POTENTIALS AND CHALLENGES IN ORAL TRADITION RESEARCH AND EDUCATION: SYNCHROTEXT SOFTWARE

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I

This short note introduces Synchrotext software, which was designed for representing African oral traditions and other kinds of performances and events. I began my documentation and analysis of Haya oral tradition in 1968.[1] Synchrotext is the product of a decades-long project to adequately represent Haya oral traditions with an appropriate technology and an analytic frame that communicate the meaning and art in performance. Synchrotext provides a means of hearing the indigenous voices of oral tradition centered in their own time and inflected with their own intonation.

For some time now, the computer has been employed to enhance research and education in the humanities. Internet sites like the Perseus Project[2] demonstrate the powers of automated information-

[1]In addition to the performedwords.org website, my monograph-length documentations of Haya oral tradition to date are: "Proverbs and the Structure of Metaphor among the Haya of Tanzania," PhD dissertation, University of Pennsylvania (1972); *See So That We May See. Translations and Interpretations from Haya Oral Tradition* (Bloomington/Indianapolis, 1980); and *The Powers of Genre: Interpreting Haya Oral Literature* (New York/Oxford, 1999).

[2]http://www.perseus.tufts.edu. The Perseus Project is a collection of open access publications; it is a non-profit enterprise located in the Department of Classics at Tufts University.

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processing. To date, the computer's constantly evolving, massive, sophisticated storage-and-retrieval capabilities have been focused almost exclusively on the cultural heritage of written texts. And, although computer-assisted archives of recorded oral performances do exist,[3] there remain current needs of oral traditions research that I believe can be more effectively met. In this short note, I would like to specify what those needs are and to introduce the software I have designed to speak to them.

The needs to be discussed relate to five practices that are among those of current concern to students of oral traditions: representation of primary data, research and analysis, modes of collaboration, education, and the safeguarding of performance traditions. Each set of needs is discussed in turn, and each becomes a context for the description and evaluation of software design.

II

Representation and analysis anchor scholarly disciplines, and oral-traditions researchers have a special relationship to the former, for their primary data is the evanescent, memory- and context-dependent, living performance of a culturally valued, authorized, and trained performer. Whether that performance was transcribed immediately, as earlier scholars did, or recorded for later transcription, as scholars do now, one necessarily takes upon oneself the burden of representation. The process (sometimes called textualization) results in a document, a text that becomes an object for analysis and theory-building. The construction of this representation is obviously related to the kinds of findings that become possible. Best practice would seem to maximize the scope of the potential observations, analyses, and hence theorizations to be based on a representation. As we shall see, the computer can help.

[3]E.g., American Memory from the U.S. Library of Congress (http://memory.loc.gov/ammem/index.html) and The EVIA Digital Archive Project at Indiana University (Ethnographic Video for Instruction & Analysis) (http://www.eviada.org/).

But the scholar-constructed representation is not only a basis for one's own investigation and presentation of findings. Others in the same discipline should be able to find it useful, as should members of other disciplines, members of a more general public, and, importantly, members of the society in which the performance occurred. The variety of audiences addressed is multiplied by the variety of institutions in which they and the representation are situated: educational, research, cultural (museums, etc.), and public mass media like the Internet. Moreover, the scholar-constructed representation inevitably becomes the permanent record of a specific performer's knowledge and art. It conveys that achievement to a world that may unfairly think the indigenous testimony and the culture it originates in irrelevant or inferior. The representation can stand as counterstatement to this prejudice.

These intended uses of the representations require exposition of two kinds of information central to oral tradition studies: contextual reference and language art. The meaning of an utterance depends on its immediate context of performance before a particular audience at a particular event and on a broader historical context that includes the common and esoteric knowledge prevalent in a given place and time. A performer addresses his or her utterance to aspects of these contexts to create specific meanings and at the same time relies on the audience to supply its unspoken, shared knowledge of these contexts to complete the meaning of the utterance as a whole.

The audience also participates in the creation of language art through its expectation and appreciation of aesthetic form. With stylistic symmetries, thematic contrasts, and an overall logic of presentation, a performer meets and satisfies, exceeds and astonishes, and/or confounds and frustrates audience expectations. This patterning functions at both aesthetic and semantic levels; it marks not only artistic achievement but also rhetorical emphases, equivalences, hierarchies, and the like. Information of this sort also supports the intended uses outlined above, and the scholar-constructed representation would do well to include it.

