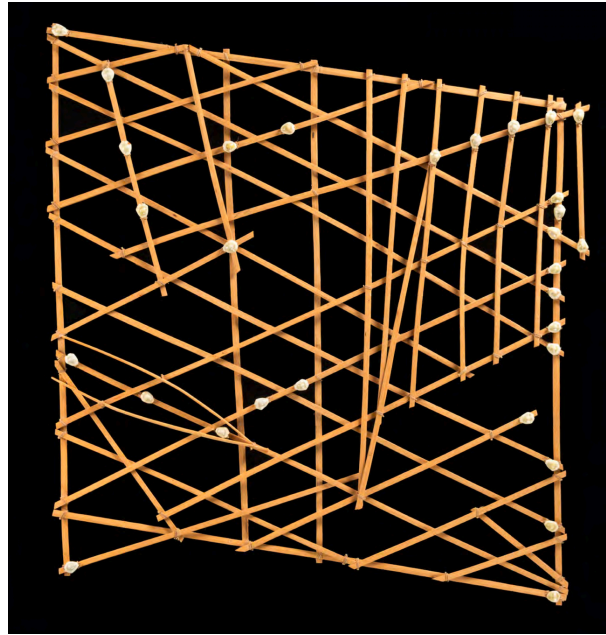


# MO5161 Skills in Transnational History

Module Coordinator: Konrad M. Lawson

Fall, 2018



**Marshallese Navigational Chart**

Denver Museum of Nature & Science Catalog No.: A926.1

**Repository for this handbook available at:**

<https://github.com/kmlawson/skills-in-transnational-history>

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## Overview

Meetings 10-12:00 Tuesdays Room 1.17, St Katharine's Lodge

Preparation: 12-18 hours per week

Week 0 - **Orientation: History in Practice - Balancing Skills and Critique in the Digital Humanities**

Week 1 - **Introduction to Historical GIS and First Look at QGIS**

Week 2 - **QGIS: Basics and Georeferencing Historical Maps**

Week 3 - **QGIS: Techniques for Exploration and Analysis of Spatial Data**

Week 4 - **Thinking With/Against Maps and Spatial Analysis**

Week 5 - **Text Analysis: Using the Command Line, Regular Expressions, and OCR with Tesseract**

Week 6 - *Independent Learning Week*

29.10 *QGIS project and essay due*

Week 7 - **Text Analysis: Introduction to R; Frequencies and Correlation**

Week 8 - **Text Analysis: Topic Modelling and Sentiment Analysis; Alternative Tools**

Week 9 - **Networks: Social Network Analysis and First Look at Cytoscape**

Week 10 - **Networks: Using R or Cytoscape to Explore Network Data; Alternative Tools**

Week 11 - **Mapping Texts and Networks; Mediums for Sharing Your Work**

12.12 *Final Project Due*

## Key Info

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**Office:** St. Katharine's Lodge Room B3

**Office Hours:** Tue 12:00-13:00 (please [sign up](https://goo.gl/Rh19wj) <https://goo.gl/Rh19wj>)

## Description

This digital humanities module will introduce MLitt students to skills related to historical GIS and the computational analysis and visualization of texts and social networks. Students will read and critique examples of humanities scholarship that apply these digital methodologies and will, throughout the module, engage with the critical debates on the advantages, limitations, challenges, and costs of employing these approaches in the humanities.

## Assessment Summary

50% - **29 October** - Historical GIS Project, 1,500 word explanatory essay and minimum 500 word appendix

50% - **12 December** - Final Project, 1,500 word essay, visualisations, and minimum 500 word appendix

## Assessments

### Map Project (50%)

This assessment is designed to give you a chance to demonstrate your ability to effectively use QGIS to prepare map layers, produce exported maps for incorporation into a historical project; be able to articulate what the maps can be useful for; and be able to describe the limitations and problems associated with your map and the data on which it depends. For Submission you must upload, as a zipped collection of files, to the MMS:

- 1,500 word explanatory essay which provides some basic historical background to the inspiration for the map project, discusses the ways in which the map can be used for heuristic, illustrative, or analytical purposes, and the limitations and problems with map. In other words, discuss both what the map might reveal, but also what it may potentially conceal or distort. *Important:* At the end of the essay or embedded into the body of the essay should be the exported maps, with any post-processing required, such as you would want them to appear in a historical essay, with an appropriate caption. You will be marked in part on the presentation quality of the map and its ability to clearly and cleanly communicate what it sets out to show.
- An appendix, at least 500 words must also be uploaded to the MMS which describes the technical process by which you assembled the QGIS project and its layers. What did you do to create each of the layers? Where exactly did you get the data for each of the layers and why did you choose that data over possible alternatives? What other technical steps did you carry out in order to produce the project?
- If your files cannot, for some reason be uploaded directly to MMS as a zip file, you may instead upload a single page document with a link to a place where the QGIS files can be downloaded (publicly accessible or shared Google Drive or Dropbox file link, or other file sharing resource). If you choose to use this method, in order to ensure that no further modifications to the documents are made after submission, your document with the link must include the “checksum” or MD5 hash for the zipped collection of documents (you can do this via the command line or online at a site such as this one: <http://onlinemd5.com/>). Alternatively, you may submit a USB drive on the previous meeting of class with the files.

**Scope:** The number of layers of data, the number of visualisations produced, and the quantity of data to include depends entirely on what map or maps are being created, that is what you are trying to show. It may consist of three or up to a dozen layers and may include natural coastal or topographical data, other features, and thematic data layers visualizing things. You may generate a single exported map if it is rich and complex (but not to the detriment of its ability to communicate), requiring a very significant amount of time in preparation or a collection of different maps using different data or snapshots of data at a particular time if they can be used effectively for historical argumentation. You may combine maps with tables or graphs, or maps combined with presentation of spatial analysis. Think of your project as building a portfolio to pitch your work at a workshop, in a grant application, etc. showing a good balance of analysis, design skills, and judicious choice in what to include and exclude. If you are concerned about finding the balance, feel free to consult with the tutor as your potential outputs become clearer.

#### *Considerations for Assessment:*

- Context: Did the project explanatory essay set the context sufficiently?
- Analysis: Did the project explanatory essay effectively explore the limitations and advantages of the maps produced or spatial analysis performed?
- Combination: Did the chosen combination of a) the number of maps produced b) the challenge of compiling the spatial data for visualisation c) the challenge of specific techniques employed in the creation of the visualisations d) the employment of any specific spatial analysis e) any alternative ways of visualising the data (tables, graphs, as appropriate) represent an effective and judicious balance for the presented project portfolio?
- Appendix: Did the appendix effectively describe the process of creating the visualisations and any spatial analysis performed and did it properly cite the sources for the data.
- Design: Did any visualisations or maps produced clearly communicate their contents and demonstrate a good sense of design, well-chosen scales, and appropriate density of visual information?
- Restraint: Did the project avoid superfluous visualisations that contribute little to the overall project and show good judgement in what to include and exclude?

