

# Network Visualization using Gephi

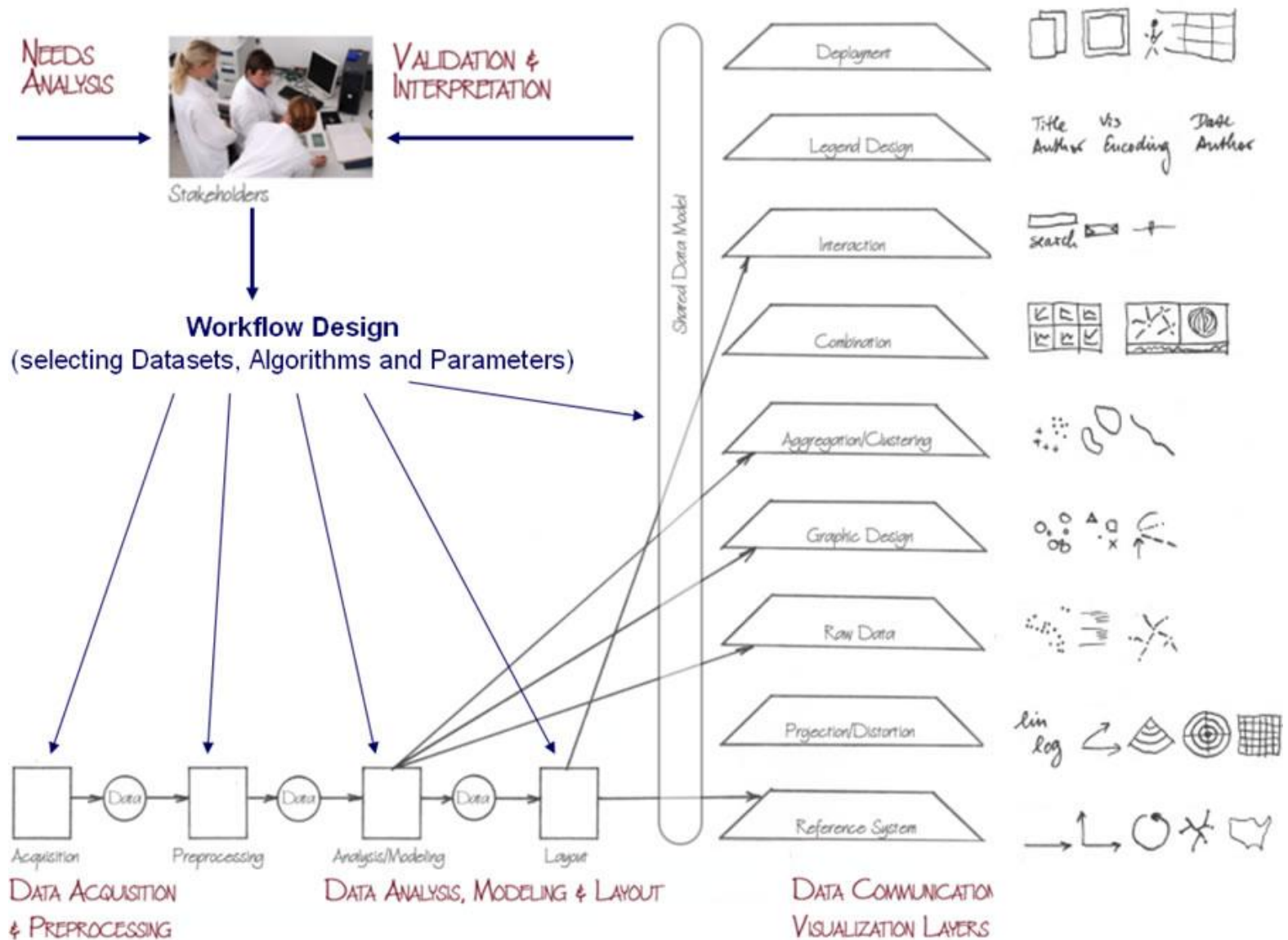


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School of Library and Information Science  
Indiana University, Bloomington, Indiana, USA  
<http://cns.iu.edu>

Please download Gephi at <http://gephi.org>  
Please download Sci2 at <http://sci2.cns.iu.edu>  
Documentation can be found at <http://wiki.gephi.org>  
Also check out <https://forum.gephi.org/>

Cyberinfrastructure for Network Science Center  
School of Library and Information Science  
Indiana University Bloomington  
LI001 Wells Library  
Monday September 17, 2012 – 6:00pm-7:00pm

# Overview – Workflow Design



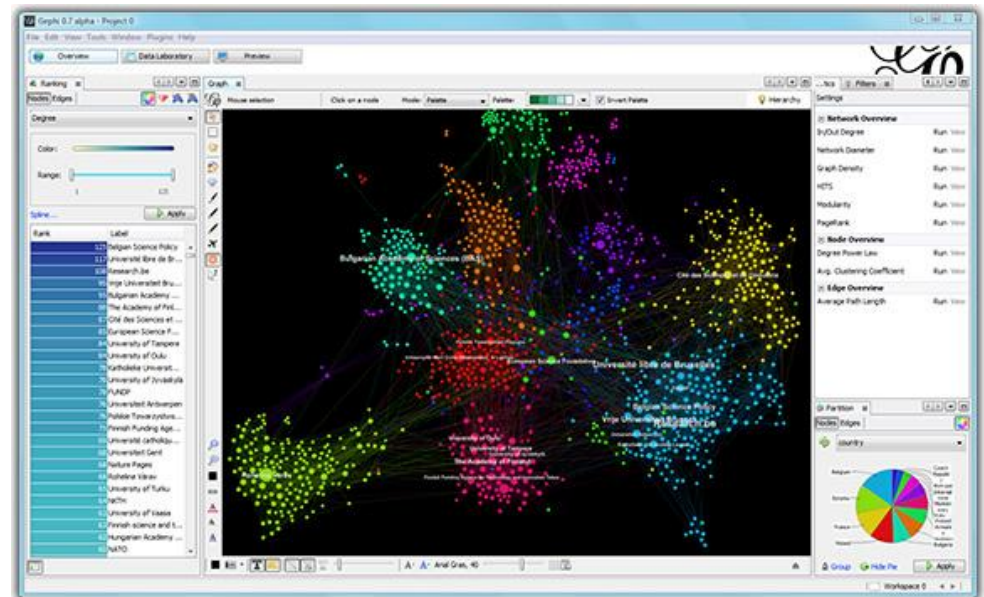


# Workshop Overview

- Introduction to Gephi
- User Interface
  - Overview
  - Data Laboratory
  - Preview
- File Formats Supported by Gephi
- Extending Gephi with Plugins
- Load Networks into Gephi from Sci2
- Opening the Network in Gephi
- Calculating Graph Metrics
- Network Layout
- Ranking the Size and Color of the Nodes
- Scaling the Size and Color of the Nodes
- Enhancing Visualization
  - Adding node labels
  - Adjusting node labels
  - Expanding the layout area
  - Using filters to reduce network size
- Finalizing in Preview
- Exporting Network with Seadragon

# Gephi - Introduction

- Gephi is an open source tool designed for the interactive exploration and visualization of networks
- Designed to facilitate the user's exploratory process through real-time analysis and visualization
- Visualization module uses a 3D render engine
- Uses the computer's graphic card, while leaving CPU free for computing
- Highly scalable (can handle over 20,000 nodes)
- Built on multi-task model to take advantage of multi-core processors



