welcome addition. The fact that it is possible to move files into a different environment does bring the possibility of carrying out the analysis in several steps using different platforms—something that Social Media Lab clearly did not intend or encourage as the main use of its platform, since an import option is not available for parsed datasets. The one thing that I was left wondering about is if there were plans to include more robust options for automatic clustering, such as topic modelling. However, the overhead and computational expense incurred when modelling complex networks of online conversations could bring additional complications. In this sense, Social Media Lab has been practical in setting the fine line on what its tool aims to accomplish, which is not an easy thing to do.

Netlytic is a well-designed framework that succeeds in the extraction and analysis of social networks from online conversations. The framework encourages researchers to hit the ground running and skip the inconveniences and difficulties that parsing a dataset can bring. On top of that, the interfaces are well designed and its processes well documented. I found that Netlytic is an excellent addition to the ever-expanding digital humanities toolbox.

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REED Online. Database.

Toronto: University of Toronto, 2017–18. Accessed 23 October 2018. ereed.library.utoronto.ca.

Records of Early English Drama (REED) is a research project that, since 1979, has been finding, transcribing, and publishing historical documents that help to establish the context from which drama in England grew from the Middle Ages until 1642, when the Puritan-dominated Long Parliament closed the theatres in London. REED collaborators have been searching for any activity related to “drama, secular music, and other communal entertainment and ceremony”¹ mentioned or implied in documents, mostly manuscripts,

1. Home page of the project's website, *Records of Early English Drama*, University of Toronto, accessed 17 October 2018, reed.utoronto.ca.

as varied as court records, statutes, guild account books, visitation articles, churchwardens' accounts, inventories, diaries, correspondence, and even wills. This archival research was needed because by the late 1960s, the historical understanding of early English theatre was based mostly on evidence from printed sources, as Alexandra F. Johnston, one of its co-founders, explains.² REED has produced twenty-seven print collections (see "REED Collections" on their website) or volumes of edited records organized by county, city, and institution (York, Devon, Ecclesiastical London, Inns of Court, among others). The wealth of information they contained has been beneficial in the work of many theatre historians.³ Yet, as Mark Pilkinton observed in 2003, in a review of the *Sussex* REED volume, the codex format of the print book did not make the most of the information unearthed, and the volumes screamed "to be put online where the information can be searchable, where it would be possible, for instance, at the click of a mouse, to find all references to Leicester's Men or the word *minstrel*."⁴ In March 2017, *REED Online* was launched with the publication of the *Staffordshire* volume, edited by J. A. Somerset; the *Berkshire* volume, edited by Alexandra F. Johnston, followed in April 2018.⁵ The present review will describe and assess the usability and technical aspects of *REED Online* as of October 2018.

"Welcome to REED Online," highlighted on a section of the mid-sixteenth-century painting *A Festival at Bermondsay* by Marcus Gheeraerts the Elder, catches the user's attention in the project's home page. With an approachable, uncluttered look on a white background, the user interface is headed by the *REED Online* logo, followed by a red, responsive top navigation bar containing five basic tabs: from left to right, "Home," "Search the Records," "About the Records," "Explore Collections," and "How To." The fact that the page

2. Alexandra F. Johnston, "The Founding of Records of Early English Drama," in *REED in Review: Essays in Celebration of the First Twenty-Five Years*, ed. Audrey Douglas and Sally-Beth MacLean (Toronto: University of Toronto Press, 2006), 21–38, 22.

3. See, for instance, the essays in part 2, "REED's 'Performance': Impact and Response," in *REED in Review*, ed. Douglas and MacLean.

4. Mark C. Pilkinton, "[Review of] Cameron, Lewis, ed. *Sussex: Records of Early English Drama*. Toronto: Brepolis Publishers and University of Toronto Press, 2000," *Comparative Drama* 37, 3/4 (2003): 423–28.

