

Second Quarter

- Team (PI, consultants) ran user-testing with *Kairos* editors for potential back-end changes to OJS using wireframes and interactive mock-ups.

Third Quarter

- Team presented on wireframes at PKP (Public Knowledge Project conference) in Berlin, and consulted with PKP developers on OJS.

Fourth Quarter

- Team negotiated for installation of developmental server (from NEH grant budget) at PI's home institution. OJS installed.

2012

First quarter

- PI began initial set-up to migrate *Kairos* to OJS.
- NEH grant extended for one year.

Second quarter

- Team conducted user-testing with *Kairos* staff of a/synchronous multimedia review system mock-up.
- PI presented metadata schema at New Media Consortium conference.

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Third quarter

- PI and consultant Eyman met in Lansing, MI, to retrieve prototype from programmer.
- PI called project failed.

2013

First quarter [end of grant period]

- PI wrote article about mining metadata as a pedagogical tool.
- PI formed advisory group for boutique data repository (see Long-Term Impact section.)
- PI and consultant (Eyman) delivered presentation at Networked Humanities conference on infrastructures of digital media publishing (and later published an article on same)

Changes in proposed project activities

scope & deliverables

The grant team changed the initial scope of the project fairly quickly after meeting the first few times, to exclude the reader tools (for remix and citation of multimedia elements and webtexts) from this project, with the hopes of returning to these goals in a follow-up grant. The decision was made to remove these tools because the scope of completing *just* the editorial workflow (back-end) portions of the project proved to be too large to complete with the time, money, and human resources the grant provided. Basically, we would have had to totally re-write OJS to get it to do all of these things, and that was beyond the intended scope of the grant project (see technological changes, below).

We further limited the scope of the project, after our initial user-testing in the second quarter of 2011, the a/synchronous multimedia review plug-in. We did this because when we tested the potential changes we had planned for the author and editorial workflow tools within OJS, we discovered that with slight modifications of our own workflows, we could fit into the current OJS workflow relatively well without having to rework the system. For instance, although we would have to change some of our long-standing terminology, like “Design-Editing” to “Layout Editor,” and to re-arrange the workflow pattern in OJS (since design-editing for *Kairos* comes *before* copy-editing the written content), changing our terminology was potentially an easier fix than rewriting a major part of OJS to accommodate a single journal’s current workflow (even if that workflow is best practice for webtextual journals, which are not the mainstay audience for OJS).

Thus, our focus for the grant project ended up being almost exclusively on writing a plug-in for OJS that would accommodate a/synchronous reviewing of webtexts. It is unknown whether this prototype was successful, as the programmer stopped responding to all grant-related communications in Fall 2012, when delivery (after a year delay) was intended to occur. It is rumored that the plug-in prototype was completed and did successfully run, but that it could not be made to integrate with OJS (see technological changes, below).

The team did add a deliverable, however, in the form of the metadata mining project. This unintended deliverable was created by the PI with a class of 15 undergraduate digital publishing students at Illinois State University. We mined over a million points of data from every webtext and media element (filetype) that *Kairos* had ever published, in its then-15-year history. (We have since expanded the collection to the issues published since this part of the project was completed in mid-

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2011.) This metadata was meant to be used to populate OJS so that the journal's archives could be searchable and sharable within the new OJS reader-interface we had originally planned to build.

personnel

The project was unable to be completed because the programmer stopped communicating with the grant team right before delivery of the prototype was to have been made. It was too late in the project, at that point, to hire a new programmer.

technological

The team's technological understanding of OJS changed the project from its original intent the most. Open Journal Systems is an organically coded tool built up through the love and grant-getting of the Public Knowledge Project's architectural and programming team. It has been built on and modified over the last decade through piecemeal efforts, acknowledged by the PKP team as somewhat haphazard, and (as indicated at the PKP conference our grant team attended in Berlin in 2011) left to its own devices in favor of the more nuanced, modular, and lessons-learned coding project that has become OJS's next iteration: Open Monograph Press. While OJS functions pretty well from a non-technical viewpoint, programmers looking under the hood have repeatedly come back with very realistic evaluations that modifying the system in as radical a way as this grant project had hoped to do would be unsuccessful. Several programmers we have spoken to have suggested that OJS needs to be forked or, more efficiently, rewritten from the ground up in order to implement the changes we wanted to make, which would make it an entirely new platform. Doing so was outside the scope of this NEH grant, as we had neither the time nor the resources to maintain a new system, nor did we want to do the current OJS users a disservice by forking and then not being able to provide a migration tool.

