

Displaying Network Graphs in Gephi (ver 0.9.2)

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What is Gephi?

According to the project website, Gephi is an interactive visualization and exploration platform for all kinds of networks and complex systems, dynamic and hierarchical graphs (<https://gephi.org/>). The latest version is 0.9.2 published in September 2017.

The Open Graph Viz Platform

Gephi is the leading visualization and exploration software for all kinds of graphs and networks. Gephi is open-source and free.

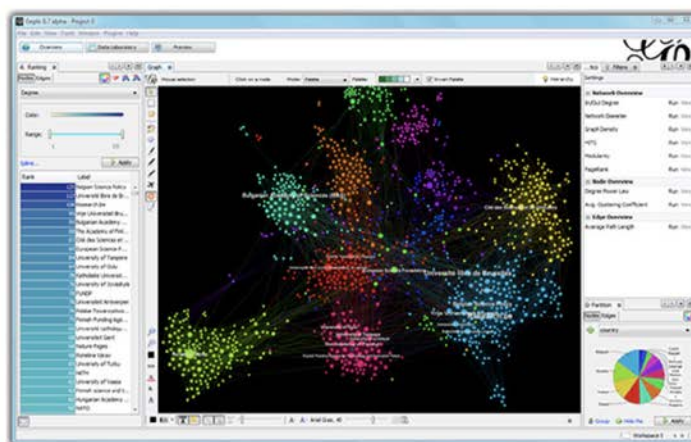
Runs on Windows, Mac OS X and Linux.

[Learn More on Gephi Platform »](#)

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Gephi 0.9.2

[Release Notes](#) | [System Requirements](#)

► **Features** ► **Screenshots**
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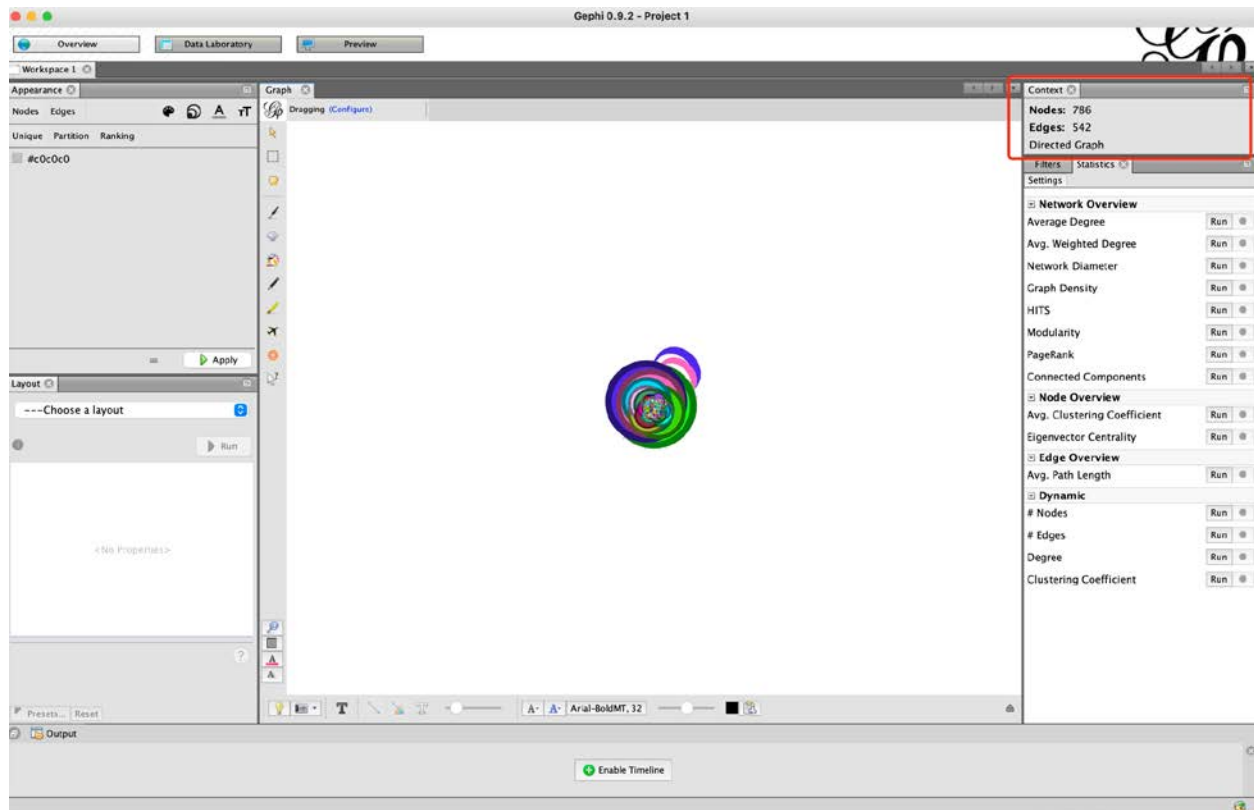


General tutorial

<https://www.youtube.com/watch?v=WpFZmIJTjA8>

Unreadable or “crowded” graphs: How can you make things better?