In sum, because its primary data is both evanescent and textually coherent, oral traditions research faces a particular set of needs for representation. Scholar-constructed representations provide the contextual information an indigenous audience uses to complement the speakers words and to appreciate their intent. These representations stand for indigenous knowledge before a variety of audiences within and outside scholarly disciplines. Within, they test and demonstrate the aptness of analysis and theory. To other audiences, the representations become historical evidence of cultural achievement. They need to be worthy of that ineluctable mantle. The computer can help.

Although computer-assisted research and analysis do put great powers of information management at the disposal of scholars, certain areas of oral traditions research cannot be satisfactorily automated—transcription, translation, and the explication of contextual knowledge. Similarly, although some automated textual analysis is possible, the most powerful research algorithm remains the juxtaposition of selected elements for comparison and contrast by an informed and expanding human intelligence. A computer can help this need, for it excels at two simple tasks that enhance pattern recognition and theory building: associating information and searching data.

Simply, one can associate analytic comments, explications, or other kinds of notes with a particular unit of text. Done over time and in a piecemeal fashion, the concatenation of annotations can provide insight, as when junctures in stylistic patterns coincide with those of semantic units or when thematic or stylistic elements of a certain kind are associated with a particular kind of formal narrative unit. The computer allows one to develop these associations incrementally and presents them (tidily and tirelessly) for further evaluation. One uses the computer to manage diverse categories of commentary so that meaningful associations can be noted.

Another way to create useful juxtapositions is to do a simple search for a particular string of characters within a single text or within a library of associated texts. Seeing the same word used in different linguistic contexts reveals its semantic range and sharpens

both its translation and one's understanding of its thematic value. Searching can also reveal various forms of repetition and enable one to theorize about its role in composition, style, and thematic development. Finally, a search of annotations alone can help refine one's analytic descriptions, which may range in abstraction from thematic explications of important symbols to codes for recurrent stylistic patterns. Thus, with two basic computer functions, the associating and searching of information, juxtapositions create opportunities for human intellect to fashion and refine its understandings of oral tradition.

At first glance, it may seem odd to have preceded this section on research and analysis with the one on representation. It might seem the order should be reversed, since in most social science disciplines, research and analysis generally precede the presentation of findings. But because of the peculiar necessity in oral traditions research of having first to create one's object of study from the record of a real-time event, the processes of representation and analysis must mutually and simultaneously inform each other. Representation informs analysis through the juxtapositions one generates from it, while analysis informs representation through the patterns it uncovers. Computers assist this dialogue not only by searching and associating data but also by maintaining the "final" representation in a malleable, "un-finalized" state, always capable of revision on the basis of further insight. Malleability is a convenience when the final publication is eventually in a fixed medium like print; it is a welcome new aspect of textuality in documents published to the Internet.

III

When consciously operating in a global context, oral traditions researchers need to address issues of collaboration, education, and safeguarding. In the midst of doing field research, oral traditions scholars usually know many cultural experts with whom they can collaborate to increase their understanding and improve their representations and analyses. Even when they leave the field, the Internet

and other forms of communication can support additional exchanges of expert advice. Promoting and structuring collaboration of this kind is one of the capabilities of computer-assisted scholarship and one of the needs of oral traditions research in a globalized environment.

In a similar way, educational needs can be addressed with a computer's ability to display expert-generated information in an interactive, engaging manner. Computers can offer users options to see not only research findings but also discussions of the methods that produced them.

The computer can also be a useful tool in the preservation of oral tradition. As UNESCO has recognized in its Convention for the Safeguarding of the Intangible Cultural Heritage in 2003, preservation and safeguarding are no longer simply synonymous with the creation of archives of recorded cultural performances. Instead, preservation and safeguarding mean creating local social conditions that help cultural heritage practices maintain continuity despite a globalized industry of cultural production and other adverse conditions.