Bastian, Mathieu, Sebastien Heymann & Mathieu Jacomy. (2009). *Gephi: an open source software for exploring and manipulating networks*. International AAAI Conference on Weblogs and Social Media. From <http://www.aaai.org/ocs/index.php/ICWSM/09/paper/view/154>

# User Interface - Overview

The screenshot displays the Gephi 0.8.1 beta software interface. The main window shows a large, complex network graph with numerous nodes and edges, rendered in a circular layout. The interface is divided into several panels:

- Top Panel:** Contains the menu bar (File, Workspace, View, Tools, Window, Plugins, Help) and three tabs: Overview (selected), Data Laboratory, and Preview.
- Left Panel:**
  - Partition & Ranking:** Includes 'Nodes' and 'Edges' tabs, a color selection tool, and a 'Dragging' mode indicator.
  - Layout:** Shows the 'Fruchterman Reingold' layout algorithm selected. A 'Run' button is visible. Below it, a table displays layout parameters:
 

Fruchterman Reingold	
Area	10000.0
Gravity	10.0
Speed	50.0
- Right Panel:**
  - Context:** Displays graph statistics: Nodes: 2217, Edges: 2931, and Directed Graph.
  - Settings:**
    - Network Overview:** Includes Average Degree, Avg. Weighted Degree, Network Diameter, Graph Density, HITS, Modularity, PageRank, and Connected Components.
    - Node Overview:** Includes Avg. Clustering Coefficient and Eigenvector Centrality.
    - Edge Overview:** Includes Avg. Path Length.
- Bottom Panel:** Contains a toolbar with various tools (lightbulb, eraser, text, etc.) and a status bar showing 'Workspace 0'.

# User Interface – Data Laboratory

Gephi 0.8.1 beta - Project 0

File Workspace View Tools Window Plugins Help

Overview Data Laboratory Preview

Data Table

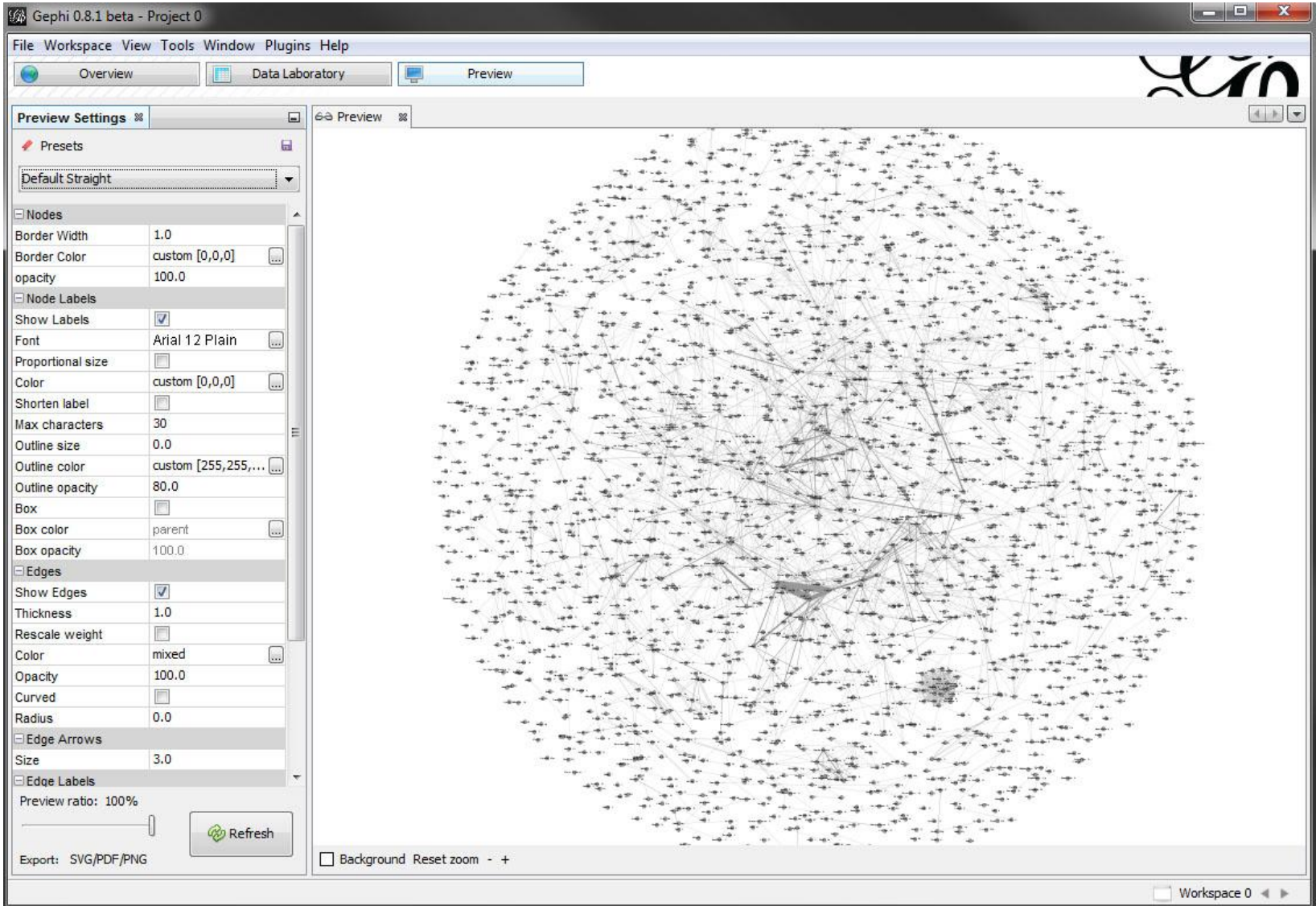
Nodes Edges Configuration Add node Add edge Search/Replace Import Spreadsheet Export table More actions Filter: Nodes

Nodes	Id	Label	number_of_authored_works	times_cited	totaldegree
● Egghe, L	n0	Egghe, L	34	357	5
● Ramachandran, S	n1	Ramachandran, S	2	6	1
● Dastidar, Pg	n2	Dastidar, Pg	3	14	1
● Daniel, Hd	n3	Daniel, Hd	7	120	6
● Bornmann, L	n4	Bornmann, L	6	115	4
● Nast, I	n5	Nast, I	1	0	2
● You, J	n6	You, J	2	8	1
● Vaughan, L	n7	Vaughan, L	5	19	5
● Moon, Hs	n8	Moon, Hs	3	2	2
● Yoo, Sh	n9	Yoo, Sh	2	0	1
● Somoza, M	n10	Somoza, M	1	0	4
● Barrios, M	n11	Barrios, M	2	0	6
● Borrego, A	n12	Borrego, A	2	0	6
● Vilagines, A	n13	Vilagines, A	1	0	4
● Olle, C	n14	Olle, C	1	0	4
● Frias, A	n15	Frias, A	1	0	3
● Villarroya, A	n16	Villarroya, A	1	0	3
● Jarneving, B	n17	Jarneving, B	4	9	1
● Vihinen, M	n18	Vihinen, M	1	0	1
● Riikonen, P	n19	Riikonen, P	1	0	1
● Rousseau, S	n20	Rousseau, S	4	35	1
● Larsen, Po	n21	Larsen, Po	4	22	4

Add column Merge columns Delete column Clear column Copy data to other column Fill column with a value Duplicate column  
 Create a boolean column from regex match Create column with list of regex matching groups Negate boolean values

Workspace 0

# User Interface – Preview



The screenshot displays the Gephi 0.8.1 beta interface in the Preview mode. The main window shows a large, dense network graph with many nodes and edges, rendered in a circular layout. The interface includes a menu bar (File, Workspace, View, Tools, Window, Plugins, Help) and a toolbar with buttons for Overview, Data Laboratory, and Preview. The Preview Settings panel on the left is expanded, showing various configuration options for nodes, node labels, edges, and edge arrows. The Preview ratio is set to 100%. The bottom of the window shows the Workspace 0 tab and a Refresh button.