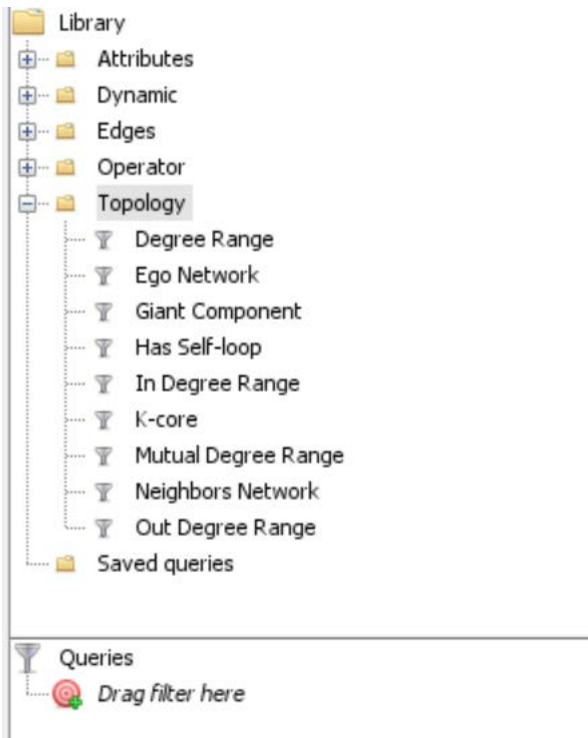
Graphs can appear “unreadable” and “crowded” when first displayed in Gephi, with overlapping edges and node labels. The top right corner “Context” (labeled in red) can tell the number of nodes and edges of your graph. A large corpus takes time to process.



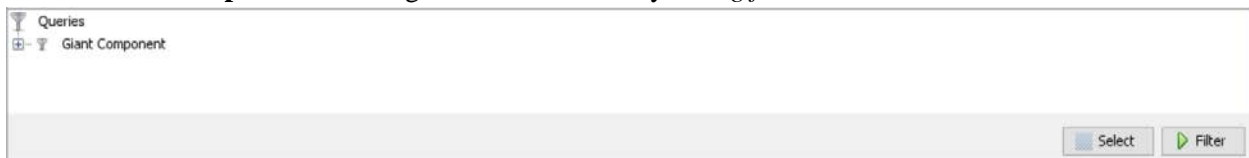
Example from the New York Times Book Review Corpus (Spring 2021 Project)

Filtering huge networks

For huge networks with thousands of nodes you may consider filtering the network. Under **Filters** click on the **Typology** tab.



Select **Giant Component** and drag it down where it says *Drag filter here*. Click on filter.

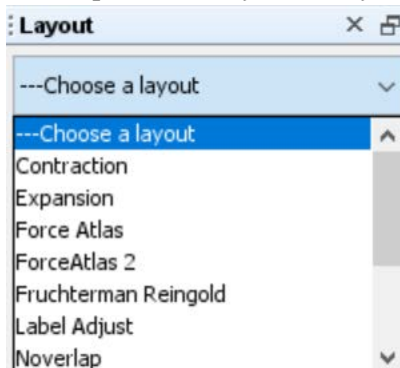


This will reduce the network size considerably.



If you want to further reduce the network size, click on the arrow next to Giant Components and drag there the **Degree Range** tab from above where it says *Drag subfilter here*.

At this point, run any of the layout options (e.g., Fruchterman-Reingold)



For a very good tutorial on the use of filters, watch this video.

https://www.youtube.com/watch?v=UrrWA_t1rjc

You have two approaches to expand the graph: manual and automatic (highly recommended for large corpus).

Manual option

Scroll to zoom: Center the graph

You can start by placing the pointer to the center of the graph and scroll to zoom in and out until the graph has expanded to a size you like. But this way can be very time-consuming, and the graph is not very visually appealing.

Hover over: Highlight selected nodes

When you point to/hover over a specific node, that node with some edges will be highlighted and others would be transparent. Then, drag the node around the screen in a preferred position and repeat this operation for all nodes you wish to disentangle.

