Interférences littéraires
Literaire interferenties
Multilingual e-Journal for Literary Studies

http://www.interferenceslitteraires.be ISSN : 2031-2790

Julie M. Birkholz & Leah Budke

Distant and Close Reading in Literature: a case of networks in Periodical Studies

Résumé

La question de la lecture, et plus particulièrement les approches opposées de la lecture distante et de la lecture rapprochée, est depuis longtemps controversée dans les sciences humaines et plus particulièrement dans le domaine des études littéraires. Dans la pratique, les outils informatiques sont de plus en plus utilisés par les chercheurs, ce qui donne lieu à un débat en constante évolution sur la lecture des objets de recherche. Cet article aborde le climat contemporain à travers le prisme des études de réseaux, en se concentrant sur les différentes façons dont les réseaux sont utilisés et peuvent être utilisés dans la recherche en sciences humaines : modélisation de l'information comme relationnelle, visualisation des réseaux et mise en œuvre de l'analyse quantitative des réseaux. Nous soutenons qu'en pratique, la lecture distante et la lecture rapprochée coexistent nécessairement et sont des approches méthodologiques qui répondent à des questions de recherche différentes mais complémentaires. Ceci est expliqué à travers trois types d'applications des études de réseaux qui se concentrent sur les périodiques : la lecture rapprochée et les visualisations de réseaux, la lecture rapprochée et les visualisations et analyses de réseaux, et la génération computationnelle de réseaux à partir de bases de données pour explorer les phénomènes relationnels avec l'analyse de réseaux. Nous affirmons qu'il est nécessaire d'accroître la sensibilisation et la transparence quant au rôle que jouent les différentes approches dans la recherche actuelle. Au lieu d'opposer ces deux approches l'une à l'autre, nous invitons les chercheurs à considérer les avantages mutuels des pratiques de lecture afin de faciliter une conversation sur la valeur et le rôle des différentes technologies et méthodes de lecture dans les sciences humaines.

Abstract

The question of how to read, and specifically the opposed approaches of distant and close reading has long been contentious in the humanities and specifically in the field of literary studies. In practice, computational tools are increasingly implemented by scholars, resulting in a constantly evolving debate around the reading of research objects. This article approaches the contemporary climate through the lens of network studies, focusing on various ways networks are being used and can be used in humanities research: modelling information as relational, visualizing networks, and implementing quantitative network analysis. We argue that in practice, distant and close reading necessarily coexist and are methodological approaches that answer different yet complementary research questions. This is explained through three types of applications of network studies which focus on periodicals: close reading and network visualisations, close reading and network visualisations and analysis, and the computational generation of networks from databases for exploring relational phenomena with network analysis. We assert that there is a need for greater awareness and transparency about the role different approaches play in present-day research. Instead of pitting these two approaches against one another, we urge researchers to consider the mutual benefits of reading practices in order to facilitate a conversation on the value and role of different technologies and ways of reading in the humanities.

To quote this article:
Julie M. Birkholz & Leah Budke, "Distant and Close Reading in Literature: a case of networks in Periodical Studies", *Interférences littéraires /Literaire interferenties*, n° 25, dir. Chris Tanasescu, May 2021, 204 - 217 .

Interférences littéraires
Literaire interferenties

Multilingual e-Journal for Literary Studies

Interférences littéraires / Literaire interferenties
KU Leuven – Faculteit Letteren
Blijde-Inkomststraat 21 – Bus 3331
B 3000 Leuven (Belgium)
Contact : beatrijs.vanacker@kuleuven.be

DISTANT AND CLOSE READING IN LITERATURE: A CASE OF NETWORKS IN PERIODICAL STUDIES

Introduction

The term distant reading was introduced in the humanities in 2000 with the publication of Franco Moretti's *Conjectures on World Literature* and more formally again in his infamous book *Distant Reading* in 2013; with that came a barrage of commentary and debates on the term and the use of digital tools and more largely on the influence of "the digital" on the humanities. There remains volatility between those employing digital approaches and tools, and those that refute and refuse it as an approach in the humanities.[1] Despite this ongoing discussion, it is impossible to deny that the digital is here: digital methods are constantly being implemented and improved upon and better understood, and thus, there is still much to discuss about how we as humanists put different forms of reading into practice.

In this article we aim to clarify a tension between distant and close reading by suggesting that a large body of growing work in the humanities that implements distant reading methods is not solely doing distant reading, but rather an in-between. We are certainly not the first to recognize this in-between method or to suggest its benefits. As Burdick and authors also suggested, there is an emergence of a conjunction "between the macro and the micro" that allows a digital humanist to "toggle" between approaches to explore their research.[2] We propose that these two types of reading are mutually beneficial for research in the field of literary studies specifically and explore where this approach has been fruitful in recent research.