Computer-assisted scholar-created representations can assist intergenerational understanding of oral traditions in the societies where they are practiced. They can represent intangible cultural heritage in its authentic style, with local understandings, and in an engagingly interactive, institutionally validated medium that enables it to communicate its universal value and appeal, especially to a younger generation (which seems to attribute great authority to information presented on screens). The computer-borne representations can help create social conditions favorable to the continued practice and development of oral tradition.

IV

Synchrotext software is an audio-visual tool for representing performances of oral tradition. It was designed specifically to be useful for researchers and students who study in and about Africa. At the center of its focus are the performed words of a culturally expert historical witness. All features of Synchrotext direct attention to the represented utterance and its intent. The framework within which the repre-

sentation unfolds is keyed to the speaker's sequence, pace, and rhythm. The player thus offers an alternative representational framework to the timeless space of printed analytic argument.

The speaker's performed words are the constant value, the document around which, using Synchrotext, an editor juxtaposes and integrates knowledge gleaned from many experts. This theoretically endless process produces and formats for display a transcription, a translation, and commentary. These represent, respectively, expertise in the sound and sense of the original language, an analytic dialogue that develops and refines the proximity of meaning across language boundaries, and (among other things) an audience's community-based knowledge that a speaker depends on to make his or her text complete.

The Synchrotext player allows the speaker's use of time and voice to reveal personal and cultural concerns. It conveys intonation that provides semantic reference, nuance, and emphasis, and pacing that colors textual passages and relates them to one another. By adding the representation of time and voice to that of literal text, the player more fully indicates culturally shared resources of communication as well as the speaker's personal emphasis, style, and, ultimately, intent.

One might object that the Synchrotext player provides only the same sort of expropriational, imperialist representational practice already so well known in academia and public cultural displays. To be sure, Synchrotext does insert a locally recorded performance into a universal, institutional framework designed to create a representation whose audience is, in the present at least, mostly university students. But it does so, I would argue, in ways that address and preserve the integrity of the speaker's historical witness. By adding time and voice, the player mediates (or reconfigures) the expression as little as presently possible (compare print). In addition, the player addresses local socio-historical realities by dedicating a prominent space for commentary, which necessarily includes audience-provided information, to frame the discourse. This form of representation reverses the traditional institutional hierarchy, in which disciplinary argument encompasses and excerpts local utterances, tailoring their representation to the larger purpose. In the player, social-science

methods develop commentary that frames and explicates a speaker's discourse. This is not at all to deny the need for a disciplined analytic perspective; it is rather to bring the local and the institutional into more productive relationship by strengthening the representation of the former within the latter.

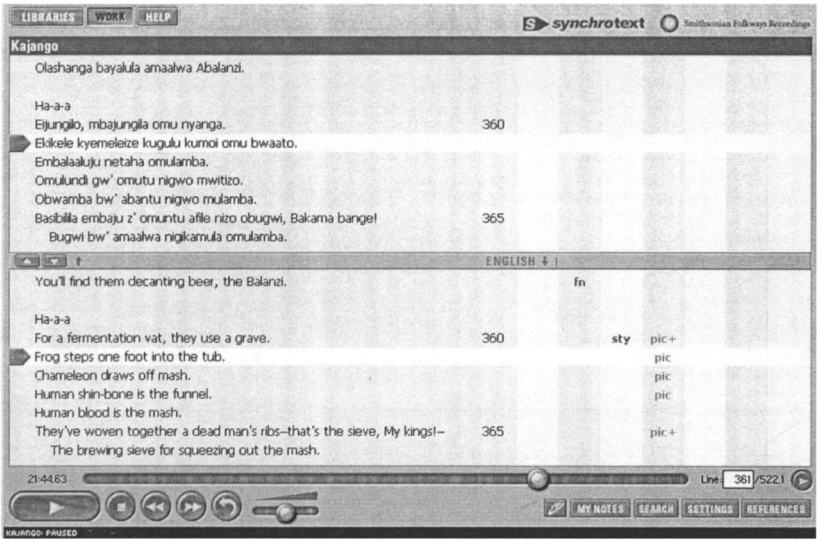
V

Synchrotext is computer software useful in the analysis of data, in the publishing of its findings, and in the representation of oral-traditions research. It also has the potential to become an important tool in implementing and innovating history education both in and about sub-Saharan Africa.