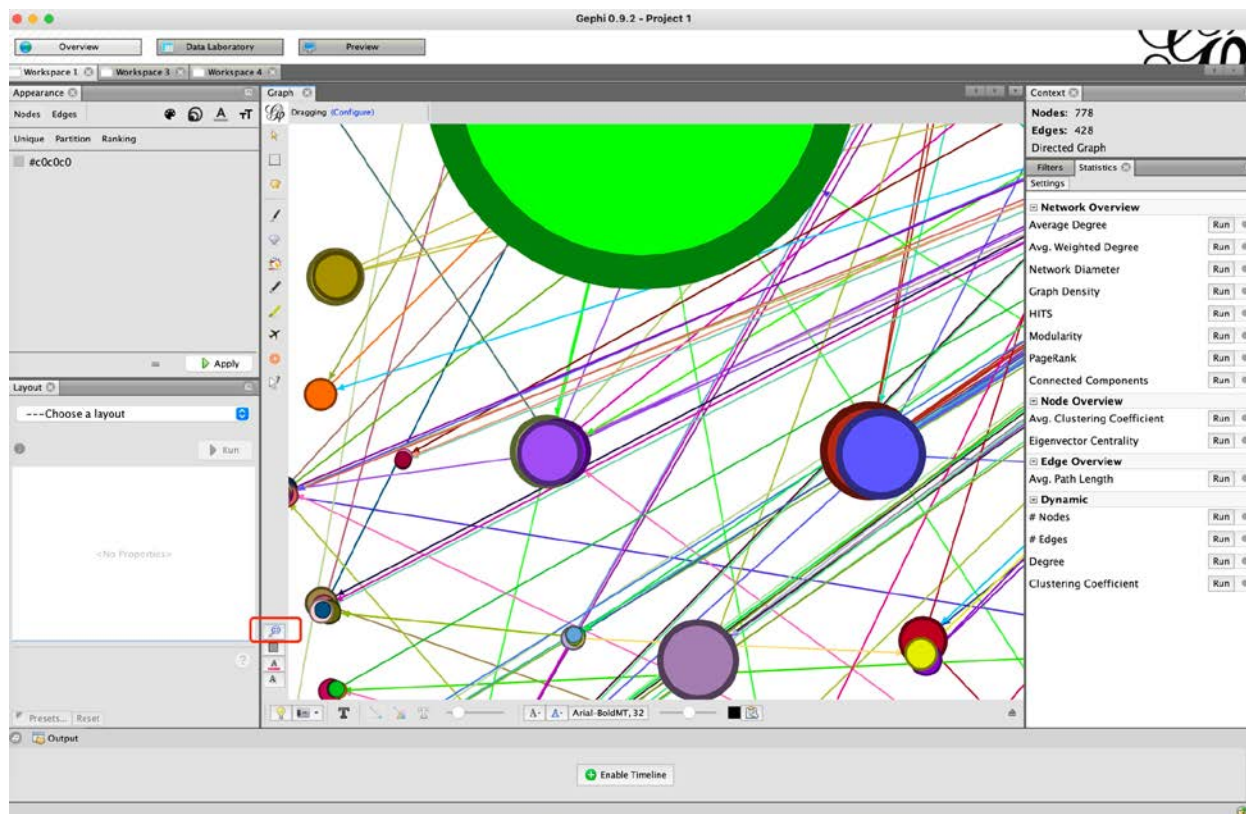
Right-click: Move the graph

You can also right-click on the nodes to do some operations including deletion and copy.

Automatic option

Re-Center the graph button

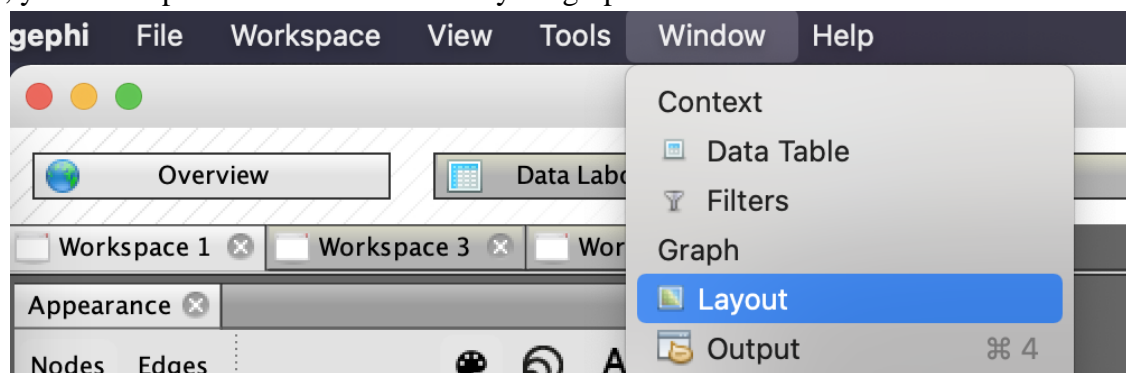
There is no undo button in Gephi. Sometimes you may expand the graph beyond the display area like this without knowing how to retrieve it. But you can adjust the graph by clicking on the recenter button (labeled in red) to bring the graph back to the center of the display area.



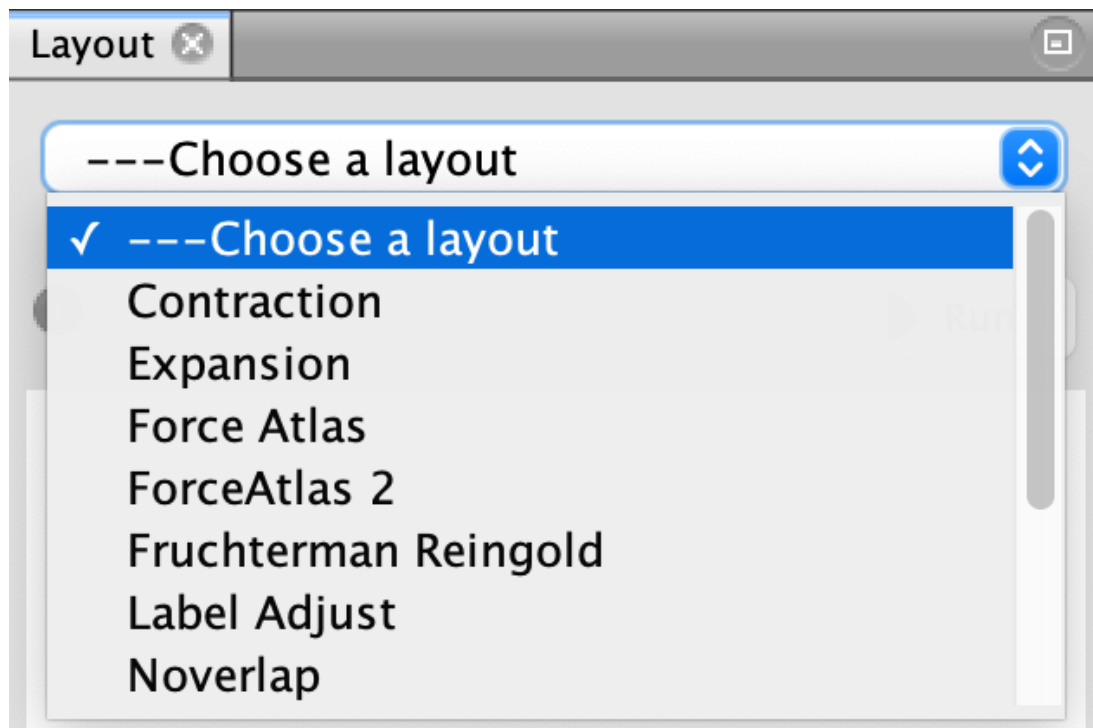
Example from the New York Times Book Review Corpus (Spring 2021 Project)

The layout button (the most useful feature!)