We demonstrate this by considering the scholarly focus on networks in periodical studies, a subfield in literary studies. This field is particularly ripe for this approach because it focuses on the periodical, a multi-layered research object ranging from the entire run of a publication to the individual text within a given issue of a periodical. As such, the periodical is a form that provokes thought on how and why we read research objects in certain ways. We investigate this through examples of three different ways networks are employed in literary research: modelling information as relational, visualizing networks, and implementing quantitative network analysis. It is not the goal of this article to serve as a literature review of these approaches but rather to show, through the example of networks in literature, how distant reading is conducted in practice and what it affords.[3] These

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[1] See recent critiques of: N. Z. DA, "The digital humanities debacle—computational methods repeatedly come up short", in: *The Chronicle of Higher Education*, 2019, [online], <https://www.chronicle.com/article/The-Digital-Humanities-Debacle/245986>.; Timothy BRENNAN, "The Digital-Humanities Bust", in: *The Chronicle of Higher Education*, October, [online], <https://www.chronicle.com/article/The-Digital-Humanities-Bust/241424>.; Maurizio ASCARI, "The Dangers of Distant Reading: Reassessing Moretti's Approach to Literary, Genres", in: *Genre*, 41, 2014, 1–19.

[2] Anne BURDICK, Johanna DRUCKER, Peter LUNENFELD, Todd PRESNER, & Jeffrey SCHNAPP, *Digital_Humanities*, Cambridge, MA, MIT Press, 2012.

[3] For reviews on digital approaches see: Annemieke C. ROMEIN, Max KEMMAN, Julie M. BIRKHOLZ, James BAKER, Michel DE GRUIJTER, Albert MERONO-PEÑUELA, Thorsten RIES, Ruben ROS, Stephanie SCAGLIOLA, "State of the field: digital history", in: *History*, 2020, 105, 365, 291-312.;

examples provide insight into how the distant reading of relational phenomena modelled as networks allows us to do close reading of individual texts differently. Reciprocally, close reading practices have the potential to improve distant reading approaches by adding a researcher's own nuance and expertise on individual texts to interpretations of patterns that emerge from larger corpora of data.

This article ultimately highlights how an investment in both approaches of reading is not at odds, but rather, how, when both methods are used in dialogue with one another, they allow us to fill gaps in our knowledge that we could otherwise not fill. Reflection on the implementation of various research methods and reading types has led us to the conclusion that it is increasingly important for humanities scholars to be more explicit about the steps we take and the decisions we make to evaluate research materials, leading to greater transparency, and thus, a better understanding of the affordances and shortcomings of different types of reading for various research approaches and questions.

Literature review

Close reading as a practice

Close reading is a (research) practice largely used in the humanities and social sciences. The term is often associated with the development of New Criticism and the New Critics' insistence on focusing on the individual text isolated from contextual influences related to its production.[4] The concept is arguably derived from the French tradition of *explication de texte*, where a scholar masters the "close and logical articulation of ideas in a thought … the careful translation, the painful analysis, the slow building up of structure on structure… to the development of the rational powers".[5] The premise with this approach was that the text itself contained the meaning, and a careful often systematic reading of that text alone—that is to say, the words and form of the text—was the correct way of analysing it. The practice of reading and analysing texts has evolved under the influence of the cultural turn, and contemporary scholars argue for an approach that encompasses more than just the text alone, including aspects such as the socio-political context.[6] Thus, the interpretation of a text in its entirety is dependent on the ways the instrument—the scholar—implements the practice of reading.

Reading practices in contemporary research, especially historical literary research, are often intimate, with the added consideration of material context. They can entail

Joke DAEMS, Gunther MARTENS, Seth VAN HOOLAND, & Christophe VERBRUGGEN, "Digital Approaches Towards Serial Publications", in: *Journal of European Periodical Studies*, 4, 1, 2019, 1–7.

[4] John Crowe RANSOM, *The New Criticism*. New Directions, 1941.

[5] Philo M. BUCK Jr., "The Classical Tradition and the Study of English", in: *Classical Journal*, 9, 1914, 284– 91, Michael HANCHER. "Re: Search and Close Reading" in Matthew K. GOLD and Lauren F. KLEIN, eds., *Debates in the Digital Humanities*, Minneapolis, MN, University of Minnesota Press, 2016, pp. 118-38.

[6] Caroline LEVINE, *Forms: Whole, Rhythm, Hierarchy, Network*. Princeton University Press, 2015.

reviewing source materials in archives, libraries, and museums to provide analysis and reflection, incorporating the researcher's specific expertise relating to a specific historical context. Instead of reading a text in isolation, researchers consider formal aspects—the materiality—of the research object. This, of course, can be expanded to include questions of production and dissemination: what was published and in what quantities, who published it, where it was available, who could afford to purchase it, how it was read, who the intended readership or the actual readership was, and how the work was received. This type of scholarly inquiry opens up new possibilities in the humanities that encourage scholars to encounter a text in its original materiality, and not merely in the form of a reproduction of that text.