Publicity of results (summary)

The major publicity efforts regarding the multimedia plug-in deliverable were based in conference presentations and one article. The major publicity efforts regarding the metadata-mining project were based in conference presentations, keynotes, an article, and the creation of a boutique data repository, which is also publicized in conference presentations and another article. See the Grant Products section for links to these publicity artifacts.

Accomplishments

(1) Our objective to explore whether Open Journal Systems as a platform would be usable, with modifications via plug-ins, for multimedia publishing was accomplished. The outcome of this objective indicated that OJS is not currently viable for multimedia publishing. This is probably the most important outcome for our project, as well as for any person working with and in digital publishing platforms today.

(2) Our objective to create plug-ins for multimedia-based editorial workflow with OJS was only minimally accomplished:

- a. We discovered that a multimedia-based workflow based on best practices at *Kairos* could be minimally manipulated to work within OJS's current production workflow. This would require us to use ZIP files of webtexts instead of transferring files within folder structures, as we do now by hand (on our servers).

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- b. We were not able to deliver on our refocused objective to create an a/synchronous review plug-in for multimedia texts in OJS. Although the possibility exists that such a plug-in could be created with more funding and better programming, the grant team has elected to not pursue this project due to the lack of overall viability for using OJS for multimedia publishing.

(3) Our objective to create a robust reader interface for multimedia journals in OJS was removed from the project as being too large of a technological task within the financial scope of the NEH grant.

(4) The biggest, unintended accomplishment with this grant was the unexpected deliverables produced by the metadata mining project, which elicited over a million points of data about the history of webtext publication in *Kairos*, the longest-running journal of its kind. The PI has published several articles relating to this outcome and has begun a new digital humanities project, rhetoric.io—a boutique data repository—the idea for which was an outgrowth of the lack of availability of venues for distributing important, albeit small, data sets in the humanities. This new project is briefly discussed in the Long-Term Impact section below.

Audiences

The primary intended audience for the Kairos-OJS plug-ins were OJS users, specifically publishers and editors who already use OJS and wanted to publish more multimedia content, as well as those who wanted to start multimedia journals from scratch. The secondary intended audience—and those who were user-tested during this grant—included editorial board and staff members from *Kairos*, who already have a working knowledge of multimedia publishing. A third, unintended audience would have been teachers, who could use a multimedia review plug-in, like the one we had planned, for conducting peer-review workshops and multimedia analyses in their classes. However, the project had little actual impact on any of these audiences since the major deliverable (the review plug-in) could not be completed.

Despite this failure, the project has allowed us to have conversations with several possible, future stakeholders who may be able to help us expand our collaborations (and our audiences) to build a new editorial-management system that is multimedia-specific.

Evaluation

Because the project wasn't completed, we do not have evaluation statistics to provide.

Lessons Learned

Instead of an evaluation, we provide the following list, written by a first-time PI of an NEH grant:

- Managing a grant, even a relatively “small” \$50,000 one, takes more time than you’d imagine. It’s equivalent, at least, to teaching a new prep, if not more. Do not skimp on budgeting for personnel, including the PI’s time, whether it be through a course re-assignment, summer salary, or paying for a staff person to manage the mountains of paperwork for you. Check with your institutional research office to see whether some of the administrative tasks can be wrapped into their office and the overhead you’re already paying the university.
- Although it adds to the paperwork, requiring quarterly (or more frequent) reports from consultants and grant team members will assist with meeting grant project milestones. Use

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project management software from the start, or hire someone with experience as a project manager if the PI can't do it themselves.

- Write-in travel money for publicity of your project. Going to conferences to present (particularly ones that are usually outside of the budget of most humanities scholars) will assist with your networking capabilities and will usually provide you with a forum to receive insightful feedback on your in-progress project.
- Saving money by conducting the majority of the work offsite (and at a lower overhead rate) doesn't make up for not having oversight of consultants. Work at a distance only with people you know well and trust or have a binding contract with.
- If you don't already have a working relationship with consultants, conduct formal interviews and/or ask for references and CVs/résumés. Don't rely on recommendations, unless those recommenders have established a formal working relationship with the consultant. Also ask your institutional research office in advance whether there is a recuperation process if the consultant breaks his or her contract.
- If you do run into personnel problems, treat everyone involved humanely and communicate with them as quickly as possible, by as many means as necessary (f2f, phone, email, Skype, text, etc.). If none of the above provides a successful resolution, seek advice from your research office or the NEH program officer.
- Be welcome to unexpected turns in the project that might produce interesting outcomes. Be cognizant of when those turns become unproductive, though, and are taking you too far afield.
- For a high-risk grant such as the NEH Digital Humanities Start-Up grants, failures still produce outcomes that are useful to you and the field, even if the deliverables you intended don't work out.