The layout button allows you to change the layout of a graph. In some computers, the layout feature would not be shown by default when you first open the Gephi, so you need to click on the button on the top of the computer to have it on your interface: Window - Graph - Layout. In this way, you can improve the visualization of your graph.



There are many options in the Layout. You can select one of the following options: Force Atlas, Force Atlas 2, or Fruchterman Reingold. Then click the “Run” button. **Warning!** The automatic resizing process can go on forever! Once you are satisfied with the expansion of the graph, you need to click on the “Stop” button.



Example 1: Force Atlas

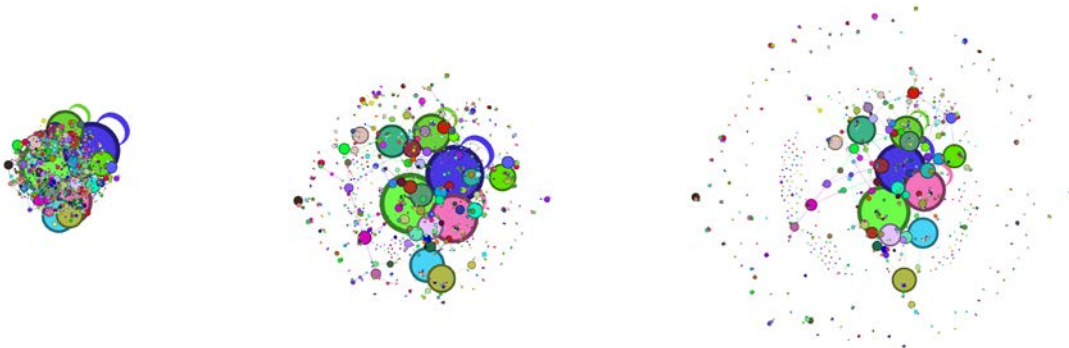
You can use the default settings provided and click the “Run” button. You also can adjust the options to improve your graph.

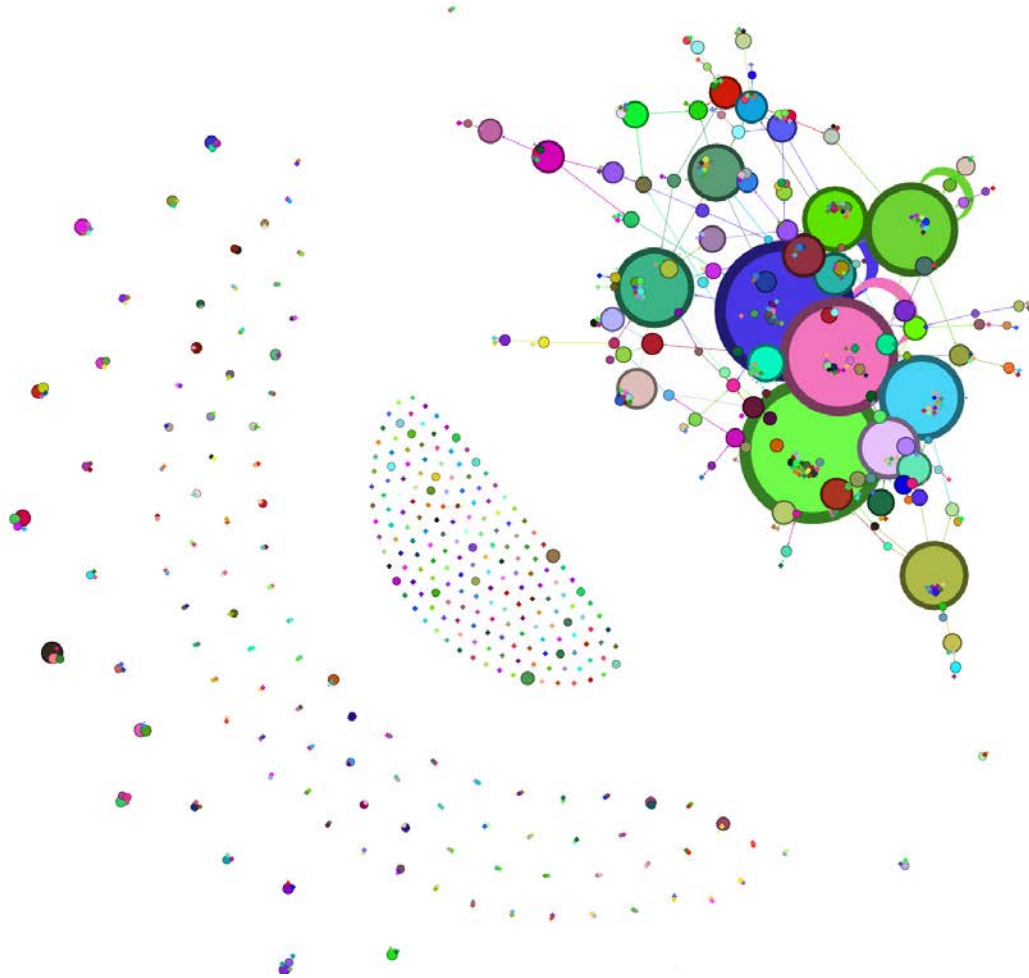
Repulsion strength: The larger the value, the more spread out will be the nodes. Trial and error!