## Final Project (50%)

The final project is not, as in the map project, limited to a single digital methodology, medium, or approach. In general, it may take the form of one of the three following kinds of project:

1. You may do a project which makes use of one or more of the new computational techniques learned in the second half of the course: text analysis and/or social network visualisation and analysis. You are free to use the combination of tools and techniques that you feel most appropriate and comfortable in using (R, Python, Cytoscape, Gephi, Orange, Voyant Tools, Palladio, Shiny, regular expressions and command line utilities etc.). You are also welcome to teach yourself and make use of other techniques and tools that you have come across if these are well documented and described in your project.
2. You may do another historical GIS project that shows significant progress in the depth of your skills or which combines historical GIS with other techniques learned in the module. I recommend that you use a different source base. If it uses the same source or sources, it must make the clear argument for how this data was used to substantively and considerably develop the project further, showing evolution in terms of its analysis, techniques, and outputs. This may include using the same or similar sources and making use of other techniques of text or network analysis with the sources. Please consult the tutor if you are concerned about overlap.
3. You may, alternatively, write a 4,000 word essay in the genre of the critical humanities. For this alternative, you should engage effectively with the theoretical scholarship on critical digital humanities both generally and specifically for the area of focus for your essay and it must engage critically and effectively with several several pieces of scholarship that may be described as applications of the technologies studied in this module.

Unless you have chosen to do the critical essay, your project should include from one to a dozen visualisations depending on the difficulty and complexity of the visualisations produced and what they can potentially be used for. These may include any of the following: 1) a collection of graphs and tables identifying patterns in the data or the product of computational analysis of text or networks. 2) Visualisation of the data through GIS output in the form of a choropleth or other thematic map, visualisations of networks using Cytoscape, Gephi, Palladio, or other visualisation tool, maps which visualise networks or material extracted from a text or corpus of texts. 3) a list of regular expressions, including description of what they do, that were used to clean data or extract useful material from texts.

For Submission you must upload to the MMS:

- 1,500 word explanatory essay which provides some basic historical background to the inspiration for the project and visualisations. It must also discuss the limitations, assumptions, and advantages of the material produced, including its heuristic, illustrative, and analytic goals, but also what they may conceal or distort. *Important:* Embedded in the body of the essay or at the end of the essay you should produce the exported visualisations.
- At least 500 word appendix discussing the technical process you used to create the database and visualisation. What decisions did you make in coding the data, where did you get the data from exactly, and what steps did you take in producing the visualisations.
- If your files cannot, for some reason be uploaded directly to MMS as a zip file, you may instead upload a single page document with a link to a place where the QGIS files can be downloaded (publicly accessible or shared Google Drive or Dropbox file link, or other file sharing resource). If you choose to use this method, in order to ensure that no further modifications to the documents are made after submission, your document with the link must include the “checksum” or MD5 hash for the zipped collection of documents (you can do this via the command line or online at a site such as this one: <http://onlinemd5.com/>). Alternatively, you may submit a USB drive on the previous meeting of class with the files.

### *Considerations for Assessment:*

- Context: Did the project explanatory essay set the context sufficiently?
- Analysis: Did the project explanatory essay effectively explore the limitations and advantages of the visualisation produced or computational analysis performed?

- Combination: Did the chosen combination of a) the number of visualisations etc. produced b) a challenge in compiling the data for visualisation c) the challenge of specific techniques employed in the creation of the visualisations d) the employment of any specific forms of computational analysis of networks, text, or spatial data. Were they an appropriate combination of materials?
- Appendix: Did the appendix effectively describe the process of creating the visualisations and any analysis performed and did it properly cite the sources for the data.
- Design: Did any visualisations or maps produced clearly communicate their contents and demonstrate a good sense of design, well-chosen scales, and appropriate density of visual information?
- Restraint: Did the project avoid superfluous visualisations that contribute little to the overall project and show good judgement in what to include and exclude?
- Development: If the project used historical GIS and use the same or similar source base, then did the project show a substantive development beyond the first assessment, and make clear in the explanatory essay what that development consisted of.
- Critical Essay: If a critical essay was chosen instead, did the essay engage effectively with an appropriate amount of theoretical literature for its topic? Did it have a clear argument which was well supported throughout the essay? Did it include evaluation of multiple concrete essays making use of computational approaches or quantitative analysis?

## **Guidelines**

Your submitted work should meet the following requirements:

### **Headers and Formatting**

At the top of all your written work or on a cover page, please include:

- The date of submission
- The assignment you are submitting (e.g. Historiographical Essay, Empirical Research Essay, etc.)
- Your student number
- A title for your essay
- The total number of words including footnotes (use the word count feature of your word processor)

When formatting your assignments, please follow these guidelines:

- Add page numbers
- Use a minimum of 12 sized font
- Use a serif font (such as Times Roman, Georgia, Garamond), not a sans serif font (such as Arial, Helvetica, Verdana)
- Please double space your essays

### **Footnotes and References**

Please carefully read the St Andrews School of History Style Sheet:

<http://www.st-andrews.ac.uk/history/infoug/stylesheet.html>

This document, sections 1-4, contains extremely valuable information on how to compose your essay, including how to format your footnotes and bibliography. Please note that failure to follow the style sheet can result in penalties on the final mark for the essay.

### **Online Submission and Late Work**

Unless otherwise indicated, work will be considered submitted by the date the document was submitted online on the MMS website for the course. If you are concerned that any given assignment was not correctly submitted to the MMS, you are free to email a copy of your submitted assignment to the module coordinator, if you like. In the event an assignment was not correctly uploaded to the MMS for some reason, but an emailed copy was sent in time, that date of submission will be used, but a copy will still need to be submitted to the MMS thereafter. This module follows the official School of History penalties for late work:

<http://www.st-andrews.ac.uk/history/infoug/penalties%20for%20late%20work.html>

### **Word Limits**

Assessed work with word limits should be always submitted within those limits. Writing in a clear and concise manner, and being able to structure and execute an argument that may be shorter than you feel is required is a skill that is of great use in academic fields as well as the workplace beyond. Please do not go over the limit and force yourself to work within them as a practice that will be important for writing assignments in your future careers.