While the terms "close reading" and "distant reading" seem to imply a degree of proximity to the material under consideration, to consider these terms in this way, and as direct opposites of one another, is inaccurate: "[t]he opposite of close reading is not distant reading but loose, casual, and careless reading".[7] Matthew Jockers in his book *Macroanalysis* suggested that the majority of computational aided readings in literature were merely "enhanced search - electronic findings aids that replicate and expedite human effort but bring little to the table in terms of new knowledge".[8] Fifteen years on from Jocker's statement, the potential for digitally-aided scholarship goes beyond the superficial applications described. The development in digitization practices, which has resulted in an ever-increasing number of digitized materials, combined with increased computer power and more sophisticated algorithms, including software and tools, have provided new opportunities to explore textual sources.

Bringing in the distant (reading)

The technological developments and increased capabilities bring advantages including the possibility to expand the size of corpora and the option to implement new computational methods for studying texts. It follows that these advancements have the potential to alter the way in which we consult and analyse texts, especially when it comes to traditional reading practices. We now have the capability to go beyond an approach that is limited to one human's capabilities and that, as Moretti criticizes, "depend[s] on an extremely small canon".[9] In contrast to close reading, which entails intense focus on a particular text, a distant reading approach allows us to understand "literature not by studying particular texts, but by aggregating and analysing massive amounts of data".[10] From these larger corpora, potential for new types of results is created that was not possible with the limited and small-scale corpora that individual research often dictated previously. Burdick and authors propound the benefits of this method, stating "distant reading explicitly ignores the

[7] HANCHER, 2016, 125.

[8] Matthew L. JOCKERS, *Macroanalysis: Digital methods and literary history*, Champaign, IL, University of Illinois Press, 2013, 7.

[9] Franco MORETTI, "Conjectures on world literature", in: *New left review*, 2000, 57.

[10] Franco MORETTI, *Distant reading*, New York, NY, Verso Books, 2013.

specific features of any individual text that close reading concentrates on in favour of gleaning larger trends and patterns from a corpus of text … it is a new way of doing research … [it] is almost not reading at all … that allows researchers to detect large-scale trends, patterns and relationships that are not discernible from a single text or detailed analysis".[11]

Consequently, when we speak of doing distant reading, this includes computer-aided research, often involving computational methods. Concretely, these approaches can range from text or data mining—that is, using full text search to find words in a set of texts, and or identify and extract information—to data or text analysis—that is, using a method or tool to analyse patterns from parts of speech, co-occurrence or frequencies of words, the discourse and sentiment of a set of texts, and relations between and within text. This a broad description of the capabilities that distant reading affords, but there are numerous tools and applications in existence and continually being developed that impact research approaches in various fields in the humanities. In the context of this article, we define distant reading in a general way as a task that is programmed and accomplished by a computer. We limit our focus to how distant reading approaches are being conducted in the field of literary studies, specifically in relation to research on networks in the subfield of periodical studies.

Use of network studies in literary studies

Networks in literature range from semantic networks of poems, or discourse, using natural processing tools, to character networks in literature, to reconstructing social relations of the past.[12] In this article we focus on historical social networks, or social processes from periodical studies.

As research on social networks has shown, networks matter. In particular, research on historical social networks working to reconstruct the past has been able to show that the position an individual had in a social network influenced that individual's power and performance, as well as the structure of the relations that lent

[11] BURDICK 2012: 39.

[12] Chris TANASESCU, Diana INKPEN, Vaibhav KESARWANI, & Brian PAGET, "Access (ed) Poetry. The Graph Poem Project and the Place of Poetry in Digital Humanities", in: *DH*, 2017; Ricardo ALBERICH, Joe MIRO-JULIA, & Francesc ROSSELLÓ, "Marvel Universe looks almost like a real social network", in: *arXiv* preprint cond-mat/0202174, 2002; Folgert KARSDORP, Peter VAN KRANENBURG, Theo MEDER, & Antal VAN DEN BOSCH, "'Casting a spell: Identification and ranking of actors in folktales", in: F. MAMBRINI, M. PASSAROTTI, and C. SPORLEDER (eds.), *Proceedings of the Second Workshop on Annotation of Corpora for Research in the Humanities* (ACRH-2), 2012, 39–50; Padraig MACCARRON & Ralph KENNA, "Universal properties of mythological networks", in: *EPL*, 2012, 99; Jeff RYDBERG-COX, "Social Networks and the Language of Greek Tragedy", in: *Journal of the Chicago Colloquium on Digital Humanities and Computer Science*, 2011, 1, 3; John PADGETT & Christopher K. ANSELL, "Robust action and the rise of the Medici, 1400–1434", in: *American Journal of Sociology*, 1993, 98, 6, 1259–1319; Giovanna CESERANI, Dan EDELSTEIN, Paula FINDLEN, Caroline WINTERER & Nicole COLEMAN, "Historical Research in a Digital Age: Reflections from the Mapping the Republic of Letters Project", in: *The American Historical Review*, 122, 2, 2017, 400–424.

social, economic, and political capital to other individuals and organisations. It also helps us to re-evaluate existing perceptions of certain networks, potentially illustrating that certain figures were more instrumental in effecting cultural or social change than previously thought. Thus, we can restore certain figures to the history of a specific publication, for example, which can then be expanded to the history of specific literary movements. Additionally, it can help add nuance and accuracy to the scholarly understanding of movements or publications by allowing us a more comprehensive view of the social structures actually at play in various literary milieus or publication environments.