Attraction distrib.: Particularly useful for larger graphs.

Adjust by sizes: Particularly useful for larger graphs.

Speed: Larger graphs will be redrawn more rapidly but... with lower precision.

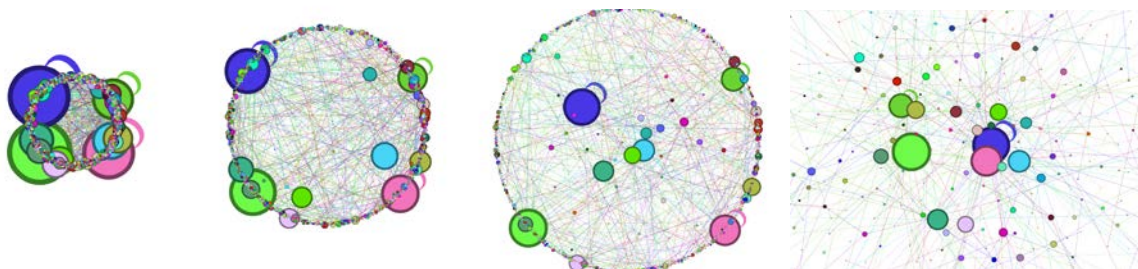


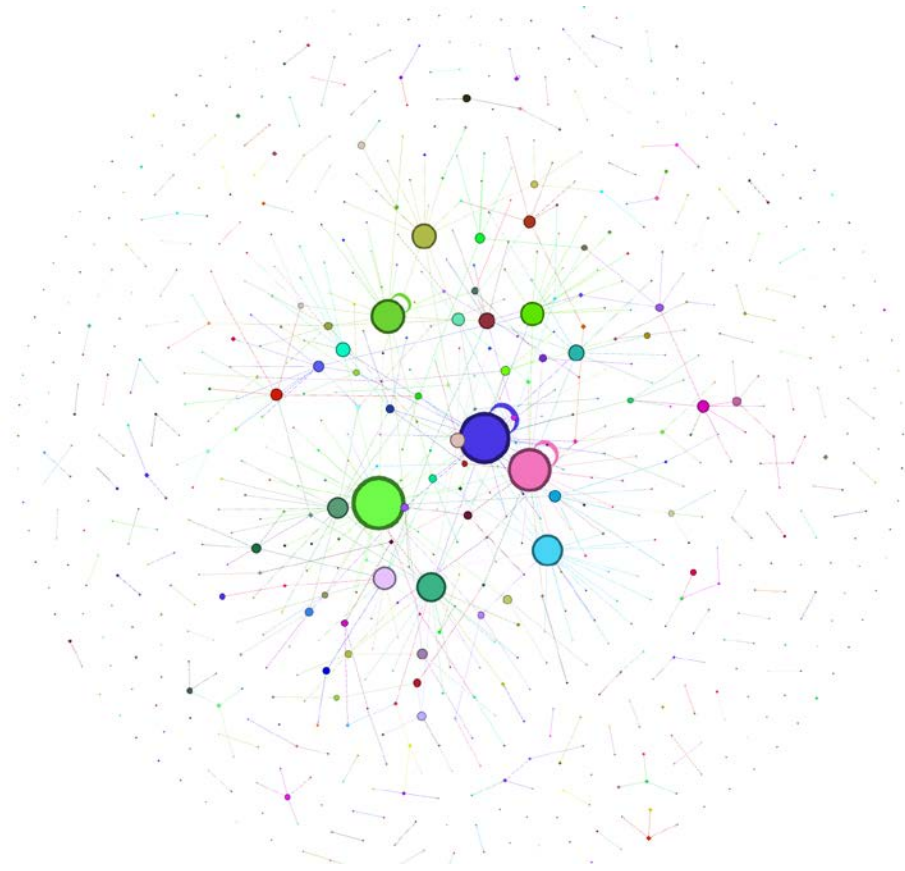


The final look of the Force Atlas layout
 Example from the New York Times Book Review Corpus (Spring 2021 Project)