Public response

We were able to conduct two rounds of usability tests with wireframes and mock-ups, as well as present those wireframes at several conference panels. We have anecdotal evidence from both of these scenarios to indicate that, if the multimedia review plug-in would have been made available, people would have definitely wanted to use it. Several key members of the OJS team—PKP founder John Willinsky and lead OJS technical architect Alec Smecher, in particular—were very excited by it when we discussed it with them via Skype early on in the grant as well as when we presented the wireframes at the PKP conference in Berlin a year later. We also had Skype calls with Stanford's High Wire press, to discuss their implementation of multimedia in OJS, and they were very interested in what we were working on as they were working on a complementary project at the time.

In addition, *Kairos* staff members and other journal editors alike thought that having both synchronous and asynchronous review possibilities was a smart idea, given the lack of time reviewers have for providing reviews. Additionally, being able to individually navigate and mark-up (draw on, attach sticky notes with written text, highlight, etc.) a webtext and then share those markers with other reviewers in a synchronous space was one of the key features editors and reviewers said they liked.

We deemed from this project that editors and publishers do want a multimedia journal editing system, and while OJS cannot offer that in its current instantiation, it's still an idea that should be pursued (just with a LOT more funding and people involved).

Continuation of the Project

There are no plans to continue building PHP plug-ins for OJS to make it multimedia compatible.

Long Term Impact

This project allowed for conversations to begin with several stakeholders at multiple, international universities and non-profit organizations about several related projects, including building a digital-media publishing infrastructure from the ground up. This infrastructure would potentially inform work on

- an (open-source) editorial-management system for digital, open-access publishers that includes print-based and multimedia publishing of article- and book-length scholarly projects as well as data-based publishing,
- a linked, boutique data repository, called rhetoric.io, which would provide searchable, visualizable data and would function as a sustainable data management storage facility (see <http://rhetoric.io>), and
- digital authoring and publishing institutes, held to train authors, editors, publishers, and evaluators of digital (media) scholarship how to compose, edit, publish, and assess such work using best practices.

Grant Products

The major grant product was the unintended deliverable of metadata, created from mining the back issues of *Kairos* from 1996–2011 (with additional years, through 2013, supplied by research assistants not affiliated with the NEH grant). Although we did not use it for its original intention (as data for the OJS database that would have run *Kairos*), the metadata is important because it is a wunderkammern that showcases the history of webtext publishing over the last 20 years. With over a million points of data categorized at both the webtext (article) level and the media-element level (for every single file associated with a webtext), this data can provide researchers with a plethora of interesting results, such as the possibility to trace the rise and fall of certain filetypes, mimetypes, and genres within webtext publishing. More over, much of this data speaks to the Web's and Web-users' understanding of accessibility or lack thereof. It's a rich data source that should be made public. But because there was no venue to publish the metadata by itself and the idea of just uploading it unmarked or uncommented to GitHub seemed like asking for obsolescence, the PI—working with a cohort of other digital writing studies scholars—started a boutique data repository, called rhetoric.io. This repository is in-progress as of this writing (although the initial website is up: <http://rhetoric.io>).

Publications

Ball, Cheryl E.; Graban, Tarez Samra; & Sidler, Michelle. (forthcoming/under review). The boutique is open: Data for writing studies. In Jeff Rice & Brian McNely (Eds.), *Networked humanities*. Minneapolis: University of Minnesota Press. Pre-print: <http://ceball.com/2013/11/17/the-boutique-is-open-data-for-writing-studies/>

Eyman, Douglas, & Ball, Cheryl E. (forthcoming/2014). Digital humanities scholarship and electronic publication. In Jim Ridolfo & William Hart-Davidson (Eds.), *Rhetoric and the digital humanities*. Chicago: University of Chicago Press. Pre-print: <http://ceball.com/2013/07/11/digital-humanities-scholarship-and-electronic-publication/>

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Ball, Cheryl E. (2013). Pirates of metadata or, The true adventures of how one editor, fifteen undergraduate publishing majors, and 25,000 media elements survived a metadata mining project. In Stephanie Davis-Kahl & Merinda Hensley (Eds.), *Extend and unify: Outreach and education for scholarly communication and information literacy programs*. Chicago: Association of College and Research Libraries. Free copy: <http://ceball.com/2013/07/11/pirates-of-metadata-the-true-adventures-of-a-harrowing-metadata-mining-project/>