Networks are used in the humanities for the analysis of relational phenomena modelled as a graph. The first step to creating such a graph is to categorize data into nodes and edges. Nodes can be individuals, organisations, or objects, which can then be related to another node via an edge, that is, a connection. Put in another way, in order to model networks, information from a text must be aggregated into a data structure of a matrix that the computer can interpret as a network with related attributes. This matrix indicates the relations (edges, ties, or links) between entities (a node).

Structuring information in this way allows one to both visualize and analyse the qualitative and quantitative aspects of the relational elements, in other terms, the network. Quantitative network methods are used to provide graph measures on structural aspects of the networks and positions of the nodes. Qualitative analysis, through visualizations, is the visual representations of these networks, which allows the researcher to attribute characteristics of nodes or edges, positions of nodes, and structures visually rather than through measurements.

Identifying historical social networks is a laborious task, which traditionally has been done by hand in the archive. One could of course make a matrix and a visualization by hand as Moretti did in his study of characters in Hamlet,[13] but increasingly this is done with the aid of a computer program such as UCINET, Gephi, the Python library NetworkX, and various network packages in R such as but not limited to the package network.[14] These programmes are capable of more efficiently and quickly generating visualizations and analysis from inputted data structures.

In addition, the digitization of archives and catalogues has afforded network research a new avenue for constructing networks. With this, the increased access to metadata of archival materials and the digitization and transcriptions of textual sources have created opportunities for (semi-)automatic identification of networks. Networks can be seen and modelled, for example, through a focus on written correspondence, manuscripts, and printed materials such as books, newspapers, and

[13] Franco MORETTI, "Network theory, plot analysis", in: *New Left Review*, 2011, [online] <https://litlab.stanford.edu/LiteraryLabPamphlet2.pdf>.

[14] Steve BORGATTI, Martin EVERETT, & Linton FREEMAN, UCINET, 2014.; Aric HAGBERG, Pieter SWART, & Daniel S CHULT, "Exploring network structure, dynamics, and function using NetworkX" in: LA-UR-08-05495, 2008, Los Alamos National Lab (LANL), Los Alamos, NM (United States).; C. BUTTS, "Network: Classes for Relational Data". The Statnet Project (http://www.statnet.org). R package version 1.16.1, 2020, https://CRAN.R-project.org/ package=network.

or periodicals. One way these possibilities have been explored in literary studies is through the application of natural language processing algorithms used to infer networks of characters in novels; a method which reduces the manual work needed to construct the networks, but which also holds different advantages and disadvantages.[15]

Thus, the combination of increased digitization of textual materials, publicly available data that can be shaped into relations, and more specific tools for both organizing, structuring, and analysing data has resulted in the ability to investigate more entities—that is to say, more extensive networks—to consider multiple types of relations (multiplex networks), and explore the dynamics of these networks over extended and or overlapping periods of time.

In summary, when we speak of a method of network analysis in the field of literary studies, we see in practice networks being composed either manually from meticulous work in an archive to document relations or semi-automatic approaches by merging metadata from digital archives. The resulting data is then inputted into a network program for network modelling resulting in 1) network visualizations, 2) quantitative network analysis, or 3) computational inferred networks from either secondary materials, such as relational databases, or, as mentioned above, (character) networks inferred from texts largely implementing quantitative network analysis. Consequently, network studies offers a diverse set of approaches for investigating relational phenomena, which is often fruitfully combined with close readings. When and how one puts these approaches into practice is dependent on the state of knowledge and information (data) on a subject.

In the following section, we provide examples of networks from research recently conducted or currently being conducted in the field of literary studies. The overview comprises three different approaches: qualitative studies using network visualizations, quantitative studies using network measures and visualizations to support findings on social processes, and the automatic generation of networks from linked data using quantitative network analysis. The examples we present here are not intended to provide an exhaustive overview of network studies in periodicals, but rather to provide clear examples of the way in which networks as a method are implemented in literary studies.