**Preview Settings**

- Presets: Default Straight
- Nodes**
  - Border Width: 1.0
  - Border Color: custom [0,0,0]
  - opacity: 100.0
- Node Labels**
  - Show Labels:
  - Font: Arial 12 Plain
  - Proportional size:
  - Color: custom [0,0,0]
  - Shorten label:
  - Max characters: 30
  - Outline size: 0.0
  - Outline color: custom [255,255,...
  - Outline opacity: 80.0
  - Box:
  - Box color: parent
  - Box opacity: 100.0
- Edges**
  - Show Edges:
  - Thickness: 1.0
  - Rescale weight:
  - Color: mixed
  - Opacity: 100.0
  - Curved:
  - Radius: 0.0
- Edge Arrows**
  - Size: 3.0
- Edge Labels**

Preview ratio: 100%

Export: SVG/PDF/PNG

Background Reset zoom - +

Workspace 0



# Loading Data – File Formats Supported by Gephi

- CSV
- DL Ucubet
- DOT Graphviz
- GDF
- GEXF
- GML
- GraphML
- NET Pajek
- TLP Tulip
- VNA Netdraw
- Spreadsheet – Node tables and edge tables  
can be loaded into the data laboratory only



# Extending Gephi by Adding Plugins

- Gephi offers an extensive plugin library for extending the functionality of the tool
- Seadragon Web Export can be used to export your visualizations for dynamic network exploration on the Web
- Seadragon allows users to zoom-in on particular parts of a network much the way Google Maps allows users to zoom-in and pan across a map.



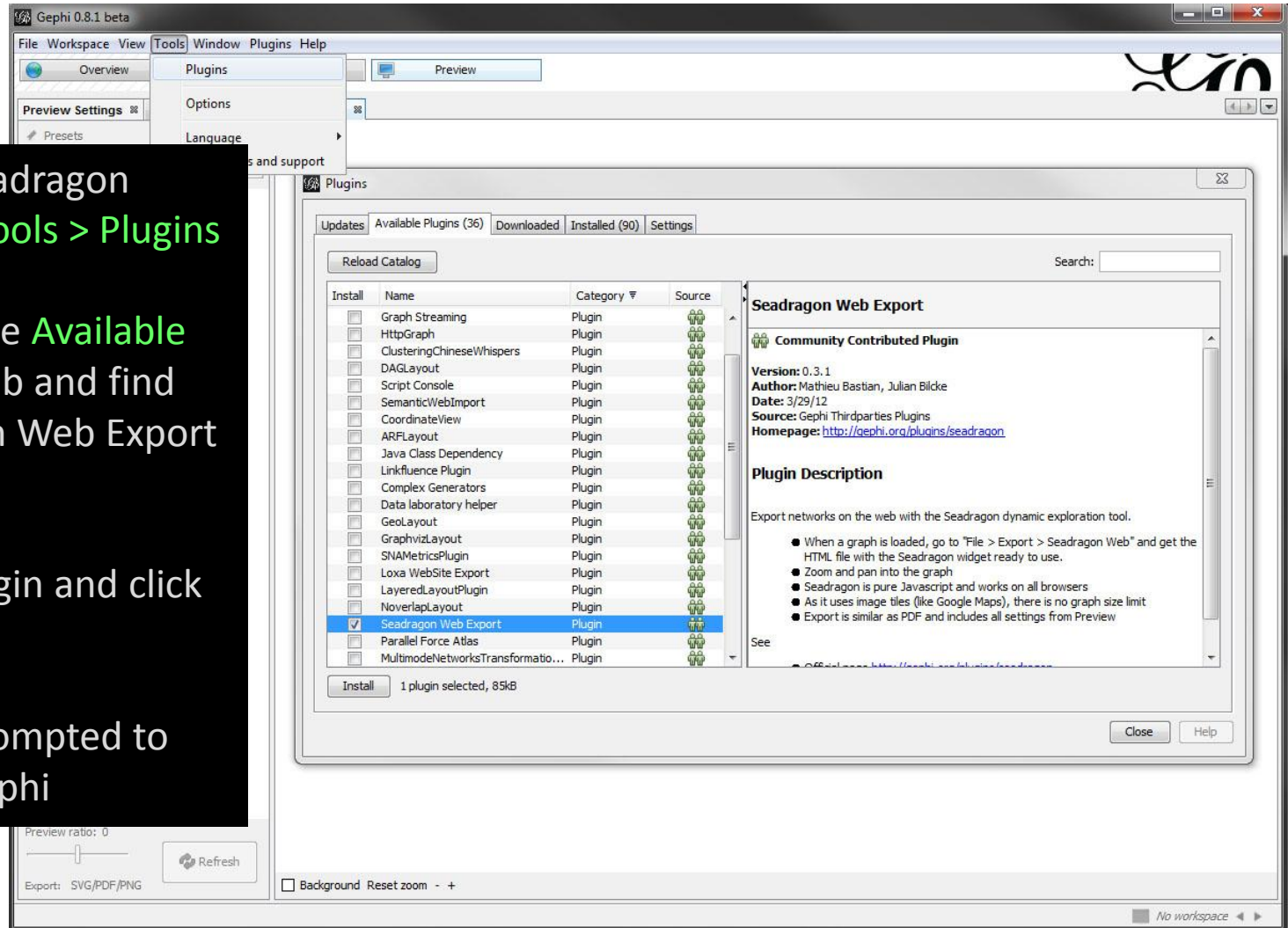
# Extending Gephi by Adding Plugins

To add the Seadragon plugin go to **Tools > Plugins**

Then select the **Available Plugins (36)** tab and find the Seadragon Web Export plugin

Select the plugin and click **Install**

You will be prompted to restart the Gephi



Gephi 0.8.1 beta

File Workspace View Tools Window Plugins Help

Overview Plugins Preview

Preview Settings

Options

Language

Plugins and support

Plugins

Updates Available Plugins (36) Downloaded Installed (90) Settings

Reload Catalog

Search:

Install	Name	Category	Source
<input type="checkbox"/>	Graph Streaming	Plugin	
<input type="checkbox"/>	HttpGraph	Plugin	
<input type="checkbox"/>	ClusteringChineseWhispers	Plugin	
<input type="checkbox"/>	DAGLayout	Plugin	
<input type="checkbox"/>	Script Console	Plugin	
<input type="checkbox"/>	SemanticWebImport	Plugin	
<input type="checkbox"/>	CoordinateView	Plugin	
<input type="checkbox"/>	ARFLayer	Plugin	
<input type="checkbox"/>	Java Class Dependency	Plugin	
<input type="checkbox"/>	Linkfluence Plugin	Plugin	
<input type="checkbox"/>	Complex Generators	Plugin	
<input type="checkbox"/>	Data laboratory helper	Plugin	
<input type="checkbox"/>	GeoLayout	Plugin	
<input type="checkbox"/>	GraphvizLayout	Plugin	
<input type="checkbox"/>	SNAMetricsPlugin	Plugin	
<input type="checkbox"/>	Loxa WebSite Export	Plugin	
<input type="checkbox"/>	LayeredLayoutPlugin	Plugin	
<input type="checkbox"/>	NoverlapLayout	Plugin	
<input checked="" type="checkbox"/>	Seadragon Web Export	Plugin	
<input type="checkbox"/>	Parallel Force Atlas	Plugin	
<input type="checkbox"/>	MultimodeNetworksTransformatio...	Plugin	

Install 1 plugin selected, 85kB

**Seadragon Web Export**

Community Contributed Plugin

Version: 0.3.1  
 Author: Mathieu Bastian, Julian Blicke  
 Date: 3/29/12  
 Source: Gephi Thirdparties Plugins  
 Homepage: <http://gephi.org/plugins/seadragon>

**Plugin Description**

Export networks on the web with the Seadragon dynamic exploration tool.