The official School of History penalties for short/long work are followed in this module:

<http://www.st-andrews.ac.uk/history/infoug/penalties%20for%20late%20work.html>

## **Academic Misconduct and Plagiarism**

Academic integrity is fundamental to the values promoted by the University. It is important that all students are judged on their ability, and that no student is allowed unfairly to take an advantage over others, to affect the security and integrity of the assessment process, or to diminish the reliability and quality of a St Andrews degree. Academic misconduct includes *inter alia* the presentation of material as one's own when it is not one's own; the presentation of material whose provenance is academically inappropriate; and academically inappropriate behaviour in an examination or class test. For more information:

<https://www.st-andrews.ac.uk/students/rules/academicpractice/>

If you are unsure about the correct presentation of academic material, you should approach your tutor. You can also contact CAPOD, which provides an extensive range of training on Academic Skills.

<http://www.st-andrews.ac.uk/capod/>

## **Advice and Support for Students**

For advice and support on any issue, including academic, financial, international, personal or health matters, or if you are unsure of who to go to for help, please contact the Advice and Support Centre, 79 North Street, 01334 462020, [theasc@st-and.ac.uk](mailto:theasc@st-and.ac.uk).

## **Semester Dates**

The Semester Dates are available at:

<https://www.st-andrews.ac.uk/semesterdates/>

## **Marking Scale**

We use a 20 point marking scale for your assignments. For more on interpreting the marking scale, see the School of History marking scale for taught Postgraduates:

<https://www.st-andrews.ac.uk/history/infopg/ipgassess.html>

## **Good Academic Practice**

<http://www.st-andrews.ac.uk/media/teaching-and-learning/policies/gap.pdf>

[http://www.st-andrews.ac.uk/media/teaching-and-learning/documents/September 2014 Updated GAP Guide for Students.pdf](http://www.st-andrews.ac.uk/media/teaching-and-learning/documents/September%202014%20Updated%20GAP%20Guide%20for%20Students.pdf)

## **Absence from Classes**

Attendance is a basic assessment requirement for credit award, and failure to attend classes or meetings with academic staff may result in your losing the right to be assessed in that module.

Please read the university policy on student absences:

<https://www.st-andrews.ac.uk/students/rules/selfcertification/>

## **Disability Support**

If you require support for disability reasons, for example teaching and exam arrangements, please contact the Disability Team in Student Services who can provide support for a wide range of disabilities such as learning difficulties, visual and hearing impairments, mobility difficulties, Asperger's, mental health, long standing medical condition and much more.

## Basic Readings

**SPATIAL** Gregory, Ian N., Don DeBats, and Don Lafreniere, eds. *The Routledge Companion to Spatial History*. Routledge 2018

**GREGORY** Gregory, Ian N., and Paul S. Ell, eds. *Historical GIS: Technologies, Methodologies, and Scholarship*. Cambridge Studies in Historical Geography, no. 39. Cambridge: Cambridge University Press, 2008. [Library ebook](#)

**LÜNEN** Lünen, Alexander von, Charles Travis, eds. *History and GIS: Epistemologies, Considerations and Reflections*. Dordrecht ; New York: Springer, 2013. [Library ebook](#)

**BODENHAMER** Bodenhamer, David J., John Corrigan, Trevor M. Harris, eds. *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. Bloomington: Indiana University Press, 2010. [Library ebook](#)

**GEDDES** Gregory, Ian N., and Alistair Geddes. *Toward Spatial Humanities: Historical GIS and Spatial History*. Indiana University Press, 2014. [Library ebook](#)

**KNOWLES** Knowles, Anne Kelly, and Amy Hillier. *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship*. ESRI, Inc., 2008.

**PAST** Knowles, Anne Kelly *Past Time, Past Place* ESRI Press, 2002.

**DEEP** Bodenhamer, David. John Corrigan, Trevor M. Harris *Deep Maps and Spatial Narratives* Indiana University Press, 2015

**RAU** Rau, Susanne, Ekkehard Schönherr, eds. *Mapping Spatial Relations, Their Perceptions and Dynamics: The City Today and in the Past. Lecture Notes in Geoinformation and Cartography*. Cham ; New York: Springer, 2014. [Library ebook](#)

**SCOTT** Scott, John *Social Network Analysis* 4th Edition (3rd will also suffice) London: Sage, 2017.

## Ebooks

Many of the texts are available with links within this sourcebook, accessible through the St Andrews e-resources or elsewhere online. If links are not working, please do let me know, but also, please first contact the library help desk if books become unavailable (this has happened in the past when a bulk library subscription to a collection of works has expired and not been renewed, inadvertently removing access) or you have problem accessing a link to a library book.

## Managing Your Time During the Semester

You should expect to spend 12-18 hours each week in preparation for this seminar. I strongly suggest you set aside regular time every week, across at least two days of the week especially allocated to this module, in order to balance out the time you dedicate to it throughout the semester. Readings for the module will rarely involve more than half the time and you should never consider your preparation done for the week when the readings are complete. When taking notes on readings, focus less on the particulars of specific historical projects we may read about and focused on the methodologies, weaknesses and strengths regarding them, and bigger connections that connect to other readings and themes we have been discussing.

After you finish the readings for the week, use the remaining time you have set aside for source *research, experimentation, play*, and data *exploration*. This should eventually, but not immediately, be directed towards the broader end of becoming more familiar with the technologies introduced in the module, and most of all, helping you towards the development of the projects for your two assessments. Bring your ideas, as they develop, into the module discussion and share them with your fellow students as well. I cannot stress enough that this time is important. You will quickly find that, even when you have a firm project idea in mind, the sources settled, and a goal in sight, the majority of time in project development will go towards cleaning or preparing data, tinkering with software, googling obscure errors, watching YouTube tutorials or diving into bulletin boards about specific features or tasks you wish to perform, and, alas, it is *very common* to discover that a project is ultimately not viable with the original approach or data, and a switch in direction is needed. *A critical ingredient for success is, therefore: to allow time for failure and new beginnings.*

This is a computer screen intensive module. Though this may seem like an obvious point, it is worth reminding you here that it is not healthy to sit and stare at a computer screen for long periods. I suggest you try working in [periods of 25 minutes](#) or so with the help of a timer, forcing yourself to get up and take a break regularly.



## Optional Pre-Semester Preparation

If you would like to get a head start on the module and get a flavor for the module, consider trying some of the following tasks. If you have challenges with software installation and such, then don't worry too much, we will try to address some of these issues during the semester.