[15] Apoorv AGARWAL, Anup KOTALWAR, & Owen RAMBOW, "Automatic extraction of social networks from literary text: A case study on alice in wonderland", in *Proceedings of the Sixth International Joint Conference on Natural Language Processing*, 2013.; John LEE & Chak Yan YEUNG, "Extracting networks of people and places from literary texts", in: *Proceedings of the 26th Pacific Asia Conference on Language, Information, and Computation*, 2012.; David ELSON, Nicholas DAMES, & Kathleen MCKEOWN, "Extracting social networks from literary fiction", in: *Proceedings of the 48th annual meeting of the association for computational linguistics*, 2010.; Niels DEKKER, Tobias KUHN, & Marieke VAN ERP, "Evaluating named entity recognition tools for extracting social networks from novels", in: *PeerJ Computer Science* 5, 2019, e189.; Roel SMEETS, Eric SANDERS & Antal VAN DEN BOSCH, "Character Centrality in Present-Day Dutch Literary Fiction", in: *Digital Humanities Benelux Journal*, 2019, 1, 1.

Cases: networks in periodical studies

The origins of the field of periodical studies can be traced to the late 1960s when Victorian periodical studies began to take shape as a discipline, resulting in the founding of the seminal journal *Victorian Periodicals Review* in 1979. Interest in Victorian periodicals was largely influenced by the compilation of the *Wellesley Index to Victorian Periodicals* in 1966, which spurred much research and thought on the wealth of periodicals produced in the nineteenth century and beyond. The field, of course, is not limited to the Victorian period and has seen major expansion in the last decades especially with sub-fields such as modernist periodical studies becoming more prominent, as is evidenced by the founding of *The Journal of Modern Periodical Studies* in 2010. Alongside these scholarly publication outlets, digitization initiatives have played an important part in building this field. While archival research based on the examination of original materials remains a central aspect of periodical studies, the ever-increasing number of digitization initiatives like The Modernist Journals Project, The Blue Mountain Initiative, and The International Dada Archive make once-scarce ephemeral materials freely available to the public. With greater access to these digitized original materials comes questions of how to read them and what they can offer us as researchers. As Sean Latham and Robert Scholes assert, the immediacy these advancements afford us also "reveals these objects to us anew, so that we have begun to see them not as resources to be disaggregated into their individual components but as texts requiring new methodologies and new types of collaborative investigation".[16]

The examination of periodicals through a network approach has been implemented by a number of periodical scholars. The most commonly used network approach in periodical studies is to delineate a specific period, country, and set of newspapers or periodicals, where networks are projected as nodes of periodicals with edges as shared reprinted texts; or nodes are people and edges are a social relationship or exchange. This is a complete network approach, where one assumes a bounded group of (possibly) related nodes seeking to analyse, for example, a node's position, as measured by degree centrality, identifying the most popular node to infer potential influence.

A subject of increased inquiry among periodical scholars is the reuse, reprinting, and reconfiguring of texts. Projects such as Viral Texts, Scissors and Paste, and Oceanic Exchanges apply computational methods to trace patterns of text reuse in nineteenth-century newspapers and magazines across the globe. A number of studies use metaphors of contagion, describing the circulation of reprinted texts as "viral" or "infectious", to emphasize both the pervasiveness of the phenomenon and the speed with which texts were spread.[17] Others adopt the term "scissors-and-paste journalism," signifying a common editorial practice in

[16] Sean LATHAM & Robert SCHOLES, "The Rise of Periodical Studies", in: *PMLA*, 2006, 121, 2, 517–31.

[17] Ryan CORDELL, "Reprinting, Circulation, and the Network Author in Antebellum Newspapers", in: *American Literary History*, 27, 3, 2015, 417–45.; David A. SMITH, Ryan CORDELL & Elizabeth MADDOCK DILLON. "Infectious texts: Modeling text reuse in nineteenth-century newspapers.", *IEEE International Conference on Big Data*, 2013.

Victorian Britain where "provincial newspapers ... often filled their pages with stories from national newspapers".[18]

Network visualizations

Many in the humanities use network analysis solely for the visualization component as a way to support their close readings and, thus, often do not consider the modelling and visualizations of networks as a distant reading approach. Although visualizations of information of any kind are a method to make general information and largely dense or encoded information more comprehensible.[19] Therefore, using visualizations in this way allows us to apply an approach and render a result that we cannot necessarily efficiently accomplish by hand and should consequently be considered a form of distant reading. Here we provide a few examples of network visualizations that are used to support the findings from close readings.