- When a graph is loaded, go to "File > Export > Seadragon Web" and get the HTML file with the Seadragon widget ready to use.
- Zoom and pan into the graph
- Seadragon is pure Javascript and works on all browsers
- As it uses image tiles (like Google Maps), there is no graph size limit
- Export is similar as PDF and includes all settings from Preview

See

Close Help

Preview ratio: 0

Export: SVG/PDF/PNG

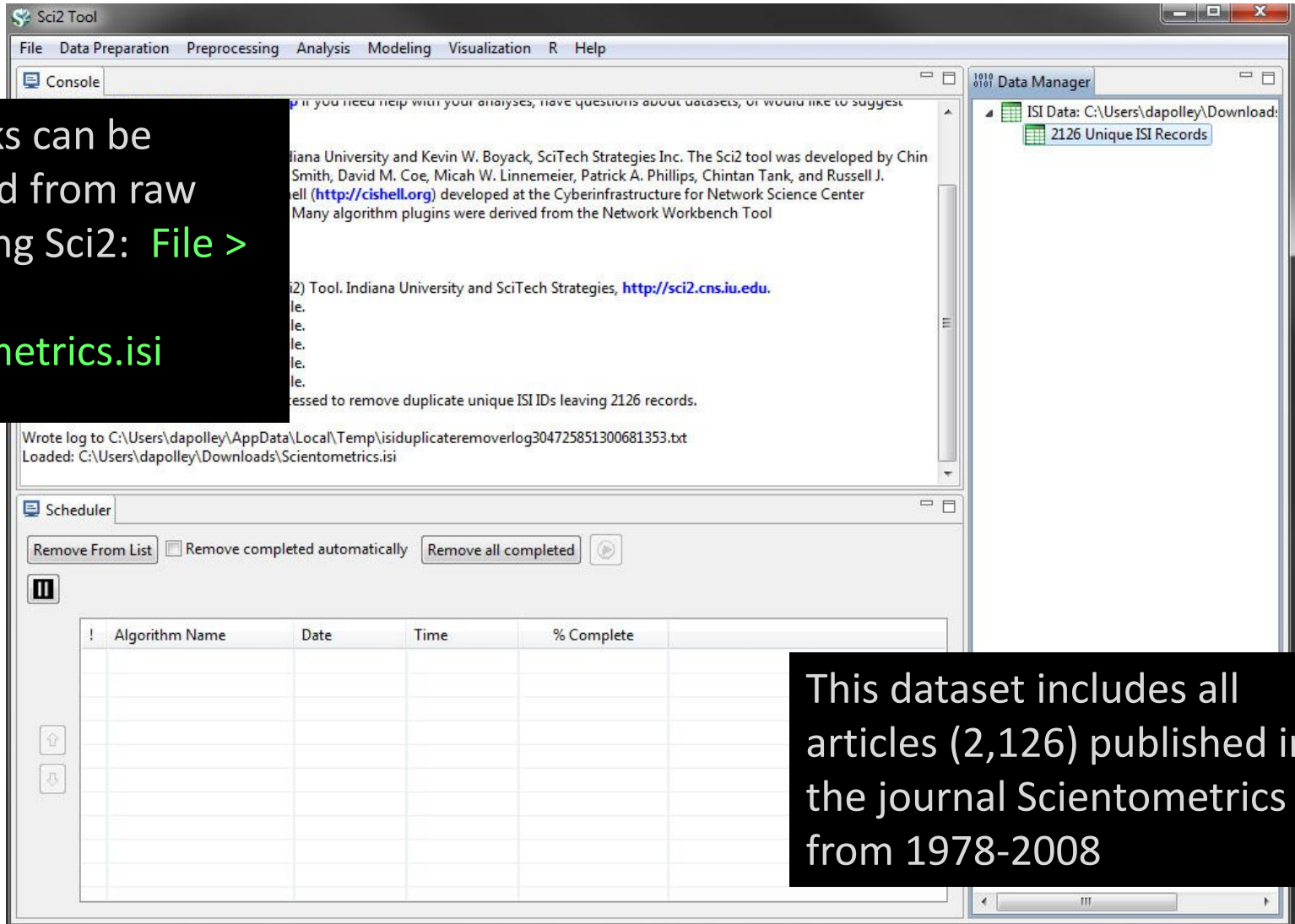
Background Reset zoom - +

No workspace



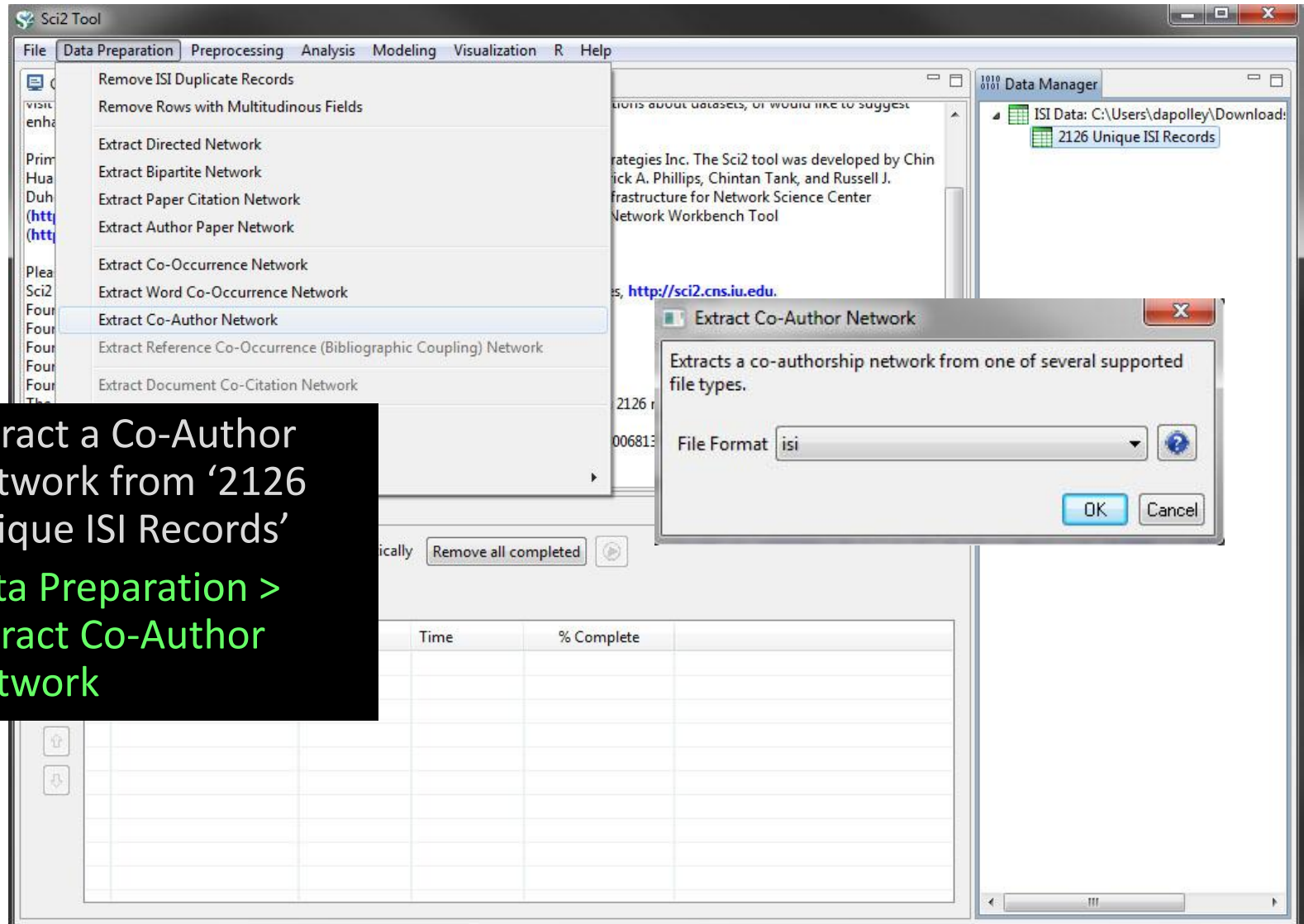
# Loading Data – Opening Networks Directly from Sci2