1. Read the short book by Franco Moretti, *Atlas of the European Novel, 1800-1900* and the fun but very informative book by Mark Monmonier *How to Lie with Maps*
2. Attempt to install [QGIS](#) and [Cytoscape](#) on your laptop
3. Attempt some of the tutorials at [Mapping and GIS for Historians](#) - please note that these tutorials were developed for QGIS 2.x and some screenshots will not indicate the correct location of buttons, etc. in the 2018 Summer release of QGIS 3.x
4. Attempt to download and install [R](#) and the free [R Studio Desktop OpenSource License](#). If you would like to get started with the world of R, consider a book such as *Learning R* by Richard Cotton, or any of the many online tutorials. *Note:* All the skills using R we will encounter in this module can also be done in the even more popular programming language of Python. If you think you might someday want to learn more programming, I'm happy to guide students towards resources that will allow them to do any of the module tasks in Python instead of R.
5. Browse and experiment with instructional materials at [A Gentle Introduction to QGIS](#), [Cytoscape Tutorials Wiki](#), and if you have your access to St Andrews e-resources, try Chapter 1 of *Text Analysis with R for Students of Literature* ([library ebook](#))

## Resources to Explore

As you do work on your projects you will find plenty of inspiration surveying the explosion of scholarship over the last decade or two. The following are some journals, hosts of projects, link hubs, and aggregators:

[Digital Humanities Quarterly](#)

[International Journal of Humanities and Arts Computing](#) (formerly *History and Computing*)

[Digital Scholarship in the Humanities](#) (formerly *Literary and Linguistic Computing*)

[Language Resources and Evaluation](#) (formerly *Computers and the Humanities*)

[Historical Methods: A Journal of Quantitative and Interdisciplinary History](#)

[Journal of Cultural Analytics](#)

[Digital Literary Studies](#)

[Digital Studies / Le champ numérique](#)

[Digital Humanities Now](#)

[Spatial History Project at Stanford University](#)

[The Historical GIS Research Network](#)

[Historical GIS Lab Bibliography](#)

Other journals that also have some relevant publications:

[Social Science History](#)

[Historical Geography](#)

[Journal of Historical Geography](#)

[Social Science Computer Review](#)

[Transactions in GIS](#)

[Environment & Planning A/B/C/D/E](#)

[Environmental History](#)

[Annals of GIS](#)

## Striking Out on Your Own

During the semester, you may decide that you want to deepen your knowledge and skill set in one or more of the technologies that are introduced in the module. A great many of the humanities scholars who have adopted some of the digital methodologies, tools, and techniques that we will encounter in this module do not have much in the way of formal training in computer science or related fields. With the exception of some short training courses in GIS and one-off sessions at digital humanities workshops and [unconferences](#), I have no formal training in any of the skills in this module. Self-learning with online resources, videos, and books are a common way to expand your abilities in these fields.

[Programming Historian](#) - This is by far the best resource online for tutorials covering a wide variety of digital humanities related tasks that are useful for historical research.

[Mapping and GIS for Historians](#)

[GQIS Tutorials and Tips](#)

[ProfHacker](#)

[Digital Research Tools](#)

[TAPoR 3 Research Tools for Studying Texts](#) [GIS Lounge](#) [Introduction to Programming for Humanists](#) (Python)

[Digital Humanities Slack Channel](#) [The Spatial Community Slack Channel](#)

## Learning GIS

*Learning QGIS* Anita Graser

*QGIS Map Design* Anita Graser

*QGIS 2 Cookbook* Alex Mandel

*Historical GIS: Technologies, Methodologies, and Scholarship* Gregory, Ian N., and Paul S. Ell, eds.

*Introduction to GIS* Victor Olaya

*Geospatial Analysis: A Comprehensive Guide* Michael J de Smith

*An Introduction to Geographical Information Systems* Ian Heywood, Sarah Cornelius

*Thematic Cartography and Geovisualization* Terry A. Slocum, Robert B McMaster et al

*Spatial Data Analysis: An Introduction For GIS Users* Christopher Lloyd

*GIS: A Short Introduction* Nadine Schuurman

*An Introduction to R for Spatial Analysis and Mapping* Chris Brunsdon, Lex Comber

## Text Analysis

*Text Mining with R* Julie Silge, David Robinson

*Text Analysis with R for Students of Literature* Matthew L. Jockers

*Applied Text Analysis with Python* Benjamin Bengfort

*Natural Language Processing with Python* Steven Bird

*Humanities Data in R: Exploring Networks, Geospatial Data, Images, and Text* Taylor Arnold, Lauren Tilton

*Mastering Regular Expressions* Jeffrey E. F. Friedl

## Social Networks

*A User's Guide to Network Analysis in R* Douglas A. Luke

*Mastering Gephi Network Visualization* Ken Cherven

*Social Network Analysis* John Scott

*Social Network Analysis: Methods and Applications* Stanley Wasserman

## General Texts

*Basic Statistics for Social Research* Augustine Kposowa, Mark D. Riddle, and Robert Hanneman

*Learning R* Richard Cotton

*Learning Base R* Lawrence Mark Leemis

*R for Data Science* Hadley Wickham, Garret Grolemond

*Learning Python* Mark Lutz

## Week 0 - Orientation: History in Practice - Balancing Skills and Critique in the Digital Humanities

Our emphasis in this course is on a set of skills related to GIS and mapping, social networks, and tools for the analysis of texts which, to obtain even a moderate proficiency in, would each require several modules. These are skills that are often associated with a field that has come to be known as the *digital humanities*. This module should be seen as a kind of taster course that allows you to encounter a world of digital tools and methodologies that may be useful for working with large collections of sources. You may decide that most or all of these methods are not appropriate for your own research going forward, but some exposure to them will greater afford you the opportunity to understand them and, when appropriate engage or critique other historical scholarship that makes use of them.

We will have three primary goals in this semester:

1. In three broad parts, we will learn some of the basic principles and techniques of *historical GIS*, digital techniques for *text analysis and distant reading*, and some basic *visualisation of social networks*. In the two major assessments of the module you will have the opportunity to practice some of the techniques learned or, in the case of the final assessment, alternatively write a critical engagement with scholarship that makes use of these methodologies. This part of the module is arguably both the most fun and the most frustrating: you should prepare yourself for the sometimes considerable amount of time spent sorting out what can often be rather trivial technical obstacles along the way. One of the goals of this course is to introduce you to the problem solving mindset required to face these difficulties by effective use of online resources.
2. In the case of each set of technologies, we will read some historical scholarship that has made use of these approaches in order to better see how they are being employed in scholarship today. When reading these texts, it is not important for you to focus on the particulars of each historical case, but instead pay close attention to how the historian makes use digital methodologies in the support of their argument. We will try to highlight what added benefits there are in employing these methodologies, either alone, or in mixed method scholarship that integrates them with other historical approaches.
3. Finally, this module will, throughout, introduce you to some of the work of what has been called the *critical digital humanities*. We will examine some of the powerful critiques that have been made of GIS both among historians and within the world of geography, where it had its biggest impact on scholarship. We will similarly examine critical discourses on other digital methodologies and in our discussions of the essays applying them that we read. Ask yourself, how much does the argument depend on the technological approach? What assumptions are made in setting the stage for the scholarship, in preparing the data, and in using the technologies? What are the costs implied, and the benefits gained? To what degree does the choice of methodology influence the kinds of questions asked and outcomes obtained?