5. J. Alan B. Somerset, ed., "Staffordshire," *REED Online*, University of Toronto, accessed 17 October 2018, ereed.library.utoronto.ca/collections/staff/; Alexandra F. Johnston, ed., "Berkshire," *REED Online*, University of Toronto, accessed 17 October 2018, ereed.library.utoronto.ca/collections/berks/.

repeats the “Search the Records” button (highlighted in green on the Flemish painting) and instructions on how to search them (through a green-coloured “View our Research Tips” hyperlink) clearly indicates that the site’s main objective is the searchability of the information the project makes available. And rightly so. The REED print collections are not primarily intended for the readerly experience of a linear discourse, since its transcribed records are arranged by chronological and geographical criteria. Researchers rather use the REED volumes to the best advantage by means of the index, that codex-based tool for readers to locate terms of interest in the document as selected by the indexer. More precisely, the digital database behind *REED Online* organizes the relevant information by means of encoded entities (objects, personal names, place names, concepts) derived from selected terms or items in the transcriptions and the metadata for the transcriptions, and classified into categories for filters to be used in the search tool of the database.

A look at the earliest record in the Staffordshire collection can be illustrative of how the entities have been tagged. The record from the Cathedral Statutes of Bishop Hugh de Nonant,⁶ dated 1188–98, contains a reference in Latin to the re-enactments (as the Latin term “representacio” has been translated) of the shepherds, of the Lord’s resurrection, and of the travellers to Emmaus. The project has tagged the location Staffordshire, Lichfield; the person Bishop Hugh de Nonant; the word “Natalis,” related to the entity “Christmastide”; the word “Pasche” and the phrase “lune in septemana pasche,” associated with “Easter week”; and finally, the words “representacio” and “pastorum” related to the entity of the type of drama “biblical plays.” The latter is categorized, of course, as a type of drama, while “Christmastide” and “Easter week” are categorized as liturgical calendar days. For the semantic identification of entities (or “tagging”), the project follows the guidelines of the Text Encoding Initiative (TEI) and uses the web application EATS (eats.readthedocs.io/en/latest/). The project’s TEI-XML files are available from its GitHub repository.

The “Search the Records” page leads to the database for all the records in the uploaded collections. The records appear by default in chronological order, irrespective of their collection. (Another way to access the records is through the “Explore collections” tab, whose dropdown menu contains the hyperlink to the

6. “Cathedral Statutes of Bishop Hugh de Nonant,” *REED Online*, University of Toronto, accessed 23 October 2018, ereed.library.utoronto.ca/records/staff-ridm55095472/.

collection's main page). The search box (on the left-hand side) asks "Enter the exact term or phrase": it does not have options for variant spellings and variant forms (as does *Early English Books Online*), but users can resort to wildcard characters ("?" for a single character, and "*" for zero or more characters), Boolean operators "AND" and "OR," and parenthesis for groupings. The results can be narrowed by entering date ranges and selecting filters based on categories of tagged entities. Shown in dropdown menus, the filters comprise locations (by country, diocese, county settlement), calendar days (secular and liturgical), people (by gender and status), collectives (clergy and occupations), entertainers (players, musicians, etc.), entertainments (including processions, royal and noble visits, orations, sports, games, songs, fairs, ale gatherings, etc.), drama (by type, status, and character), material objects (instruments, books, props and machinery, sets, cloth, costumes, regalia, food and drink), crimes and misdemeanors (including drunkenness, among many others), and record types (central government and royal, chronicles and histories, church, educational institution, family, guild, local government, manorial, religious community). The categories will grow as more collections are incorporated. This organization exponentially multiplies the search capabilities. Once all the collections are available online, a researcher will effortlessly gather the information related to, say, "Leicester's Men," by just selecting this troupe in the entertainers filter, or will easily find out about the uses of "beards" by selecting this prop in the material objects filter.