Networks can be extracted from raw data using Sci2: **File > Load > scientometrics.isi**



This dataset includes all articles (2,126) published in the journal Scientometrics from 1978-2008

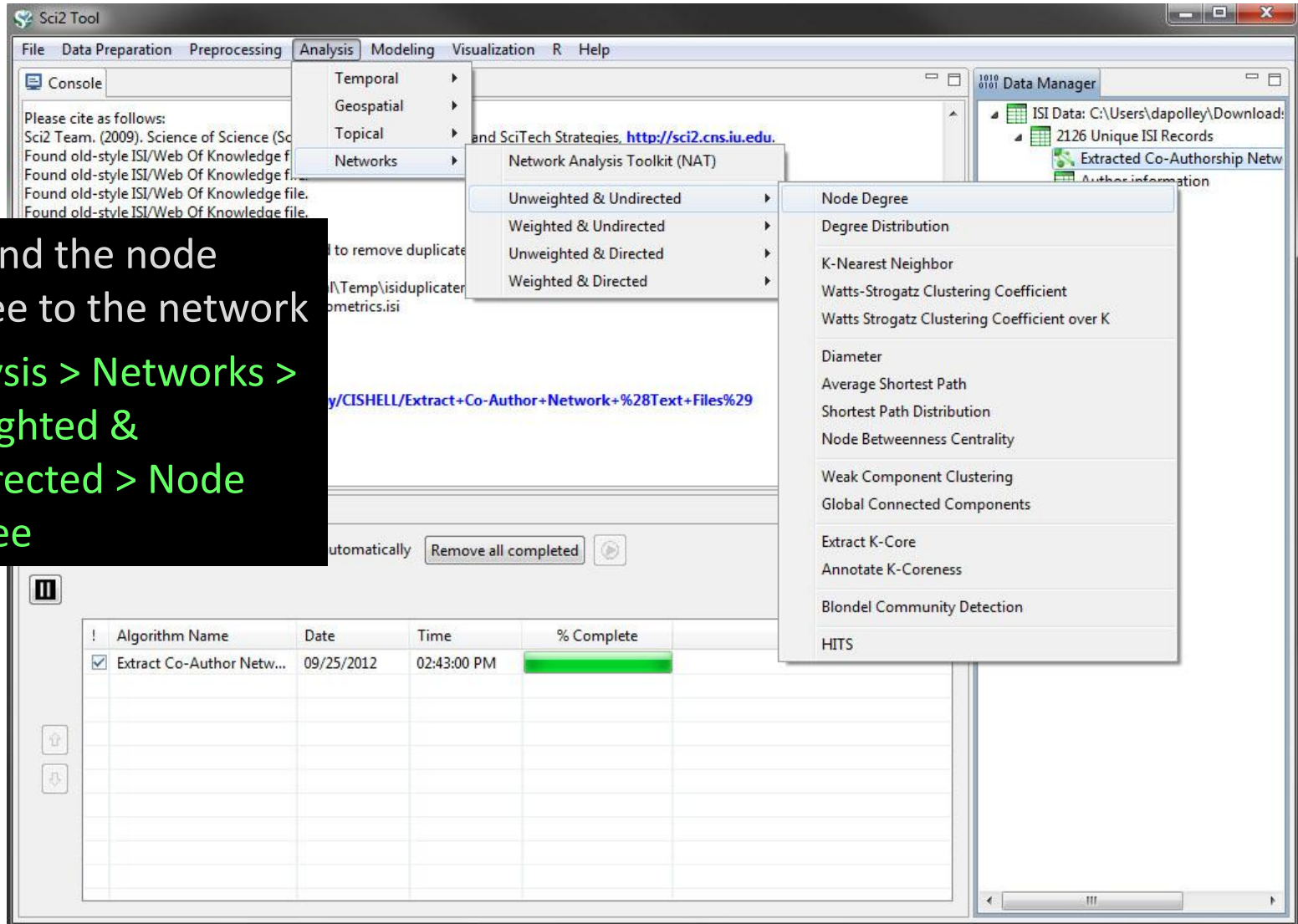
# Loading Data – Opening Networks Directly from Sci2



Extract a Co-Author Network from '2126 Unique ISI Records'

Data Preparation > Extract Co-Author Network

# Loading Data – Opening Networks Directly from Sci2



Sci2 Tool

File Data Preparation Preprocessing Analysis Modeling Visualization R Help

Console

Please cite as follows:  
Sci2 Team. (2009). Science of Science (Sci2) and SciTech Strategies. <http://sci2.cns.iu.edu>.  
Found old-style ISI/Web Of Knowledge file.  
Found old-style ISI/Web Of Knowledge file.  
Found old-style ISI/Web Of Knowledge file.  
Found old-style ISI/Web Of Knowledge file.

Temporal  
Geospatial  
Topical  
Networks  
Network Analysis Toolkit (NAT)  
Unweighted & Undirected  
Weighted & Undirected  
Unweighted & Directed  
Weighted & Directed

Node Degree  
Degree Distribution  
K-Nearest Neighbor  
Watts-Strogatz Clustering Coefficient  
Watts Strogatz Clustering Coefficient over K  
Diameter  
Average Shortest Path  
Shortest Path Distribution  
Node Betweenness Centrality  
Weak Component Clustering  
Global Connected Components  
Extract K-Core  
Annotate K-Coreness  
Blondel Community Detection  
HITS