### Preparation

1. Examine two of the most famous maps cited in scholarship on mapping and GIS: Charles Joseph Minard's [map of Napoleon's Russian Campaign](#), and the famous [cholera map](#) of John Snow (you can read more about this here: [Map-making and Myth-making in Broad Street](#)). Why have they come to be regarded as excellent examples of maps that communicate an idea very clearly?

### Introductory Reading

Moretti, Franco. *Atlas of the European Novel, 1800-1900* Verso 1998, p1-73 (Ch 1: The Novel, the Nation-State)

[Literature Is not Data: Against Digital Humanities](#)

### Suggestions for Play and Exploration

- Browse the table of contents of some recent issues in the journals listed above in the *Resources to Explore* section and take note of titles you may want to revisit for inspiration for your future projects.
- If you haven't done so already, consider signing up for [Slack](#), and joining the Digital Humanities slack and Spatial Community slack channels, both good places to learn from others passively on the channels hosted or to ask questions.

## Week 1 - Introduction to Historical GIS and First Look at QGIS

This week will explore the field that has become known as Historical GIS, but more broadly the analysis of geographic data within the humanities in general, as well as some of its basic approaches and promise. Beginning this week, and continuing through week four, you will all be asked to give short presentations and prepare summary handouts on some examples of scholarship making use of GIS. We will set aside time this week to discuss the first project assessment, and some potential topics and sources that you may consider using for the assessment.

### Preparation

1. If you haven't already done so, please try to **download and attempt to install QGIS**. If you have problems, please make note of what issues appear and bring them in.

*General Tips Regarding Installation Problems:* Many of the multi platform open source applications out there these days make use of Java. Sometimes the version of Java pre-installed on your laptop (or, indeed, not installed or active) will be the key problem for getting the application to function smoothly. Installing or updating the appropriate Java version can often fix these issues. Also, if you find yourself presented with unusual error messages, searching google with a large part or all of the error message in quotation marks will often lead you to bulletin boards where people have faced similar issues and tried different steps to resolve the issue (though *please* evaluate recommended instructions on random bulletin boards with great care and ensure your machine is backed up before trying anything too elaborate!). The website [Stack Exchange](#) often has useful discussions that address software issue.

2. Using the Moodle, accessible via the module [MMS](#), **sign up to do two five minute non-assessed presentations** (not a minute more!) each on the "application" texts (one student per text) in the *Reading Selection* list below. These presentations will be given Week 1, Week 2, Week 3, or Week 4 (3 out of these 4 weeks). In addition, sign up for a third text which you will prepare a handout for, but not actually present on.

- **Make a handout about each of the three texts** (two of which you will also present on) which is on a single or double-sided page. Submit the digital file for the handout as a PDF to the module Moodle for everyone's access before the class day that you will present on (the third text can be submitted anytime before week 4), and bring a printed copy for each student and tutor. On the handout: At the top of the handout put a full citation of the text followed by a short paragraph summarizing the argument and main features of the text. In a series of bullet points provide a brief outline or elaboration of points you will raise in your short spoken presentation, but not a verbatim text of the presentation - use this opportunity to practice the art of using a handout to complement your presentation, rather than stealing your listeners' attention by replacing it completely.
- In the presentation **comment on the way that GIS or mapping was used** in the text. **Comment on what data was used for the project and what kind of effort might have been involved in preparing it for GIS.** Were there any innovative or useful ideas to draw from the text as **potential inspiration** for our projects? Was GIS used primarily for *heuristic* or *explorative* purposes, visualising sources or data in order to discover new questions and spot patterns to press the historical research forward? Was GIS employed using formal *analysis*, making use of quantitative methodologies, spatial statistics, or other algorithmic techniques (if so, list what specific ones were used in the handout) towards the end of making concrete spatial claims? Was GIS used primarily used for *illustrative* purposes, showing things referred to in the text, or showing in visual terms that which has been demonstrated by other means in the body of the text's argument? Note: many works do not fit well into any single category, but least make note whether there are any formal analytical GIS techniques at all used and what the added value of mapping or GIS is in the work.

### Required Readings

KNOWLES Ch 1 "GIS and History" 1-27

GREGORY Ch 1 "GIS and its role in historical research: an introduction" 1-19

GEDDES Fragment of Ch 4, only section "Environmental Management" 104-111

## Reading Selection for Presentations on Historical GIS Scholarship:

*For the coming weeks, choose two of the following chapters for the weeks of your presentations plus one for an additional handout. Please skim 3-5 other chapters of interest over the next few weeks for inspiration for your map project. See the preparation section above for presentation info.*

### GEDDES

- Ch 1 “Railways and Agriculture in France and Great Britain” 4-30 Schwartz and Thevenin
- Ch 2 “The Development, Persistence and Change of Racial Segregation in U.S. Urban Areas” 35-59 Andrew Beveridge
- Ch 3 “Troubled Geographies: A Historical GIS of Religion, Society, and Conflict in Ireland since the Great Famine” 62-83 Ian Gregory
- Ch 5 “The Politics of Territory in Song Dynasty China” 118-140 Ruth Mostern

### KNOWLES

- Ch 4 “Scaling the Dust Bowl” Geoff Cunfer
- Ch 6 “Mapping Husbandry in Concord: GIS as a Tool for Environmental History” Brian Donahue
- Ch 8 “New Windows on the Peutinger Map of the Roman World” Talbert and Elliot

### PAST

- Ch 2 “Teaching the Salem Witch Trials” Benjamin Ray
- Ch 3 “Similarity and Difference in the Antebellum North and South” Aaron C. Sheehan-Dean
- Ch 6 “Redlining in Philadelphia” Amy Hillier

### BODENHAMER

- Ch 7 “Mapping Text” May Yuan

### DEEP

- Ch 4 “Inscribing the Past: Depth as Narrative in Historical Spacetime” Ethington and Toyosawa
- Ch 7 “Spatializing and Analyzing Digital Texts: Corpora, GIS, and Places” Gregory, Cooper, Hardie, and Rayson
- Ch 8 “GIS as a Narrative Generation Platform” Yuan, McIntosh, and Delozier