Processes of reprinting texts are sometimes implicit, but other times the relationship between various publication contexts is well established. The modernist magazine and the modernist poetry anthology often shared a more explicit relationship, with editors ushering texts, that is poems, from a more ephemeral vehicle, the magazine, to a more permanent publication site, the anthology. Leah Budke's work on the modernist magazine and anthology duo, *Others*, demonstrates the dynamic between two such publications.[20] The object of study in this case is multi-layered, with the magazine comprising a total of twenty-six separate issues, and the anthology comprising three different annual "issues." Within these publications, the material can be further categorized into individual contributions, that is to say, poems, by individual authors. This data can be categorized into nodes—poems, poets, magazine issues, anthology issues—and edges—the relationship each of these nodes share with other nodes. In this study, the editorial practice of reprinting in the direction of magazine to anthology was further examined, with metadata collected from both publications, in an effort to gain further insight into the way the *Others* brand, a collective concept, was shaped through these two publications. Network visualizations in this study help to illustrate two main points: firstly, how the gender dynamic of the brand was impacted by reprinting practices, with far fewer poems by female contributors reprinted in the more permanent anthology form; and, secondly, how there was a marked decrease in material reprinted from the *Others* magazine over the entire run of the *Others* publications, with the third and final anthology (1920) comprising 80.6% of material

[18] Laurel BRAKE, and Marysa DEMOOR, eds. *Dictionary of nineteenth-century journalism in Great Britain and Ireland.* Academia Press, 2009.

[19] Stefan JÄNICKE, Greta FRANZINI, Muhammad Faisal CHEEMA, & GERIK SCHEUERMANN, "On Close and Distant Reading in Digital Humanities: A Survey and Future Challenges", in: *EuroVis (STARs),* 2015, 83-103.

[20] Leah BUDKE, "The Definitive Editor: Alfred Kreymborg and the Others Magazine-Anthology Duo", in: *Modernist Cultures*, 15, 4, 2020, 515–37.

from outside sources.[21] Mapping the reuse of poems in such a case adds more to our understanding of these two literary publications by demonstrating the longer-term editorial practices, which highlights specific powerful individuals who were key agents and representatives of these publications. This helps to support broader claims garnered from close readings about the way various publication forms and specific editors, through distinct editorial practices like reprinting, carved out a place in the larger literary environment.

Consequently, as this example depicts, the modelling of this relational information as a graph, allows the researcher to visualize relational elements and thus explore relational research questions that can support propositions in close reading, and vice versa. This ultimately has the potential to generate additional research questions, which can be either complementary or entirely new, to serve as avenues into understanding social phenomena of the past.

Network visualizations and analysis

Quantitative approaches to networks are also used in literature, most often in combination with network visualizations and close readings. Here researchers model networks and explore patterns through the measurements of the graph structure, position of nodes, patterns of relations, and characteristics. These identified patterns can be in juxtaposition to (previous) findings from close readings. The measures used depend on the relational phenomena at hand; this can range from investigating centrality or popularity of nodes to measuring closeness through social capital.[22]

In using such an approach, Bode, for example, through tracing 9,200 fictional titles published in Australian newspapers in the nineteenth century, identifies key syndicators that had not previously been seen as key players in the distribution of fiction in previous research.[23] Cordell and researchers in the Viral Texts Project also take a complete network approach to investigate print culture exchange in the United States in the pre-Civil War era, resultingly identifying key brokers of textual exchange in the often overlooked, and thus understudied, South and Midwest regions.[24] So and Long research publishing patterns of a set of American poets to explain cooperation among poets and publishers.[25] Additionally, they implement quantitative network analysis and visualizations, which they argue allow them open

[21] Ibid.

[22] For a general overview and literature review of network measures for social networks see: Daniel J. BRASS, Joseph GALASKIEWICZ, Henrich R. GREVE, & Wenpin TSAI. "Taking stock of networks and organizations: A multilevel perspective", in: *Academy of management journal*, 47, 6, 2004, 795-817.

[23] Katherine BODE, "Fictional Systems: Mass-Digitization, Network Analysis, and Nineteenth-Century Australian Newspapers", in: *Victorian Periodicals Review*, 50, 1, 2017, 100-138.

[24] Cordell, 2015.

[25] Richard Jean SO and Hoyt LONG, "Network analysis and the sociology of modernism." In*: boundary 2013, 2, 40, 2, 147-182.*

"up new ways of interrogating the collaborative networks that underwrote the evolution of modernist poetry globally."[26]

In these approaches both qualitative visualizations and quantitative measures of the networks are used to generate data on the frequency by which specific nodes (e.g. syndicates, publishers, brokers) reprinted texts during specific periods. These studies were afforded by access to digital archives where the full-text of the periodicals were available. Thus, this approach allows researchers to identify the structures of reprinting and associated key actors, complementing findings on the social and cultural practices of reprinting. The implementation of close reading, network visualizations, and quantitative network analysis relates to the state of the previous knowledge. For example, in all the works mentioned above, the authors built on a body of previous work on reprinting that suggested specific relational phenomena. Quantitative network analysis could then be used to go beyond what was humanly possible to compute in an efficient manner, resulting in a larger scale analysis of the relational phenomena. This complemented visualizations and rich descriptions which were developed on the basis of close readings, culminating in valid and reliable propositions for understanding this particular phenomenon of reprinting.