What increases the accessibility of the information is the fact that each tagged entity has its own page, and that each tag is shown as a highlighted hyperlink, so that a click on it leads users to that page. It would not be an exaggeration to state that the tagging is the marrow and heart of *REED Online*.

It should be noted that at present the tagging is "not comprehensive," as the project explains in the "Digital Methodology" subsection (accessed through the "About the Records" tab, reed.library.utoronto.ca/about/series/). First, a relevant term is tagged only in its first appearance in a document, so that readers "should never assume a tagged word is the only instance of that word or concept in the record." A tag is thus being used "as a pointer to get users to the relevant document." Second, translations are not tagged, while document descriptions and the Introduction are "lightly tagged, with more comprehensive tagging of the Introduction planned for the future," so that users need to resort to the web browser's search function.

After the user enters the term in the search box and/or selects options in the filters, a table of results is reloaded with the relevant records arranged chronologically by default. Each row of the table contains a transcription record identified by date, location, record title containing the hyperlink to its specific page, and shelfmark. The records can be selected and de-selected, and can also be re-arranged by date, and alphabetically by location, title, and shelfmark. The user interface for a specific record shows the transcription itself, interspersed with icons as annotation pointers for marginalia and footnotes. Once selected, the icon prompts a pop-up window. Below the transcription there is an apparatus that includes at least the “Document Description,” and may contain “Marginalia,” “Footnotes,” “Record Translation,” “Glossed Terms,” and “Endnotes.” This apparatus is shown in an “accordion” with collapsible content. The translation also has “marginalia” icons. To the right of the transcription, a side panel offers a number of functionalities. It allows users to show or hide tags and glossed terms in the transcribed text (not in the translation). A collapsible “View Tags” function lists all the tagged entities, each hyperlinked to a page devoted to the entity in question. Another section of the side panel is “Tools,” with a hyperlink to the GitHub repository that contains the TEI-XML files of *REED Online*. Finally, this side panel has helpful hyperlinks to the sections “Anatomy of a Record” (the explanation of how a record is organized), to “Search Tips,” and to “Symbols & Abbreviations.”

As mentioned above, each tagged entity has its own page. Entity pages cannot be accessed directly through a search for the term (for instance, “biblical plays” in the main Search tool), but through the associated term included in the record (for instance, “pastorum” appearing in the transcription of the record used above).⁷ By default, an entity page shows a list of “Related Records,” an option available on the left tab of the central navigation bar. Next to this tab, there is one for “Related Editorial Content” (for instance, the “biblical plays” entity page points to the “Performance Traditions” essay of the

7. The “biblical plays” entity page (ereed.library.utoronto.ca/entities/40362/) can be reached by typing in “biblical plays” in the Search box, selecting one of the records, and then clicking on the related term (e.g., “pastorum”) in the content of the record (transcription or endnote). This term “pastorum” and other tagged terms can be highlighted if the option of showing tags (right-hand menu) is activated. Incidentally, a search for the entity “drunkenness” on the main “Search” tool does not return any record; one has to type in “drunkard” in the search box, and then proceed as just explained in order to reach ereed.library.utoronto.ca/entities/45503/.

Berkshire collection), then a tab for “Related entities” (for instance, the “Kings of Cologne” entity page), and a tab for a map showing the locations associated with the entity in question.

The record transcriptions can also be accessed through the “Explore Collections” tab on the top navigation bar. The reader-user is welcomed to the main page for each uploaded collection by an interactive map of the counties. The map, developed with the JavaScript library Leaflet, highlights the locations mentioned or implied in each related record. (For more on these maps, see the “Digital Methodology” subsection, mentioned above.) After scrolling down past the map, the user finds the table-list of related records, chronologically arranged. Each record is listed in a row of the table of results as described earlier. A tab in a horizontal bar below the map also leads to the “Editorial Materials” of the volume, containing the “Acknowledgements,” “Historical Background” and “Performance Traditions,” and appendices.