The current version of Synchrotext software is (and will be) available via www.performedwords.org. The best way to experience how Synchrotext works, if you have a Windows-based PC and broadband access to the Internet, is to see it at the following link: www.performedwords.org/synchrotext.htm Your computer needs to be equipped with Apple Quicktime and will be prompted to install Adobe Shockwave; both are free programs downloadable from the Internet. Follow the prompts to install Shockwave and its "xtras"; you need do this only on the first time you visit the site.

To get an idea of Synchrotext if you have a Mac, you unfortunately can only view a Flash tutorial. The link to this is at the bottom-right of the introductory page www.performedwords.org (A planned update will run on a Mac as well).

If you do not have a broadband link to the Internet, I offer the image on the next page. Here is the player with an audio file loaded and paused a little more than 26 minutes into a sung narrative, on line number 361. The question of "lines" in an oral performance will be taken up later. The example comes from Kajango, one of the heroic ballads in the Haya heroic ballad library on the Performed Words website. A user clicks the play button at lower left to resume an audio recording that is synchronized with a scrolling transcription above and translation below. Other buttons along the bottom of the screen, respectively, from left to right,



- control a stop-and-return-to-the-beginning
- reposition the player one "synchpoint" (one of the points at which the text is synchronized with the media—in this work they correspond to lines) backward or forward
- return to consult the introductory screen for a particular work, a move easily reversed
- adjust playback volume
- (the first two buttons in the right-side cluster) record a user's line-by-line notes and recall notes made in previous sessions (these are stored on each user's computer, not in the work itself)
- search all texts associated with the work (a search of all the works in a library is possible from a library screen)
- select the categories of comments to be displayed or hidden
- access directly the longer documents associated with each work.

The horizontal slide control above these buttons, when "dragged" with the user's cursor, scrolls through the performance by time and text. The window to its right accepts a line number entered by a user, which moves the player to that point in the work.

The columns of two- and three-letter links on the right of the page access commentary, which may be text, images, url links to Internet

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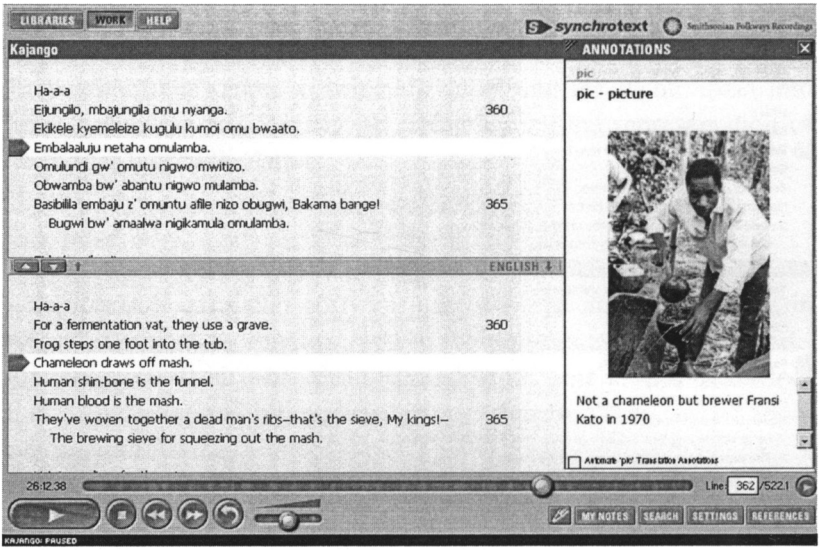

pages, audio, video, or hyperlinks to particular points in a longer document. The last type is used in the ballad presentations for links to a plot summary, so that a user can both see what is happening at a given point and review events from the beginning if desired.