Network Analysis: Relational and Linked Data

The use of databases to organize data related to people and periodicals is increasingly an important component of research projects in the field of periodical studies. The way that information is structured into data (information that the computer can analyze) influences the research questions that we can ask. A flat spreadsheet of a list of individuals is markedly different from a relational structure, which is composed of multiple sheets that are linked by a common object or identifier. In the latter, we are able to generate information about multiple lists and the relations between them. Databases, and specifically relational databases, comprising this type of data are often used to reconstruct networks of the past. While access to this data affords the researcher to efficiently aggregate large amounts of information into graphs, often such approaches are not complemented with close readings as we have demonstrated in our two previous examples to illustrate the potential a combination of approaches holds. Often this large amount of data is used in a more isolated way to identify a needle in a haystack, make decisions about case studies, and/or find gaps in previous research.

Examples of such approaches include: Beals' award winning Scissors and Paste Database explores reprints and reuses through a relational database that results in a set of quantitative measures for newspapers and items.[27] Using the British

[26] Ibid: 148.

[27] Melodee BEALS, "Scissors and paste: The Georgian reprints, 1800–1837", in: *Journal of Open Humanities Data*, 3, 2017.; British Library, "British Library Labs Symposium 2016 Competition and Award Winners", [online], <https://blogs.bl.uk/digital-scholarship/2016/11/british-library-labs-symposium-2016-competition-and-award-winners.html>.

Library Newspaper Collection (JISC1, 1800-1900), The Times Digital Archive (1800-1900), The London Gazette (1800-1837) and the National Library of Australia's Trove (1800-1837), it develops a central repository of reprinted news across the nineteenth-century Anglophone world. This provides a tool for researchers to explore previously distributed and siloed collections of newspapers with the lens specifically on the relations between reprinting.

As these approaches become more widespread, there is a growing need for consistency in how we collect, manage, and share data. The use of Linked Data ontologies and knowledge graph infrastructures such as Wikidata is increasing in the Humanities.[28]

Linked Data "provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries."[29] Data that adheres to this framework facilitates accessibility of information on historical and cultural objects because it is in a standardized format readable by both humans and machines. The ontology, the way the data is modeled, makes few (or more flexible) assumptions on the structure of the information, compared to relational data structures. This, in turn, affords the creation of a networked archive, which brings together publicly available materials distributed in libraries, archives, and museums using the Resource Description Framework (RDF). The result is that researchers can integrate and implement an unprecedented amount of often unstructured, siloed data, at lightning speed, which enables the investigation of diverse research questions that are not limited by the structure of the information.

Technically speaking, data represented in the RDF language is structurally a graph. Thus it inherently allows us to infer relations, bundling any common affiliation between objects and attributes. This means that if social relations are stored in RDF accessible information, researchers can efficiently extract them and remodel them into networks.[30]

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[28] K. THORNTON, E. COCHRANE, T. LEDOUX, B. CARON, & C. WILSON, "Modeling the Domain of Digital Preservation in Wikidata", in: *iPRES*, 2017. Albert MEROÑO-PEÑUELA & Rinke HOEKSTRA, "What is linked historical data?", in: *International Conference on Knowledge Engineering and Knowledge Management*, 2014, 282-287.; MAlbert MEROÑO-PEÑUELA, Ashkan ASHKPOUR, Marieke VAN ERP, Kees MANDEMAKERS, Leen BREURE, Andrea SCHARNHORST, Stefan SCHLOBACH, & Frank VAN HARMELEN, "Semantic technologies for historical research: A survey", in: *Semantic Web,* 2015, 6, 539-564. For examples of this work in practice see: Vikto DE BOER, Matthijs VAN ROSSUM, J. LEINENGA, & Rinkse HOEKSTRA, "Dutch ships and sailors linked data", in: *International Semantic Web Conference*, 2014, 229–244.; S. PAUL, Richard L. ZIJDEMAN, Marco HD VAN LEEUWEN, Ineke MAAS, & Kenneth PRANDY, "The construction of HISCAM: A stratification scale based on social interactions for historical comparative research, in: *Historical Methods: A Journal of Quantitative and Interdisciplinary History*, 2013, 46, 2, 77-89.

[29] W3C, "W3c semantic web activity.", W. W. W. C., 2011.

[30] Yolanda GIL & Paul GROTH, "LinkedDataLens: linked data as a network of networks", in: *Proceedings of the sixth international conference on Knowledge capture*, 2011, 191–192.

One example of this in literary studies is the use of historical linked open data.[31] As Birkholz and Meroño-Peñuela showed, linked data allows us to efficiently construct, reshape and analyse social networks of women editors in Europe in the nineteenth century from the WeChangEd dataset available on Wikidata.[32] This results in an efficient, valid, and reliable approach for exploring relational phenomena stored on the Semantic Web, and specifically for investigating personal relationships between female editors and other individuals as identified within the WeChangEd dataset through increasingly specific SPARQL queries to generate networks of different time periods, places, and people. Within the publicly accessible Jupyter Notebook, researchers can also compute quantitative network measures to explore the networks.