The *Staffordshire* collection, edited by J. A. Somerset, offers 182 records, 51 of which are from Stafford, the county town. The *Berkshire* collection, edited by Johnston, contains 348 records, the earliest one from 1301–02, a payment of 6d to a minstrel at the abbey, included in the Cofferers’ Accounts of the Gild Merchant. The interactive map shows Reading as having 150 records, while a search with “Berkshire, Reading” selected in the “Locations” filter, results in 178 records. As announced by the English Department of the University of Toronto, the records from the parish of St. Laurence in Reading are “among the fullest and richest in England.”⁸ The essays on the historical background and performance traditions for each volume are models of scholarly work that this review, limited by size, cannot praise enough.

The project’s documentation on the rationale for transcriptions, encoding, technical implementation, principles of selection, etc., is sufficiently explained in the “About the Records” section, and obviously relies on guidelines and criteria already established in REED. The specificities for the online project are explained in the “Digital Methodology” subsection.

That the website is intended not only for theatre historians can be seen in the fact that it explains the dating system by which a reference such as 1452/3,

8. “REED: *Berkshire*, ed. Alexandra F. Johnston, Launched!” Department of English, University of Toronto, accessed 17 October 2018, english.utoronto.ca/Assets/English+Department+Digital+Assets/English+Department/English+Department+Digital+Assets/Undergraduate+pdfs/REED+Beckshire+announcement.pdf.

“means that the date of the record falls between 1 January 1453 and 24 March 1453. [...] because the scribe would have thought of that period as falling in 1452, whereas since 1752 (England) and 1600 (Scotland), we have thought of the new year as beginning on 1 January not 25 March, and so we would regard that as coming from 1453” (see “Anatomy of a Record” subsection). Help is ubiquitous: within each record’s page, not only the “Anatomy of a Record” but also the “Search Tips” page is at hand within the “How To” tab in the top navigation bar, as is the “Symbols & Abbreviations” page (also available in the “About the Records” tab). The “How To” section begins with an “Introduction to the Research Process.”

The footer contains links to the REED project website, a contact page, a Twitter link, the statement that the content is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (creativecommons.org/licenses/by-nc-sa/4.0/), and the array of sponsors’ logos (British Academy, English Department of the University of Toronto, Libraries of the University of Toronto, National Endowment for the Humanities, and the Social Sciences and Humanities Research Council of Canada). This institutional backing provides sufficient confidence in the long-term preservation of the project.

One may miss issues such as a direct “how to cite” advice (this is at present included in the “Terms of Use” page accessible from the footer), DOIs (digital object identifiers), a page or section on the people involved similar to the “People” page in the REED project website (some information as to the developers and designers of the interactive maps is given in the “Digital Methodology” subsection), and alternative export formats and technical interfaces that would allow re-use of data elsewhere.

As this description should make clear, the website (powered by Kiln, “a multi-platform framework for building and deploying complex websites whose source content is primarily in XML”) is admirable for its navigability and accessibility. In just two clicks one can get to the records transcriptions; these can be intuitively sorted out according to one’s interest by means of a well-organized search functionality; and with one more click, the transcription itself is right on the screen ready to be explored with its hyperlinked tagged entities. And pages load at fast speed! The project is solid in its data modelling and transparent in its editorial and encoding procedures.

Certainly, *REED Online* is not merely a publication in digital form of the REED print volumes, but an information system that intelligently and efficiently follows “a methodology determined by a digital paradigm.”⁹ All in all, one can only look forward to more volumes being uploaded onto *REED Online*.

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9. Patrick Sahle, in collaboration with Georg Vogeler and the members of the IDE, “Criteria for Reviewing Scholarly Digital Editions, version 1.1,” translated by Misha Broughton, James Cummings, Franz Fischer, Philipp Steinkrüger, and Walter Scholger, Institute für Dokumentologie und Editorik, June 2014, accessed 23 October 2018, i-d-e.de/publikationen/weitereschriften/criteria-version-1-1/.