Two more screens complete an introduction to the player. The first screen, above, shows an audio work paused with the annotations window open, displaying an image that helps explicate a line of text. The second screen, on the next page, shows a video work paused with the annotations window open, displaying a textual comment. This latter screen shows a work published, stored, and played locally, from a CD-ROM or other storage device, not from the Internet (this accounts for the visual bars that frame it top and bottom). Note the button controls in the upper left of the video player that select the image size; a larger image reduces the number of adjacent lines of transcript that appear. Note also on this screen that the small box at the bottom left of the annotations window has been checked: the player therefore automatically displays a particular kind of comment when encountered. Here the Elizabethan English of Macbeth is glossed automatically, when needed, on the fly. When the player

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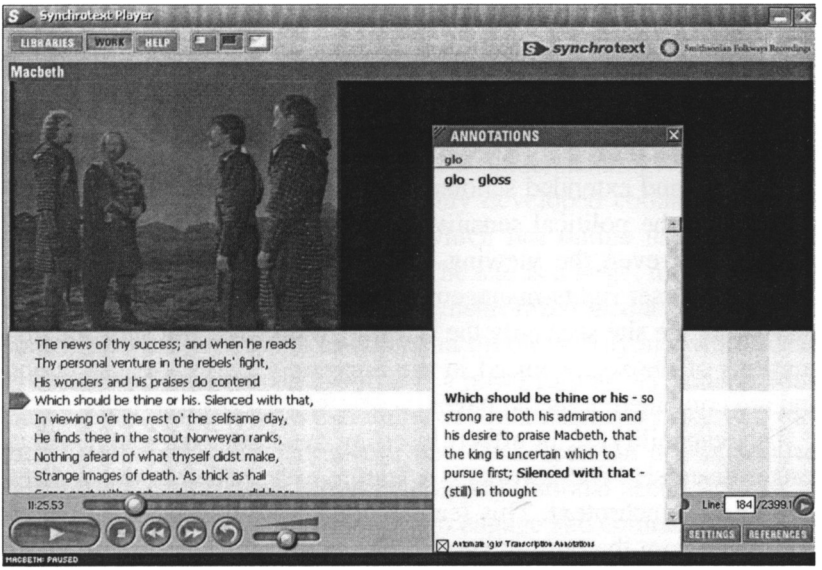

runs with the annotations window open, links to other commentary associated with particular lines are displayed in the topmost line of the window as they become available.

VI

Comparing Synchrotext with somewhat similar software reveals its advantages to oral traditions research. Synchrotext is one of a number of scholarly programs that use time code—the numerical time values essential to digital recordings—to coordinate the playing of audio or video files with the simultaneous appearance of text, images, and other digitized information stored in various electronic file formats. All media-synchronization, or "media-tagging" or "media-annotation" programs use media time code to trigger access to information from other files. Each media-synchronization program has a particular set of features defined by the kinds of files that are synchronized to time-coded media, by the ways access to these linked files is controlled, and by the kinds of additional computer

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functionalities that are also made available, like text searching and automatic transcription.

The representational power of a synchronized-media format is amply demonstrated by the Internet site www.oyez.org, which presents audio recordings of U.S. Supreme Court proceedings, scrolling transcripts, and extended scholarly discussions. Because of the complexity and the political sensitivity of the legal issues involved, the creation and even the viewing of line-by-line commentary is controlled by a user rights-management hierarchy, so that a non-specialist visiting the site sees only the scrolling transcript. But separate discussions of the issues raised in the Supreme Court cases are public and are contained in linked pages.

This capability of, in effect, inserting synchronized media within longer discursive frameworks is a feature to be added to the updated version of Synchrotext. This feature, sometimes called deep-linking, is lacking from the present version due to unfortunate circumstances in its development. The success of Oyez.org demonstrates the appropriateness and competence of synchronized-media formats in making available a culture's most highly valued performed texts. Viewing Macbeth in Synchrotext does the same.

Because of the politically sensitive nature of its content, Oyez.org controls a user's right to correct a transcription or to add a comment. Synchrotext takes a simpler approach to collaboration. If a viewer wishes to add or alter information in a published work, he or she emails the suggested changes to its editor. Alternately, the user can develop a file of annotations with the "my notes" feature. This file is saved to the user's computer and can then be emailed to the editor of the work for consideration. The "my notes" feature is also designed to help students' research projects.

Synchrotext takes this informal approach because it views collaboration principally as a means to improve representation. Among Synchrotext online users, there do not yet appear to be numbers with cultural knowledge sufficient to collaborate in making changes to improve transcriptions, translations, and commentaries. Thus, a sophisticated user-rights management system to allow online changes and additions at this point would seem unnecessary.