Thus, in contrast to the two previous examples, the approach of automatic generation of social networks and quantitative network analysis does not inherently employ close readings but serves a purpose to aid us in making informed decisions about where to return to the archive to explore specific relations, individuals, or periodicals that have been overlooked or understudied and could be given further attention. For example, information structured in this format also affords the leveraging of Semantic Web technologies in bringing distributed information together in an efficient and queryable manner that results in a different entry point into historical data and archives. The advent of these (linked) open data resources affords researchers the ability to easily and efficiently model data as social networks in order to reconstruct important cultural relations of the past.

Conclusion

The way networks are largely used in the field of literary studies is inherently situated between close and distant reading. Although close reading is illuminating and clearly useful, the implementation of distant reading approaches such as network analysis—or more specifically, modeling information as relational, visualizing networks, and implementing quantitative network analysis, as presented in this article—allows us to investigate even more detailed questions. The approaches taken to implement network analysis vary based on the state of the field, knowledge and the structure of the information. As we have shown through these examples, the ways that computational approaches of network analysis are used "to read" in literary studies and more widely in the humanities is not binary—it is not either close or distant reading alone—but is a back-and-forth, even reciprocal, type of reading. This means implementing approaches that we have categorized into three types: close reading and network visualisations, close reading and network visualisations and analysis, and the computational generation of networks from databases for exploring

[31] Julie BIRKHOLZ & Albert MEROÑO-PEÑUELA, "Decomplexifying the Network Pipeline : A Tool for RDF/Wikidata to Network Analysis", in: *Digital Humanities Benelux Journal*, 2020, 2, 53–68.

[32] Ibid.

relational phenomena with network analysis. None of these approaches are solely distant reading practices, but, rather, they garner validity through supplementing and reinforcing other approaches to reading, including close reading.

We propose that this in-between approach is one that will remain central in the field as we continue to evaluate and incorporate computational tools in our work. With the research opportunities this avenue of mixed approaches provides, it becomes increasingly important to be more explicit about the steps we take and the decisions we make to evaluate research materials. Although this might be new for humanists, social scientists have considered for decades how to integrate mixed method approaches, and this research could serve as a guide for future work in explicating these approaches more broadly than the examples in literature given here.[33] This should signal to scholars the benefit of reflecting on and developing a critical awareness towards the research practices undertaken in the humanities. In being transparent about the decisions we take in approaches, methods, and tools, we can facilitate a conversation on the value and role of different approaches to our hermeneutics in the humanities.

While technological advances and the resulting computational methods may increase the ways we can approach our research objects, there are also limitations to what one individual can accomplish. In practice, this means that we, as literary scholars, and more generally as humanists, should acknowledge that we may need additional expertise to conduct this in-between work. The incorporation of linked data and the use of computational tools to generate networks holds potential for collaboration. We may, for instance, want to enlist the help of network experts to help accomplish these research goals, thus developing cross-disciplinary contributions to knowledge. These efforts can often be mutually beneficial for researchers in their respective fields. For example, a project that builds a historical database can contribute to our understanding of the past, but it can also contribute to the development of specific methods or tools to manage, organize, and analyse materials.

In the field of literary studies, the question of how to read has long been a central focus. Before the advent of computers and the resulting computational methods, reading was restricted to a human activity. From our current vantage point, however, reading means more than the human activity alone, and, as we have shown, is best thought of as a practice that can, and, perhaps should be, supplemented by our current technological capabilities. The reading that a computer can conduct, however, surpasses the limits of individual human knowledge, and is therefore distinct from what we can process as humans. On the other hand, we as humans have the ability to infer the implicit and to detect nuance through reading, a skill that machines have not yet mastered and perhaps never fully will. Yet even as distant reading methods advance, machines will still never be able to diminish our expertise as humanists, and conversely, our expertise will not diminish the machine's efficiency. Instead, as we have shown, the two enhance each other, allowing us to gain insight and to see patterns, both large and small, that would otherwise remain

[33] John W. CRESWELL & Vicki L. PLANO CLARK, *Designing and conducting mixed methods research*. Sage publications, 2017.

obscured. While a computational method can help to highlight a pattern, it remains the researcher's task to interpret that pattern and to assert the importance of it in the wider context of the historical moment.

Acknowledgements

The work of the first author was partly supported by the H2020 European Research Council under the ERC Starting Grant agreement no. 639668. The first author would like to thank Marianne Van Remoortel for facilitating a fruitful space, on the WeChangEd team, to experiment with the ways that networks can be used in the humanities, which inspired many great discussions on close and distant readings and methodological practices in general: thank you for giving my ideas wings through your support Marianne!

Julie M. BIRKHOLZ

Ghent University and Royal Library of Belgium's Digital Research Lab

Leah BUDKE

Ghent University

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