### SPATIAL

- Ch 1 “Re-focus on Women in an Industrial Revolution...” Sherry Olsen
- Ch 4 “Railroads and Population Distribution...” Alvarez-Palau and Martí-Henneberg
- Ch 6 “Mapping the American Iron Industry” Anne Kelly Knowles
- Ch 9 “Geographies of Welfare in Nineteenth Century England and Wales” Douglas H L Brown
- Ch 13 “Kleindeutschland: the lower east side in new york city...1880s...” Kurt Schlichting
- Ch 15 “A City of the White Race Occupies its Place...” Lutz et al
- Ch 17 “The Post, The Railroad and the State” Gustavo Velasco
- Ch 19 “Food, Farms, and Fish in Great Britain and France, 1860-1914” Robert M. Schwartz
- Ch 20 “White Maps and Black Votes...” Don DeBats
- Ch 21 “The Spatial History of State Power” Ruth Mostern
- Ch 22 “Peasants and Politics - How GIS Offers new insights into the German Countryside” George Vascik
- Ch 23 “Mapping Inequality ‘Big Data’ meets social history in the story of redlining” Connolly et al
- Ch 25 “Urban Property in Nineteenth-Century Rio De Janeiro: Rent, neighborhoods, and networks” Zephyr Frank

### RAU

- Ch 3 “Peopling the Past: Interpreting Models for Pedestrian Movement in Ancient Civic-Ceremonial Centres” Morton et al
- Ch 5 “Lyons, the Spatial Analysis of a City in the 17th and 18th Centuries. Locating and Crossing Data in a GIS Built from Written Sources” Gauthiez and Zeller
- Ch 6 “Mapping Long-term Urban Space Structures: Barcelona as a Case Study” Bassols and Garriga

## Further Reading

Read more chapters in Moretti’s *Atlas of the European Novel*  
Read additional chapters in SPATIAL

## Suggestions for Play and Exploration

- [Stanford Spatial History - Gallery of Projects](#) - Visit this gallery of projects and examine a few of them for possible inspiration. Note that some of them merely have screenshots (many of them were once interactive with

the plug-in Flash, which is no longer supported by its developers) and reflect on the problem of technological obsolescence on the web.

- Think about historical works that have impressed you or which you think are important for your area of interest. Are there aspects or sources which are or might benefit from a more spatially explicit approach? Do the works make use of maps or spatial visualization in an effective way? Could they have? If so, how might it have been done? What sources in your area of interest might lend themselves well to *heuristic* or *analytical* or *illustrative* use of maps and GIS?
- If your chosen readings for presentations include work that use analytic GIS techniques or spatial statistics, look up the method that was used and read more about it. Find out if/how the method can be done within QGIS, evaluate the strengths or weaknesses of the method. What kinds of assumptions does it make or other problems may arise?
- Look up one or more of the source bases used in some of the reading selections for presentations. Are any of them available online and easily accessible? Are sources like it or of the same type or class available in your area of interest and easily accessible? How might you get a hold of them for use in your own research?
- Start thinking about your first assessment and come up with half a dozen possible ideas to explore. Start chasing down information for it, or putting in inter-library loan requests if required.
- If you don't have it yet, apply for a SCONUL card in the library to help you get access to other large research libraries in the area. Consider getting a reader card at the National Library of Scotland and read up on the procedure for the use of the library, which is in Edinburgh.
- Look to the weeks ahead and identify techniques or skills that you think you might be especially interested in. Jump ahead and start learning in that area.

## Week 2 - QGIS: Basics and Georeferencing Historical Maps

We will open today with a discussion of some basic GIS terminology, concepts, and the components which are required for using GIS software. We will also examine some of the range of tools, free and not free which can be used as desktop software, but also through a range of online tools for working with geographic data, creating rich maps with this data, and in more advanced software, carry out analysis on these geodata sets. We will discuss ways of finding and creating your own geodata, including some of the strategies for searching online for high quality datasets.

We will set aside class time to further talk about the first assessment, the expectations and share thoughts on what you wish to do in this regard.

### Preparation

1. Please come to class with your laptop, having installed QGIS: [QGIS Download and Installation](#). In class we will together work through a few of the tutorials at [Mapping and GIS for Historians](#)
2. We will have some presentations today, see last week for more on how to prepare.
3. Some of the readings today point to the controversies over the use of GIS that created considerable tension within the field of Geography and has similarly sparked debates among historians. As these will emerge multiple times, consider noting down some of the main issues and different perspectives along with some of the major participants in these debates mentioned.
4. There are a number of technical concepts that arise this week. In fact, some of them show up in two or three of the readings so if you understood it clearly the first time, you can skim or merely review the understanding of the concept in the other readings. If they are not clear from the readings, consider looking into them a bit more:
  - Data models
  - Vector and raster data
  - MAUP modifiable areal unit problem
  - Ecological Fallacy
  - Spatial autocorrelation
  - Generalization (in the context of GIS)
  - Least cost path analysis
  - Epistemology and Ontology (in the context of GIS)

### Required Reading

Victor Olaya *Introduction to GIS* 2018 (Very affordable copy available for order online, or [various free formats here](#)) 1-36, 87-98

Nadine Schuurman *GIS: A Short Introduction* Ch 2 “GIS, Human Geography, and the Intellectual Territory Between Them” 21-52

DEEP Ch 3 “Genealogies of Emplacement” 54-71

BODENHAMER Ch 3 “Geographic Information Science and Spatial Analysis for the Humanities” 31-73

KNOWLES Ch 5 “‘A Map is Just a Bad Graph’: Why Spatial Statistics are Important in Historical GIS” 123-150

### Further Reading

GREGORY Ch 4, 5, 6, 8

Monmonier, Mark. *How to Lie with Maps*. 3rd Edition. University of Chicago Press, 2018.

Schuurman *GIS: A Short Introduction* Ch 3 “The Devil is in the Data”, Ch 4 “Bringing it All Together”

John Pickles ed. *Ground Truth: The Social Implications of Geographic Information Systems* 1995 esp. Preface, Ch 1, 3, 7

Hill, Linda L. *Georeferencing: The Geographic Associations of Information*. Digital Libraries and Electronic Publishing. Cambridge, Mass: MIT Press, 2006, Ch 5 Gazetteers and Gazetteer Services [Library ebook](#)

## Reference Reading

The following may be useful to you in getting acquainted with QGIS. See also the *Striking Out on Your Own* section above in this handbook:

Graser, Anita. *Learning QGIS 2.0*. Packt Publishing Ltd, 2013. (Not in library) - Note: QGIS is now at 3.x so some instructions may be slightly off when it comes to some features.