But in addition to improving representation, there is another reason to collaborate that makes an online system a useful feature. This reason is pedagogy: using collaborative commentary in an educational setting to encourage students to engage a particular event or performance with an active and critical understanding. Educational intent is at the core of the most highly developed collaborative site on the Internet, www.Synote.org, which has online user-generated commentary as its central purpose. The site is a large, multifunctional tool for creating presentations of synchronized media and allowing controlled groups of users to comment on them. Anyone with access to broadband Internet can use it. It is a powerful tool for general educational use, but I believe that culturally rich discourses like oral tradition, Supreme Court argument, and Shakespearian drama require software tailored to their individual representational needs.

Synchrotext's educational ability to engage and communicate with students resides in its interactive mode of presenting information. With media-player controls and annotation links, a user interactively selects the manner and kind of information that Synchrotext conveys. Each state of the player—playing or stopped, annotations window open or closed—creates a different experience and evokes different kinds of semantic frames: real-time performance, study text, or critical commentary informed by the theory and methods of a particular discipline.

As a research tool, Synchrotext creates multiple juxtapositions to provide a basis for analysis. Another media-synchronization or media-tagging program freely available online is more narrowly and more richly designed for research. The program ELAN[4] is primarily for linguists and has the ability, like Synchrotext, to associate many annotations with a single time code. ELAN is quintessentially a research program, being able to represent different kinds of association between annotations and recorded speech, to juxtapose multiple levels of association simultaneously, and to import results of analyses formatted in other linguistic-research software like The Linguist's Shoebox (http://www.sil.org/computing/catalog/show_soft-

[4]Available at http://www.lat-mpi.eu/tools/elan/, where a screenshot can also be seen.

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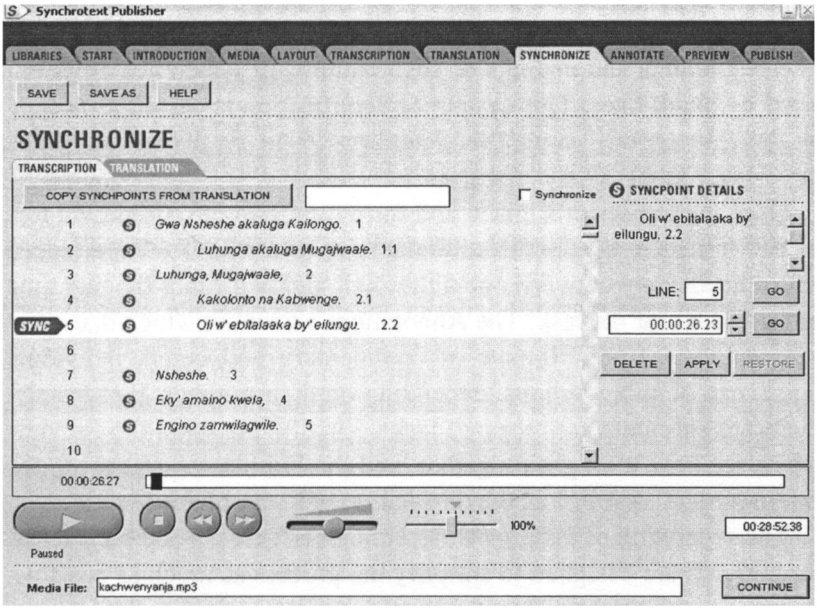
ware.asp?id=26). Although based on the same time-code associations as Synchrotext and the other software noted here, ELAN does not publish to the Internet, thus limiting its use as a tool for representation, collaboration, and education.

VII

Synchrotext excels as a publication tool, for it alone among synchronized-media software has features designed to promote preservation and safeguarding: its publisher software is separate from the player and has the ability to publish synchronized works to a CD-ROM as well as to the Internet. Motivated by a professional concern for the safeguarding of intangible cultural heritage, these features enable Synchrotext to meet representational and other needs outside of academia, where broadband access to the Internet may not be available, such as those areas in which oral traditions are regularly recorded.

