Network analysis is a method for modeling the connections among structured data. The program we will use, Gephi, can visualize connections among various types of data. The datasets provided by the instructor will show you the connectedness among U.S. Airports, as well as among bibliographic data from modernist magazines that was curated by students. The idea is that you might see connections you had not predicted—say, which airports have the most connections, or that connect to odd places, or among authors, between magazines and certain authors, or between authors and certain themes. We will want to discuss network analysis as a tool for doing literary history, and also to start thinking creatively about how information systems might be used to ask and answer humanistic questions.

**Step 1: Import the Data Into Gephi**

1. Download the US Air97 and Modernist Magazines Master datasets onto your computer ([http://introdh.wordpress.com/downloads](http://introdh.wordpress.com/downloads)). Be sure to place them where you'll remember to find them (i.e. on the Desktop or in a subfolder of Documents).
2. Start Gephi and go to File > Open...
3. Browse to the files and open the one named us-air97.net.zip (select Archive Files from the file type menu).
4. A dialogue window will ask if you want certain parameters, so make sure Graph Type is set to Directed, and that Auto-scale, Create missing nodes, and Add full graph are all checked. These options should already be set as the default.
5. Once the dialogue appears as in this picture, click OK.
Step 2: Manipulating the Graph and Adding Labels

1. Once the data are imported, you'll see a square-ish rat's nest of black dots and lines, some of which are darker than others. Mouse over them to see how their immediate neighbors become highlighted within the graph. These dots represent different nodes within the data (such as author names and magazine titles), and show you the connecting links to other data.
2. You'll notice that Gephi doesn't immediately tell you what these dots are, so we need to make their labels visible. Click on the little rectangular arrow at the bottom right of the Graph area to open some options.
3. Once the options pane opens across the bottom, click on the Labels tab and then on the checkbox next to Node.
4. After a moment, the Graph area will fill with large text, which you should make smaller by clicking on the Font button (under the Node checkbox) and selecting a smaller font size like 8pt.
5. Now that the text is smaller, try zooming in to get a closer look, or pulling nodes around, and get a sense of what's in the network model.
6. To try a different layout, go to the Layout panel in the left sidebar, select one of the options (such as Yifan Hu) and then click on the Run button.

Step 3: Adding Interpretive Features with Node Size and Color

Gephi can change the visual aspects of its nodes and edges to represent the levels of connectedness among the nodes. For example, the nodes that have more connections, such as the theme Unknown or the magazine BLAST, will appear larger or in different colors to provide a more immediate conception of where the dominant nodes in the network lie. These features are based on statistical properties that Gephi will compute.

1. In the right sidebar, click on the Statistics tab. If it is not there, add it by clicking on the Window menu at the top of the screen and then selecting Statistics.
2. Next to Average degree, click on the Run button. You will see some output about the degree densities of the graph.
3. Now, in the left sidebar, click on the Ranking tab, and then on the Nodes sub-tab.
4. To the right of the Nodes subtab, the Color palette should already be selected.
5. Select Degree from the dropdown menu and then click on the Apply button. The nodes should now appear on a scale from red to black (or whatever colors were pre-selected on your version of Gephi).
6. Click on the Weight button (looks like a red diamond) to the right of the color palette.
7. Select Degree again, leave the default size parameters in place, and click on the Apply button.
8. Some of the nodes should now appear larger.
Step 4: Creating Ego Networks

The large-scale graph can be very interesting. However, we might wish to drill down and look at smaller networks in order to enhance our thinking about a particular author, magazine, or theme. Filtering for an ego network (a network centered on a single node) is one way to do this.

1. In the right sidebar, click on the Filters tab.
2. Expand the Topology folder.
3. Drag Ego Network down to the Queries area and then click on it.
4. In the Node ID field at the bottom, type in a term from our spreadsheet that you wish to examine, such as BLAST.
5. Click on OK and then on Filter to start the Ego Network.
6. You will then see a smaller network for those nodes most immediately connected to BLAST.
7. You can then adjust the number of degrees out from BLAST shown in the network by selecting 1, 2, 3, or Max from the Depth menu under the Node ID field.