[QGIS Training Manual](#) [QGIS Tutorials and Tips](#)



## Week 3 - QGIS: Techniques for Exploration and Analysis of Spatial Data

Our goal in this second hands-on QGIS session is to discuss the art and challenges of georectification. This is the process of assigning coordinates in physical space to, in our case, locations on a historical map. We will learn how to carry this out to prepare a map in GIS software such as QGIS so that we may add layers that extract locations or objects on that map, both at large scales and small ones.

[Mapping and GIS for Historians](#) - Please continue doing tutorials on our tutorial website, at least through tutorial 6

### Reading

in

### Further Reading

Hill, *Georeferencing*, Ch 5 [Library ebook](#)

## ERASE - QGIS - Map Design, Post-processing, and Deployment

This week is closer to cartography and moves beyond GIS software. We will discuss some of the principles of creating maps that are visually effective, maps that tell stories, and some basic elements and techniques. We will discuss the world of map editing beyond GIS software, using vector based software, whether the open-source application Inkscape, or commercial software such as Adobe Illustrator. We will discuss the relative benefits of working within QGIS and then editing or deploying your maps after some editing in another graphics application, or, when simple maps are all that are needed, working directly with a graphics application, or an online tool.

A portion of class time will be set aside to talk to show each other what progress you have made in your own QGIS project, what map layers you have created or combined, what maps you have georeferenced, and you will have a chance to receive feedback.

### Preparation

Please continue and complete the tutorials at [Mapping and GIS for Historians](#)

Please attempt to install [Inkscape](#) on your laptop. Don't worry if this is unsuccessful but it will be nice if at least some students attend class with a functioning version.

Have a look at the Wikipedia entry for [SVG](#)

Take a look at this example of a highly detailed SVG map:

[Holy Roman Empire in 1648](#)

If you successfully installed Inkscape or have a copy of another SVG compatible graphics application, download and open the map in the application.

### Reading

CORRIGAN Ch 4 "Inscribing the Past" Ch 7 "Spatializing and Analyzing Digital Texts"

### Reference Reading

Slocum, Terry A., Robert B. McMaster, Fritz C. Kessler, and Hugh H. Howard. *Thematic Cartography and Geovisualization*. 3 edition. Pearson, 2013.

Tufte, Edward R. *The Visual Display of Quantitative Information*. Graphics Press, 2001.

## Week 4 - Thinking With/Against Maps and Spatial Analysis

For several weeks now we have been learning some very basic skills in QGIS and mapping. The promise of using GIS software for mapping, and the more advanced geographical analysis that becomes possible with it should be apparent. However, this week we will shift to think more critically about some of the epistemological challenges that it presents and what limitations there are for historical GIS and geographic analysis of a quantitative kind when applied to spatial history.

We will set aside time towards the end of this seminar to talk about the second assessment for this module. We will discuss ways to build on existing work done on the QGIS project and essay or ways to shift to another project for the Database/Visualization assessment that may be useful in your dissertation research, for example.

“Elements of Historical Knowledge About Urban Spaces: Reflections on the Requirements for a Dynamic Map” in Rau, Susanne, Ekkehard Schönherr, eds. *Mapping Spatial Relations, Their Perceptions and Dynamics: The City Today and in the Past. Lecture Notes in Geoinformation and Cartography*. Cham ; New York: Springer, 2014. [Library ebook](#)

LÜNEN Charles Travis “GIS and History: Epistemologies, Reflections, and Considerations” 173-194

Joanna Drucker “[GIS Analysis and Critical Issues](#)” \* Please attempt the exercises Drucker offers here.

Joanna Drucker “[Humanities Approaches to Graphical Display](#)”

### Further Reading

Jobst, Markus, eds. *Preservation in Digital Cartography: Archiving Aspects*. Berlin ; London: Springer, 2010. [Library ebook](#)

## **Week 5 - Text Analysis: Using the Command Line, Regular Expressions, and OCR with Tesseract**

This week will have two focuses. The first is to talk about some of the technological challenges of moving from textual narrative or other kinds of material embedded in historical sources, to digital data that can be manipulated, analysed and visualised. Already in week 5 and again in week 12, we will return to the critical questions of what is lost, transformed, newly created in this process, but the main goal is to look at some of the tools for cleaning data. Among these will be an introduction to Regular Expressions and a brief introduction to tools such as OpenRefine and Orange.

The second part of the class will introduce (but not delve into too much depth) into the broad world of text analysis and text mining in the form of a variety of fields such as corpus analysis, text encoding and markup, topic modeling, and making use of data extracted from text for maps and network visualisations.

### **Preparation**

Review the tutorials available at programming historian and identify 1-3 of these that may be relevant to your own goals for the preparation and analysis of data. We will discuss them in class:

<https://programminghistorian.org/lessons/>

Please use this week to really make a jump on your second project, thinking about the topic, and more importantly, what kinds of sources might be used for our second exercise.

### **Reference Reading**

Jeffrey E. F. Friedl *Mastering Regular Expressions* 2nd Edition O'Reilly

## **Week 6 - Independent Learning Week**

Use this week to finish your Map Project and catch up on any reading you may have fallen behind on. Start thinking about how to transition into the database project and read over the requirements for the Database and Visualisation Project.

## **Week 7 - Text Analysis: Introduction to R; Frequencies and Correlation**

## **Week 8 - Text Analysis: Topic Modelling and Sentiment Analysis; Introduction to Alternative Tools**

## Week 9 - Networks: Introduction to Social Network Analysis and Cytoscape

This week begins with a more historical approach. The study of large groups of individuals, or individual objects, along with the network of relationships between them is very old in the practice of history. It was traditionally the field known as “prosopography” which we will examine more closely today, and analyse some of the decisions made in the course of developing the large databases behind some of these projects.

We will set aside class time to see what progress you have made towards a topic for the second assessment and what kinds of data you have begun to assemble for the database and visualizations.

### Preparation

Please visit and look over the following websites:

[Prosopography Research](#)

[Domesday - Prosopography of Anglo-Saxon England.](#)

[Prosopography of the Byzantine World](#)

[China Biographical Database Project](#)

### Reading

Erickson, Bonnie H. “Social Networks and History: A Review Essay.” *Historical Methods: A Journal of Quantitative and Interdisciplinary History* 30, no. 3 (January 1, 1997): 149–57. doi:10.1080/01615449709601182.