Data Manager

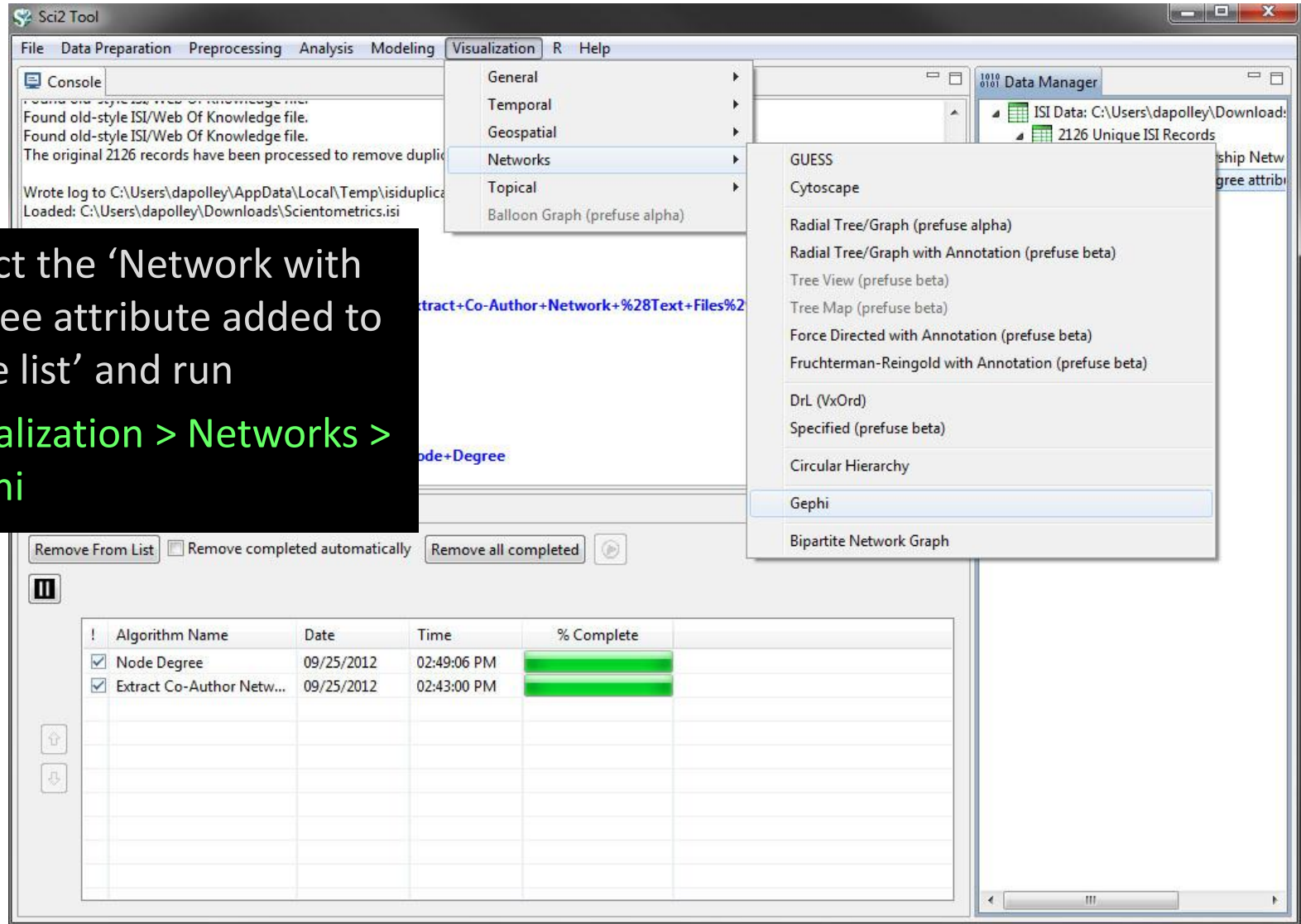
ISI Data: C:\Users\dapolley\Download:  
2126 Unique ISI Records  
Extracted Co-Authorship Network  
Author information

Append the node degree to the network  
Analysis > Networks > Unweighted & Undirected > Node Degree

Remove all completed

!	Algorithm Name	Date	Time	% Complete
<input checked="" type="checkbox"/>	Extract Co-Author Netw...	09/25/2012	02:43:00 PM	100%

# Loading Data – Opening Networks Directly from Sci2



Sci2 Tool

File Data Preparation Preprocessing Analysis Modeling Visualization R Help

Console

Found old-style ISI/Web Of Knowledge file.  
Found old-style ISI/Web Of Knowledge file.  
The original 2126 records have been processed to remove duplicates.  
Wrote log to C:\Users\dapolley\AppData\Local\Temp\isiduplicate.log  
Loaded: C:\Users\dapolley\Downloads\Scientometrics.isi

Visualization > Networks > Gephi

Data Manager

ISI Data: C:\Users\dapolley\Downloads\...  
2126 Unique ISI Records

Remove From List  Remove completed automatically Remove all completed

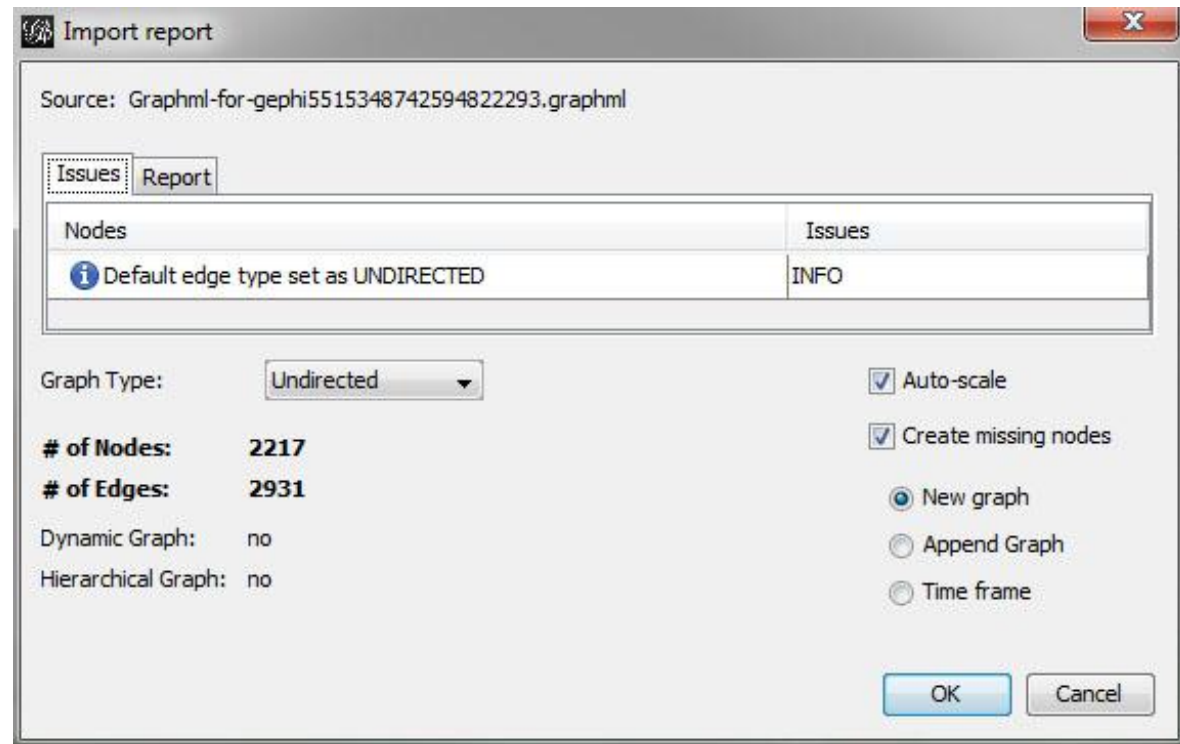
!	Algorithm Name	Date	Time	% Complete
<input checked="" type="checkbox"/>	Node Degree	09/25/2012	02:49:06 PM	100%
<input checked="" type="checkbox"/>	Extract Co-Author Netw...	09/25/2012	02:43:00 PM	100%