Example 2: Fruchterman Reingold

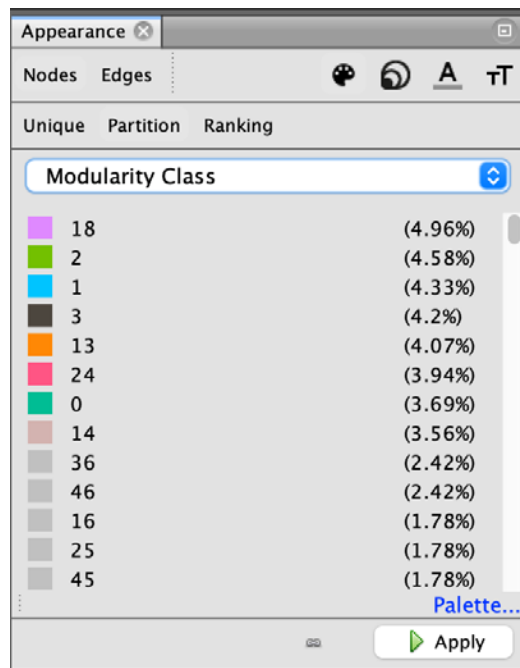
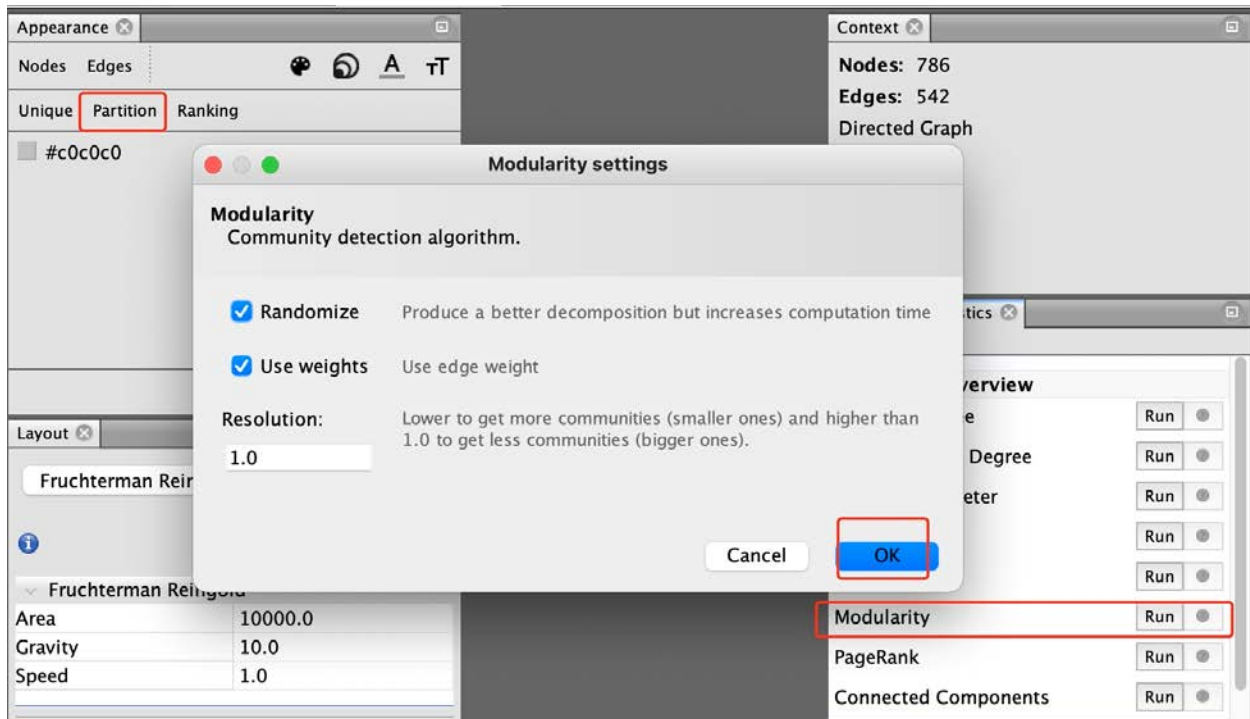
The process of visualization is as follows.



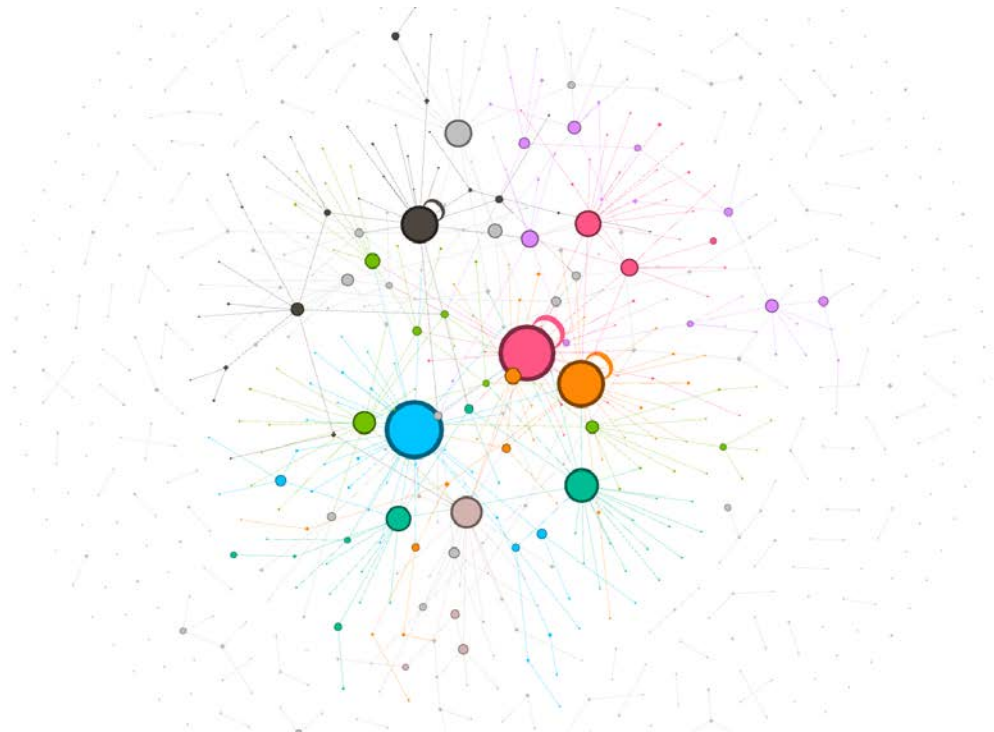


The final look of the Fruchterman Reingold layout
 Example from the New York Times Book Review Corpus (Spring 2021 Project)

After finishing the Fruchterman Reingold layout, you can further look into the “Modularity” feature in the “Statistics - Settings - Network Overviews” on the right-hand side. Click the “Run” button. A modularity report window would show out, but we can close the report window. Now we can turn to look at the left-hand side “Appearance” section. Click on “Nodes - Partition - choose Modularity Class as an attribute”. Then click the “Apply” button.