### Reference

[Historical Network Research - Bibliography](#)

## ERASE - Developing a Network Database

This week we’ll discuss some of the background of what needs to be thought about prior to the creation of a database and some of the challenges at the outset. The basics of what a relational database is, and how it has come to dominate, until very recently, almost everything you interact with online. This week we will also have a closer look at some existing databases, how they are structured, and what happens when you interact with them. We will also discuss how prosopographical efforts and biographical or event databases are now a key part of linking to heuristic map making and GIS analysis.

Peter Bol “[GIS, Prosopography, and History](#)”

Lemercier, Claire. “[Formal Network Methods in History: Why and How?](#),” December 7, 2011.

Harvey, Charles, and Jon Press. *Databases in Historical Research: Theory, Methods and Applications*. Macmillan, 1996, selections.

This week we will begin developing our own database, primarily with the software known as LibreOffice Base, and open source alternative to the desktop database software Microsoft Access. We will first construct a database using some example data, but then approach it with some of our own data. In addition, we will review your results from carrying out the below tutorial, using another approach to database creation and visualization from the Programming Historian.

Attempt this tutorial at the Programming Historian:

[From Hermeneutics to Data to Networks: Data Extraction and Network Visualization of Historical Sources](#)

### Reference

[LibreOffice Base Manual](#)

[TheFrugalComputerGuy Tutorials for LibreOffice Base](#)

### Further Reading

## **Week 10 - Networks: Using R to Explore Network Data and Introduction to Alternative Tools**

Moretti, Franco. *Graphs, Maps, Trees: Abstract Models for Literary History*. Verso, 2007.

## Week 11 - Mapping Texts and Networks; Mediums for Sharing Your Work

This week we will talk about the kinds of tools available for visualizing networks, small and large. We will take a closer look at the open source software called Gephi and, using some sample data, will discuss what benefits rich network visualizations with the software might offer. Some of our readings for this week continue the broader background in the scholarship on Social Network Analysis

### Reading

Tom Elliot and Sean Gillies “[Digital Geography and the Classics](#)” *Digital Humanities Quarterly*

Moretti, Franco. *Graphs, Maps, Trees: Abstract Models for Literary History*. Verso, 2007, p34-64 (Ch 3: Maps) [Library ebook](#)

“[Demystifying Networks](#)”

Wetherell, Charles. “Historical Social Network Analysis.” *International Review of Social History* 43, no. Supplement S6 (December 1998): 125–44. doi:10.1017/S0020859000115123.

Cherven, Ken. *Mastering Gephi Network Visualization*. Packt Publishing Ltd, 2015, selections (not in library)

Wasserman, Stanley, and Katherine Faust. *Social Network Analysis: Methods and Applications*. Cambridge ; New York: Cambridge University Press, 1994, selections

### Reference Reading

Hanneman, Robert A., Augustine J. Kposowa, and Mark D. Riddle. *Basic Statistics for Social Research*. 1 edition. San Francisco, CA: John Wiley & Sons, 2012.

Robert A. Hanneman and Mark Riddle [Introduction to social network methods](#) Online textbook

### Examples of Research on Networks

Lindner, Ulrike. “Transnational Movements between Colonial Empires: Migrant Workers from the British Cape Colony in the German Diamond Town of Lüderitzbucht.” *European Review of History: Revue Européenne D’histoire* 16, no. 5 (2009): 679–95.

David S. Lux and Harold J. Cook, ‘Closed Circles or Open Networks? Communicating at a distance during the scientific revolution’, *History of Science* 36 (1998): 179-211.

James Secord, ‘Knowledge in Transit’, *Isis* 95 (2004): 654-672

Rodogno, Davide, Bernhard Struck, and Jakob Vogel, eds. *Shaping the Transnational Sphere: Experts, Networks and Issues from the 1840s to the 1930s*. New York: Berghahn Books, 2014. (Introduction)

Jasanoff, Maya. *Liberty’s Exiles: How the Loss of America Made the British Empire*. London: HarperPress, 2011.

John Law, ‘On the methods of long-distance control: vessels, navigation and the Portuguese route to India’, in John Law (ed.), *Power, Action and Belief. A New Sociology of Knowledge?* (London, 1986), pp. 234-263. Not in library, but available to download [here](#)

David Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge* (Chicago, 2003), Chapter 1 ‘A Geography of Science?’ and Chapter 4 ‘Circulation: Movements of Science’.

Bruno Latour, ‘The Powers of Association’, in John Law (ed.), *Power, Action and Belief. A New Sociology of Knowledge?* (London, 1986), pp. 264-280.

Pierre-Yves Saunier, ‘Circulations, connexions et espaces transnationaux’, *Genèses* 57 (2004), 110-126

### On Social Network Analysis Methodology

Scott, John, and Peter J Carrington. *Social Network Analysis a Handbook Of Network Analysis*. London; Thousand Oaks, Calif.; New Delhi: SAGE, 2011.

The following chapters in the handbook are more useful for humanities scholarship:

Ch 2 Social Network Analysis: An Introduction pp11-25

Ch 4 Network Theory pp40-54

Ch 8 Personal Communities: The World According to Me pp101-115

Ch 13 Corporate Elites and Intercorporate Networks pp180-195



Ch 19 Scientific and Scholarly Networks pp271-285  
Ch 23 A Brief Introduction to Analyzing Social Network Data pp331-339  
Ch 27 Qualitative Approaches pp404-416  
Ch 28 Analyzing Affiliation Networks pp417-433

## **ERASE - Epistemologies of Quantification and the Critical Digital Humanities**

This week we will again step back and reflect on some of the risks and theoretical problems with heavily quantitative approaches. We will discuss some of the literature on this in the “critical digital humanities” and then ask ourselves how our own projects for this module faced these issues.

### **Reading**

Schmidt, Benjamin M. “[Theory First.](#)” *Journal of Digital Humanities*, March 9, 2012.

Gibbs, Fred. “[Critical Discourse in Digital Humanities.](#)” *Journal of Digital Humanities*, March 9, 2012.

Joanna Drucker, “Humanistic Theory and Digital Scholarship” in Gold, Matthew K., eds. *Debates in the Digital Humanities*. Minneapolis: University of Minnesota Press, 2012. [Library ebook](#)

Folsom, Ed. “Database as Genre: The Epic Transformation of the Archives” *PMLA* Vol. 122 No 5 Oct 2007, 1571-1579.

Lev Manovich [Database as a Symbolic Form](#)

Burdick, Anne, Johanna Drucker, Peter Lunenfeld, Todd Presner, and Jeffrey Schnapp. *Digital\_Humanities*. The MIT Press, 2012, selections.