Presentations

- Ball, Cheryl E. (2013, December 6). The mixed genres of *Kairos* webtexts [Invited lecture]. Department of Media and Communication, University of Oslo, Norway.
- Ball, Cheryl E. (2013, November 20). The kairos of scholarly multimedia: Examining the history of webtexts through metadata [Invited lecture]. Blekinge Museum, Karlskrona, Sweden.
- Ball, Cheryl E. (2013, June 9). Preservation & access for scholarly multimedia. Computers & Writing, Frostburg, MD.
- Ball, Cheryl E. (2013, June 7). Futures of computers and writing: Publishing [Roundtable]. Computers & Writing, Frostburg, MD.
- Ball, Cheryl E. (2013, May 30). Boutique data in writing studies [Keynote]. Technical Communication and Rhetoric PhD Maymester, Texas Tech University, Lubbock.
- Ball, Cheryl E. (2012, March 22). The Mid-Life (Crisis?) of Kairos: Caring for the Health and Welfare of Open-Access Digital Media Publishing. Conference on College Composition and Communication, St. Louis, MO.
- Eyman, Douglas, & Ball, Cheryl E. (2013, February 15). Networked humanities scholarship, or the life of *Kairos*. Networked Humanities Conference, University of Kentucky, Lexington, KY.
- Ball, Cheryl E. (2012, Jan. 5). The Future of Peer Review in Scholarly Multimedia. Modern Language Association, Seattle, WA.
- Ball, Cheryl E. (2011, Oct. 21). The Challenges of Publishing Webtexts. International Society for the Scholarship of Teaching and Learning, Milwaukee, WI.
- Ball, Cheryl E.; Gossett, Kathie; & Eyman, Douglas. (2011, Sept. 27). *Kairos* and Multimedia Digital Scholarship: The Need for Better Publishing Tools. The Public Knowledge Project (PKP) Conference. Berlin, Germany.
- Ball, Cheryl E. (2011, July 19). Learning Through Leading: Digital Media Scholarly Publishing [Poster presentation]. New Media Consortium, Madison, WI.
- Ball, Cheryl E. (2011, April 6). Writing proposals and getting grants [CCCC Research Committee Roundtable]. Conference on College Composition and Communication, Atlanta, GA.
- Ball, Cheryl E. (2011, January 8). Digital media scholarship: Innovation or insanity? Modern Language Association, Los Angeles, CA.

Syllabi

English 354: Digital Publishing, <http://354s11.ceball.com/> Dr. Cheryl E. Ball, Illinois State University, Spring 2011 Course website includes 100+ pages of instructions for mining metadata from fifteen years of *Kairos* back issues, with metadata schema and crosswalks to OJS.

Appendices

To keep filesizes down, I have elected to include links in the section above to all relevant publications and syllabi, which amount to nearly 200 pages of content. Readers can access all PDFs for free on my website. The appendix, then, only includes screenshots of the interactive prototype for the asynchronous reviewing system.