Synchrotext's separate publisher is freely downloadable from http://www.performedwords.org/publisher/synchropub.zip. Separating publishing and playing functions simplifies both, enabling people with only moderate computer skills to create online and CD-ROM synchronized works. How easy is the process? The following image is a screenshot of the publisher. The tabs across the top of the screen access different work spaces, each designed to facilitate a particular set of publishing tasks. In Libraries, one begins or recalls a synchronized work for editing. In Start and Introduction, an editor composes two pages that name, give the screen credits for, and introduce the synchronized work. In Media, one specifies and imports the recording to be synchronized. In Layout, one chooses the video-image size the player will display on opening. In Transcription and Translation one enters or imports the texts and coordinates their formats so that they will scroll together congruently.

The figure on the next page shows the player open to the Synchronize tab. In this space, the editor plays the media with the controls near the bottom, and inserts "synchpoints"—time-code values that specifiy points of correspondence between text and sound. This is



done on the fly by pressing the keyboard spacebar at the desired moments. One reviews this process, correcting and/or fine tuning the time-code values by entering numbers in the window on the right about half-way down or using the arrows to move the synchpoint forward or backward in .1 second increments. The scale at bottom center decreases the playback speed if desired to assist synchronization. Publishing in Synchrotext does require time and labor to transcribe, translate, and annotate—about the same time researchers and students spend in optimizing the layout of print publications.

Formatting a transcript can be time-consuming because an editor must continually decide what constitutes a "line" or quantum of information. Using markup options that include text lines, blank lines, and indented lines, an editor creates a visual representation of the flow of the performance: the continuities and disjunctions between quanta of information. In the transcript above, a return to the left margin indicates a singer's audible pause. A return to an indented margin indicates the beginning of a "syntactic line" not pre-

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ceded by a pause, but cohering with other "lines" in patterns formed by syntactic parallelism, lexical repetition, and semantic contrast. The beginnings and endings of such patterns of coherence are separated by blank lines. This system of versification is parsed as needed on the Annotations screen (and later appears in the player) under the three-letter label of "sty" for style.

Once the transcript is made and formatted, and the translation formatted to match, synchronization does not take long. An experienced editor needs only between one-and-a-half and two-times the real time of the media for the task. The Annotations screen, in which one specifies categories and formats of commentary and enters individual notes, can be more tedious, depending on their number. Fortunately, there are shortcuts for repeated tasks. Finally, one uses the Preview tab to see how it all goes together, and the Publish tab to choose the Internet or a CD-ROM as the destination of the published work.

The separation of tasks on different tabbed screens and their linear progression are designed to simplify the process as much as possible. Suggestions for improvement are welcome.

VIII

The present Synchrotext has enabled me to realize a goal I have pursued, which is to witness the richness of aesthetic and ethical dimensions present in the face-to-face performances of African oral traditions. There are hours of human voices available on the performedwords.org site, and a visitor can hear folktales and understand them immediately, as they are being told. I did not leave the voices from my life and work in Tanzania mute and flattened on a page or buried in a file cabinet. This representational goal was shared and shaped by my colleague at the Smithsonian, Ralph Rinzler, who developed the art and sociology of presenting live performances of tradition bearers in the context of a national museum.

But Synchrotext needs improvement, even for my own use, and especially for the use of others. The following developments will

help many of the potential users I have spoken with over the past years. Let this list of planned changes be an acknowledgement of their justified complaints:

- Change the programming platform to Adobe Flash. This would cure multiple ills—
  - Establish cross-platform compatibility with Macs
  - Eliminate the need for program add-ons that bedevil site administrators and periodically put Synchrotext off line
  - Provide full Unicode support, enabling the representation of almost all writing systems, including the phonetic alphabet
  - Create more flexibility in the page composition, enabling more versatile linking of documents (including pdf files) and the use of templates to address the needs of particular disciplines and audiences
- Add scrolling music transcription
- Add the capability to display multiple video recordings that share the same time code (i.e., recordings of the same event)
- Add the capability to display alternate transcriptions and translations
- Add deep-linking
- Add a metadata editor

The development of Synchrotext also has an important institutional dimension. Cultural institutions and academic disciplines deploy established practices to create and distribute knowledge, including practices of representation. As examples cited above indicate, in recent years, this has sometimes included the use of synchronized media to convey modalities of voice, timing, cultural framing and expert commentary. The examples are not many, but hopefully this form of representation will increasingly find a place in institutional practice. Synchrotext is ready.[5]

[5]I invite you to send comments to seitelp@si.edu

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