Select the 'Network with degree attribute added to node list' and run

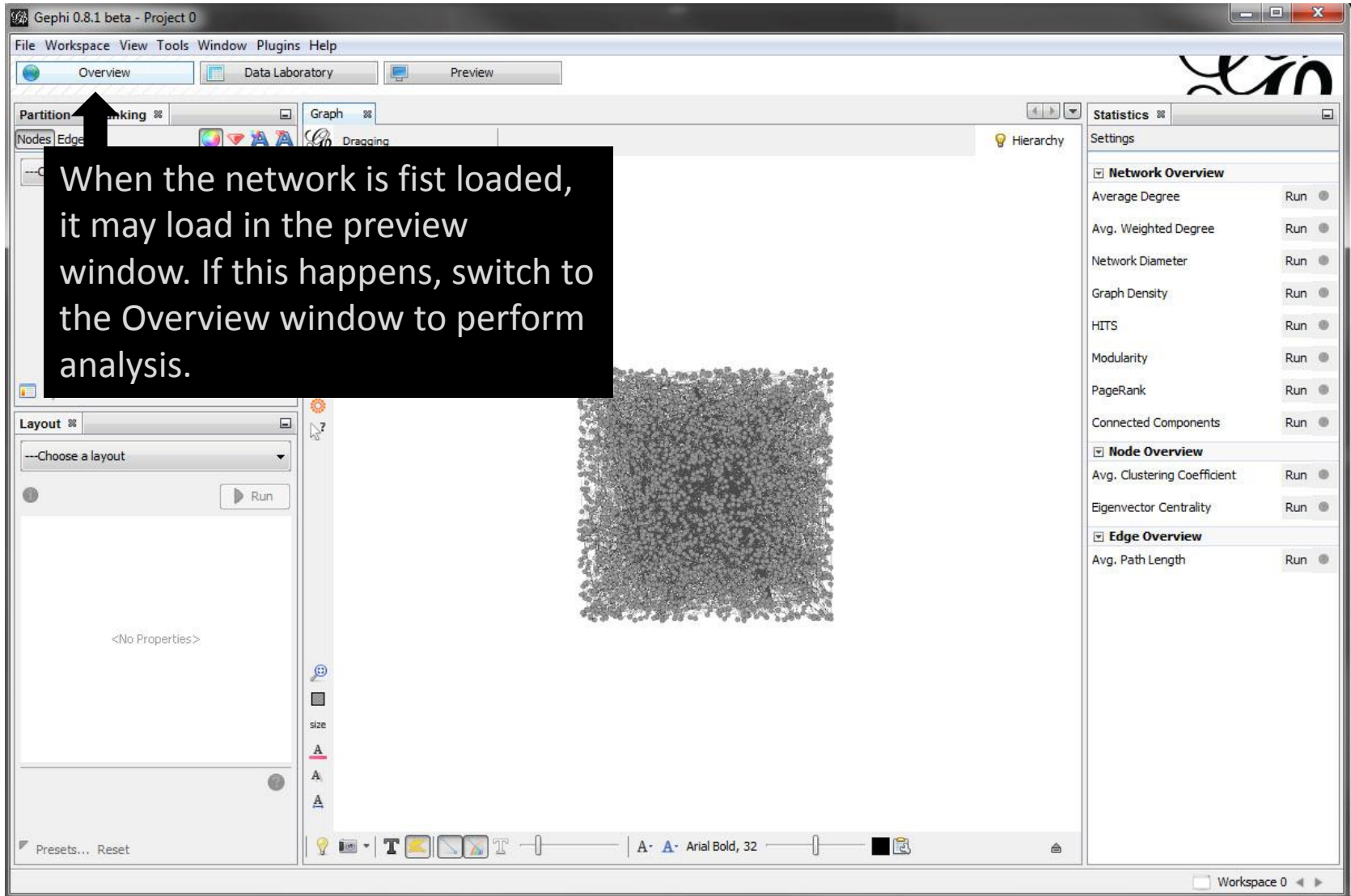
Visualization > Networks > Gephi

# Opening the Network in Gephi

When you open a network in Gephi from Sci2 you will be presented with an import report. Click **OK**



# Opening the Network in Gephi



The screenshot shows the Gephi 0.8.1 beta interface. The main workspace is divided into three panes: Overview, Data Laboratory, and Preview. The Overview pane is active, showing a network graph. The Preview pane is also active, showing a dense network graph. The Statistics pane on the right is open, displaying various network and node metrics. A black text box with white text is overlaid on the Overview pane, providing instructions on how to switch to the Overview window if the network loads in the Preview window.

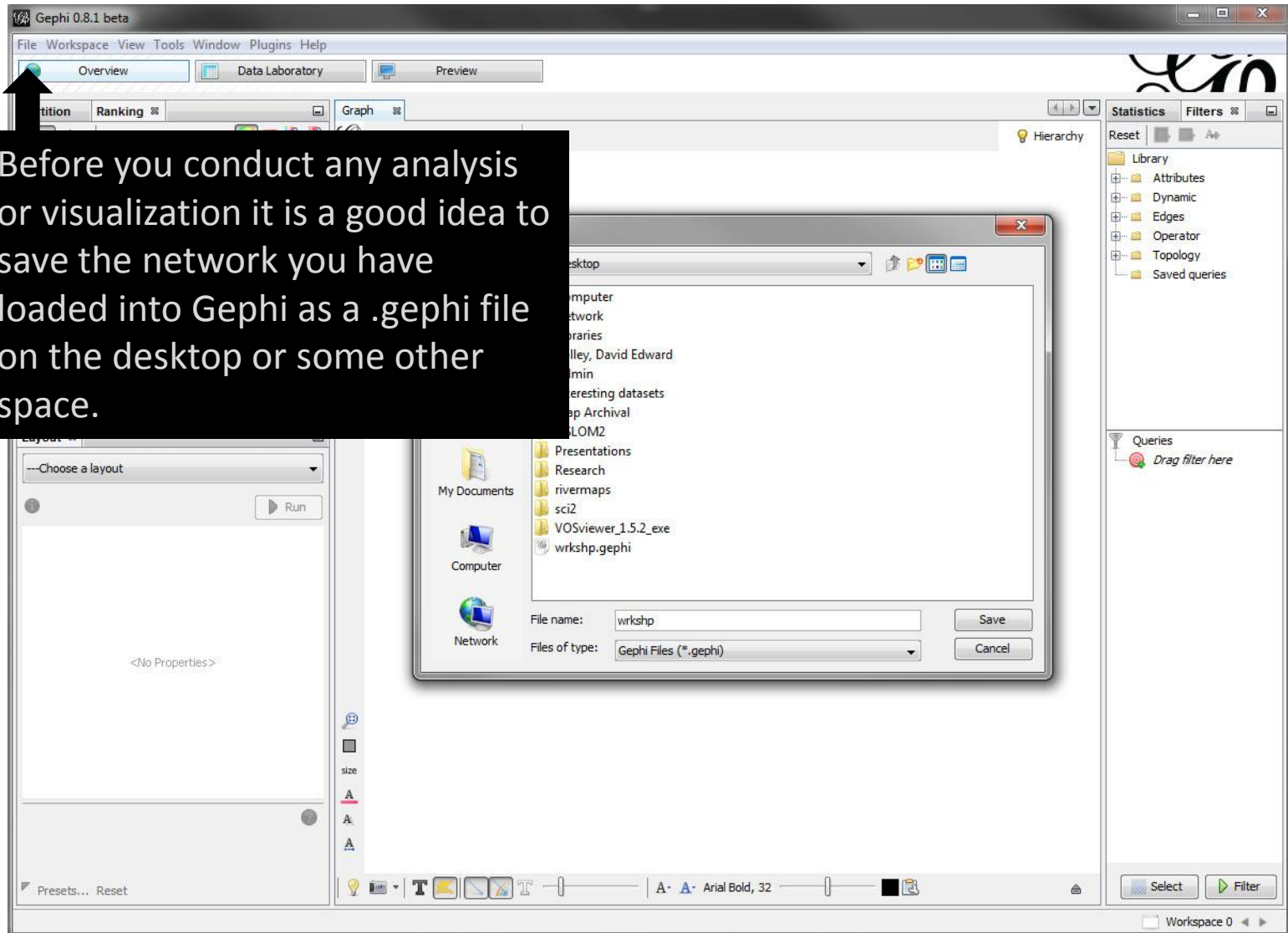
When the network is first loaded, it may load in the preview window. If this happens, switch to the Overview window to perform analysis.