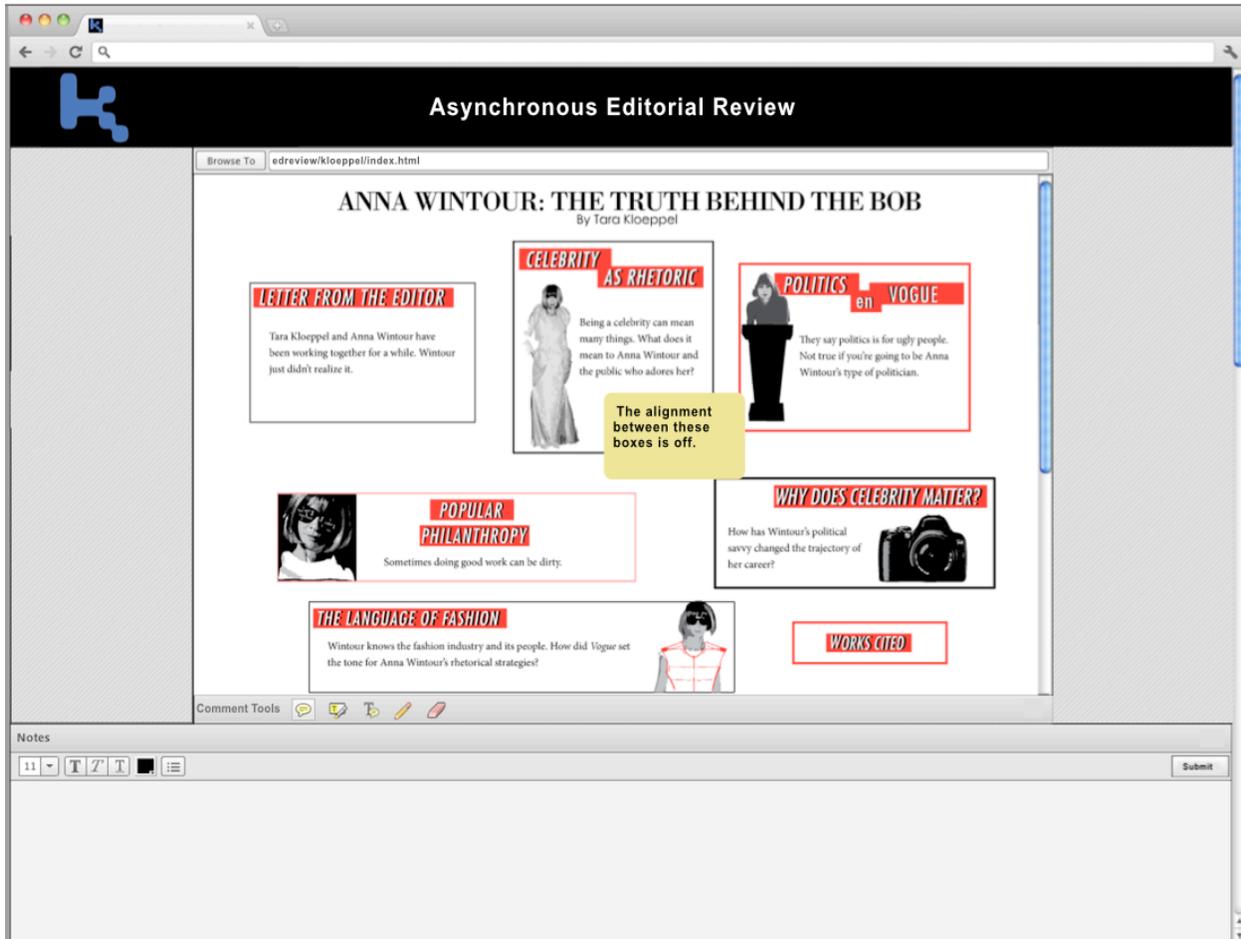


Figure 1. A screenshot of the **asynchronous**, multimedia review prototype used in second-round user-testing. (The prototype was intended as an OJS plug-in). This shot shows a reviewer adding a sticky note with written commentary on top of a webtext (“Anna Wintour”) that is located center-screen. This review system would upload a webtext to the review database, where readers could interact with it individually online during an open window of three weeks (or so, as scheduled by the editor), and add their written comments and annotated webtext screenshots through the Submit button (bottom right). This would create an interactive discussion forum over the course of several weeks, which the editor could then retrieve for revision purposes.

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The screenshot shows a web browser window titled "Synchronous Editorial Review Session" with the URL "edreviewkloepffel/index.html". The main content area displays a webtext titled "ANNA WINTOUR: THE TRUTH BEHIND THE BOB" by Tara Kloepffel. The webtext is divided into several sections, each with a red-bordered box and a title: "LETTER FROM THE EDITOR", "CELEBRITY AS RHETORIC", "POLITICS on VOGUE", "POPULAR PHILANTHROPY", "THE LANGUAGE OF FASHION", "WHY DOES CELEBRITY MATTER?", and "WORKS CITED". A yellow sticky note is placed over the "CELEBRITY AS RHETORIC" section, containing the text: "The alignment between these boxes is off." The interface includes a left sidebar with an "Attendee List" showing "Kathie", "Guest1", and "Steve". A right sidebar contains a "Chat" window with a menu open, showing options like "Email Chat History", "Text Size", "My Chat Color", "Show Timestamps", "Preferences", and "Help". At the bottom, there is a "Notes" section with a text input field and a "Submit" button, and a "Comment Tools" bar with icons for highlighting, drawing, and erasing.

Figure 2. In the **synchronous** review system, several editorial board members could meet at the same time to review a webtext (center-screen: “Anna Wintour”) and chat about using the Chat feature in the right sidebar of the screen. Some chat features are shown in this screenshot. All attendees in the chat are listed in the left sidebar. The same annotation features as the asynchronous review has (note bubbles, sticky notes, highlighting, pencil/drawing, and eraser) are shown in the Comment Tools bar (mid-screen, below the webtext).