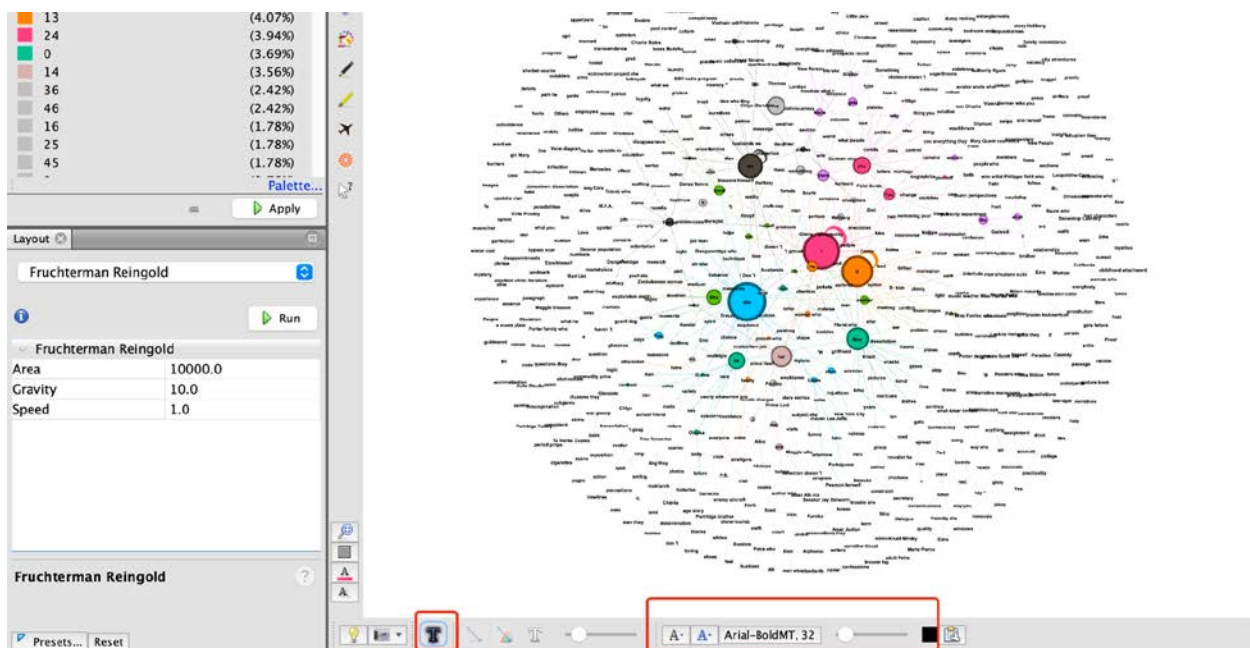


In this way, the graph would be redrawn with different colors for similarly grouped nodes.

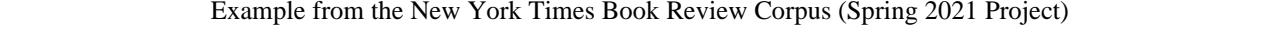


Example from the New York Times Book Review Corpus (Spring 2021 Project)

Clicked on the **T** button (labeled in red) to display the text of each node. You can also adjust the font, size, and color of the text. Now the graph becomes more informative.



Then zoom in the graph as you like, and hover over the nodes to get more specific information about the SVO.



Nodes

d. To vary the colors, with different colors for different nodes, click on the icon labeled in [blue](#).

Lines/edges

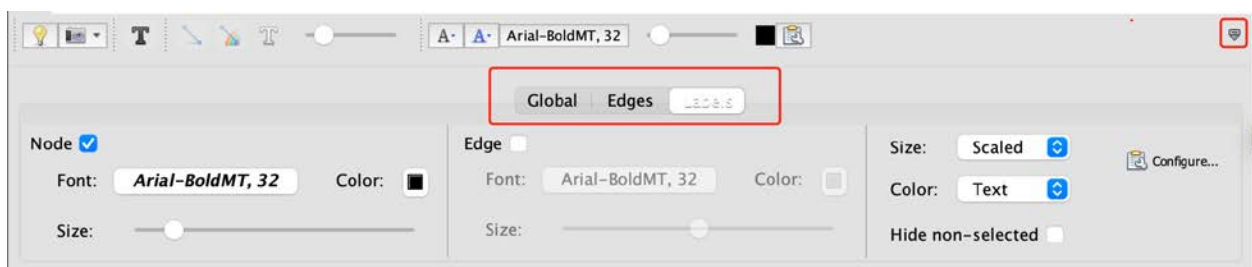
e. To vary the thickness of the line (edge), slide the bar (labeled in [red](#)) to the left or right.

f. To vary the colors click on the icons labeled in [blue](#).

g. You can even set a specific edge to a specific color to draw attention to that relation. Just click on the lower of the two icons labeled in blue, choose a color, and hold down the left mouse. Click on the two nodes whose relation you want to highlight.

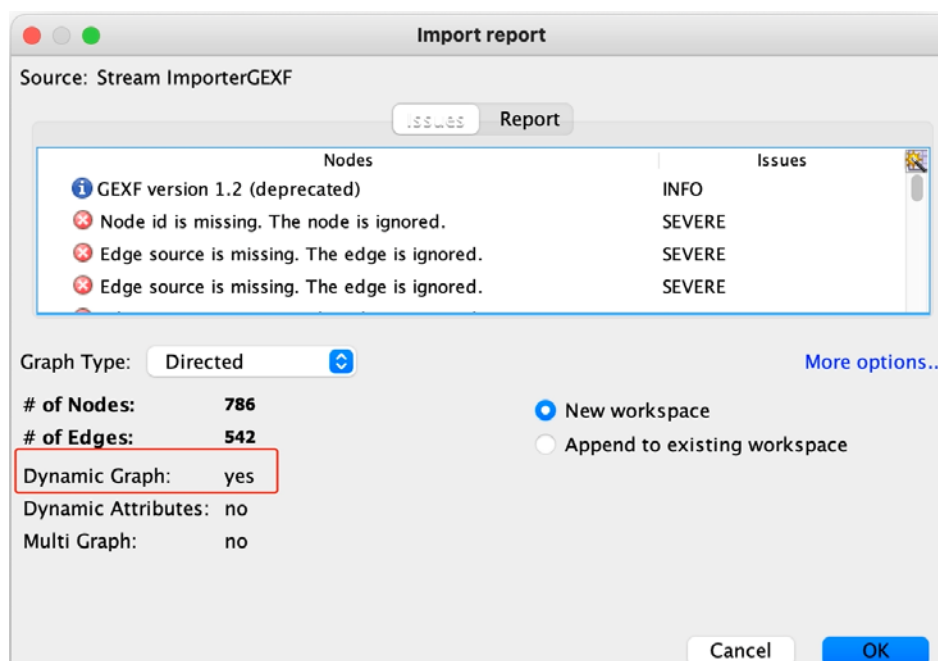


Or you can further adjust it in the following interface by clicking the small arrow on the right-hand side (labeled in [red](#)).



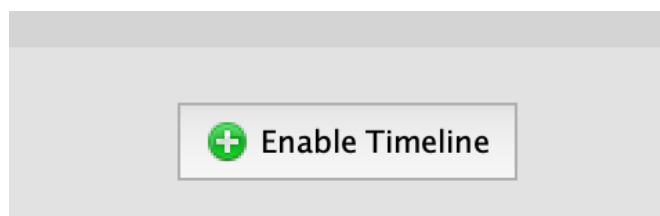
Dynamic network graphs

If your network data includes a time dimension, Gephi can produce a dynamic network graph that changes automatically with time.



Data for dynamic graphs must include a beginning and end date for each point. But time can also be approximated by sentence index as in the SVO algorithm to display SVOs with the tempo of writing.

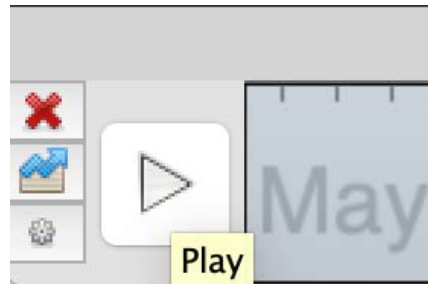
Click on “Enable Timeline” at the bottom.



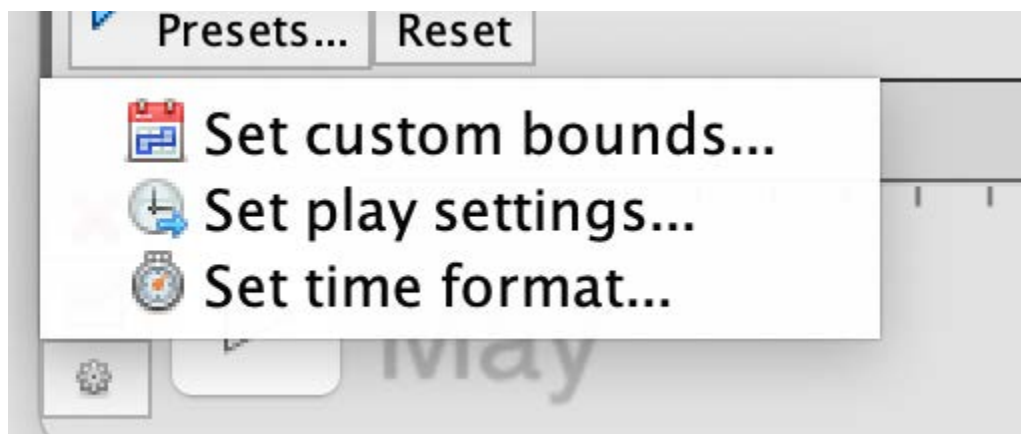
Then place the mouse over the right-hand side of the time bar (labeled in red) and shrink the bar by dragging it to the left. You can experiment with different widths of the time horizon.



Click the “Play” button to enjoy your dynamic visualization!



For your preference, you can also change the settings such as speed and display of dates by clicking on the setting button in the lower left-hand corner.



References

Gephi Github Page. <https://github.com/gephi/gephi/wiki>