Category	Metric	Action
Network Overview	Average Degree	Run
	Avg. Weighted Degree	Run
	Network Diameter	Run
	Graph Density	Run
	HITS	Run
	Modularity	Run
	PageRank	Run
Node Overview	Avg. Clustering Coefficient	Run
	Eigenvector Centrality	Run
Edge Overview	Avg. Path Length	Run



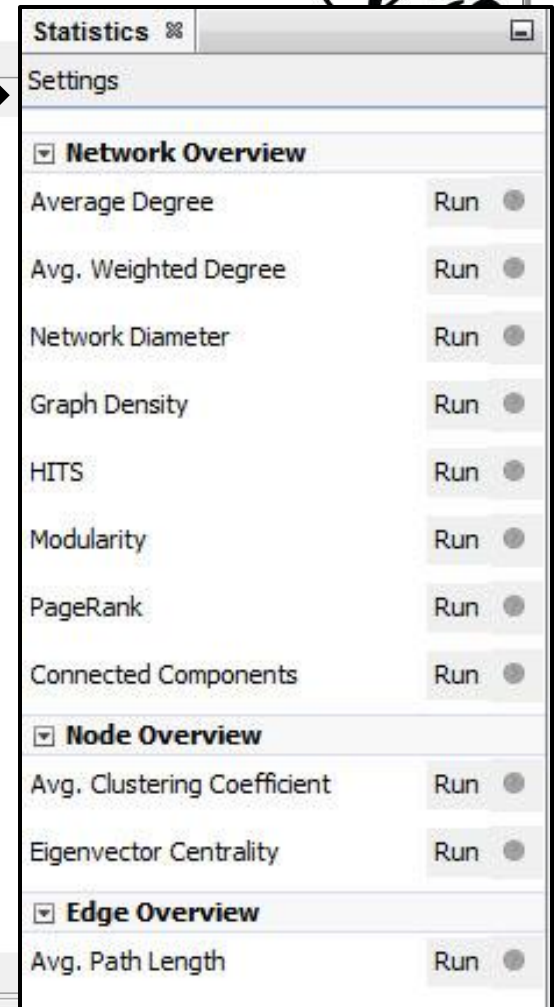
# Opening the Network in Gephi

Before you conduct any analysis or visualization it is a good idea to save the network you have loaded into Gephi as a .gephi file on the desktop or some other space.



# Calculating Basic Network Metrics

Basic network, node, and edge metrics can be calculated using the statistics window. To calculate a particular metric click **Run** and a report will be generated. If the statistics window does not automatically appear, follow **Window > Statistics** at the top of the tool.

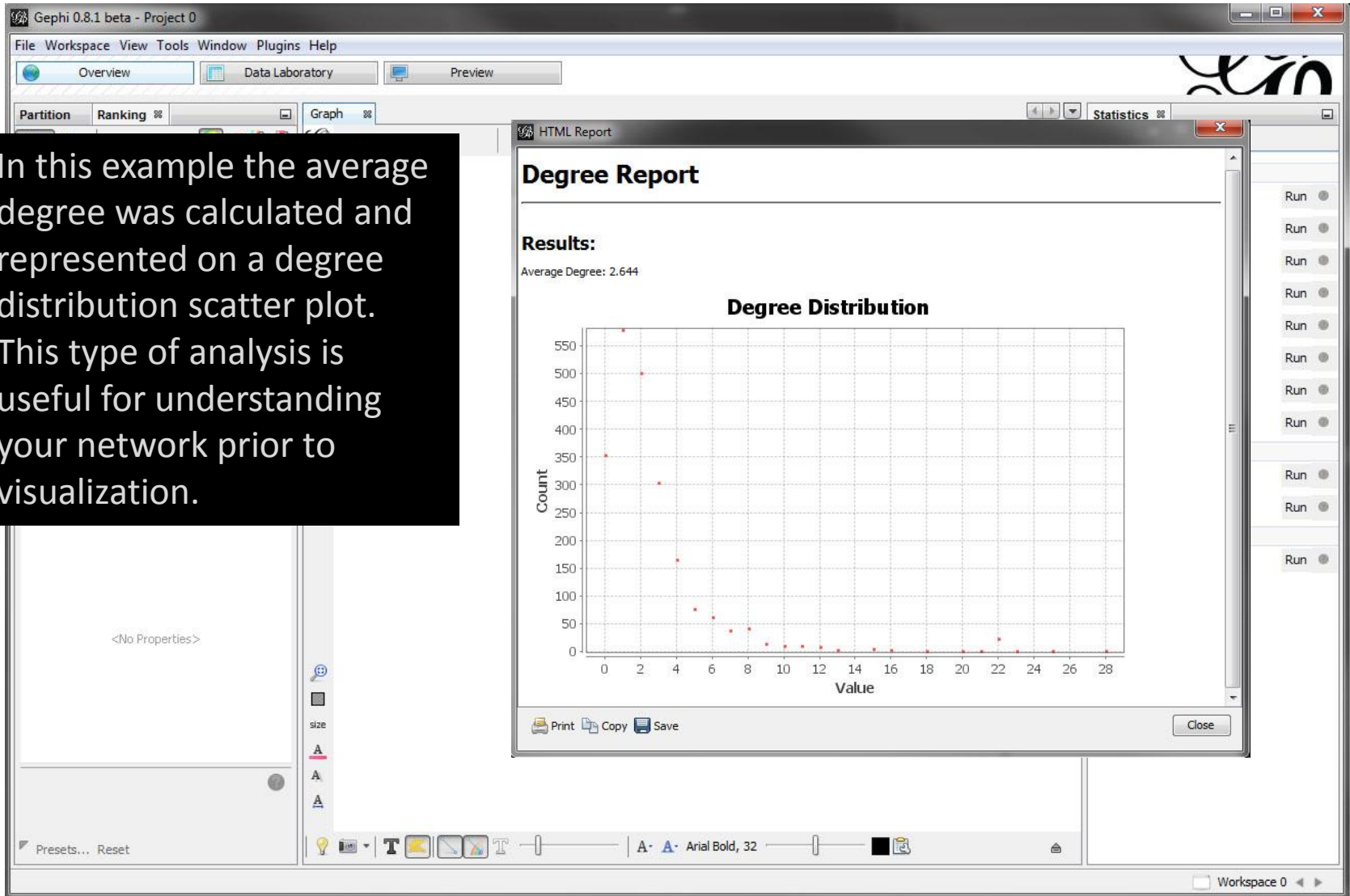


The screenshot shows the 'Statistics' window in Gephi, which is divided into three sections: Network Overview, Node Overview, and Edge Overview. Each section contains a list of metrics with a 'Run' button next to it.

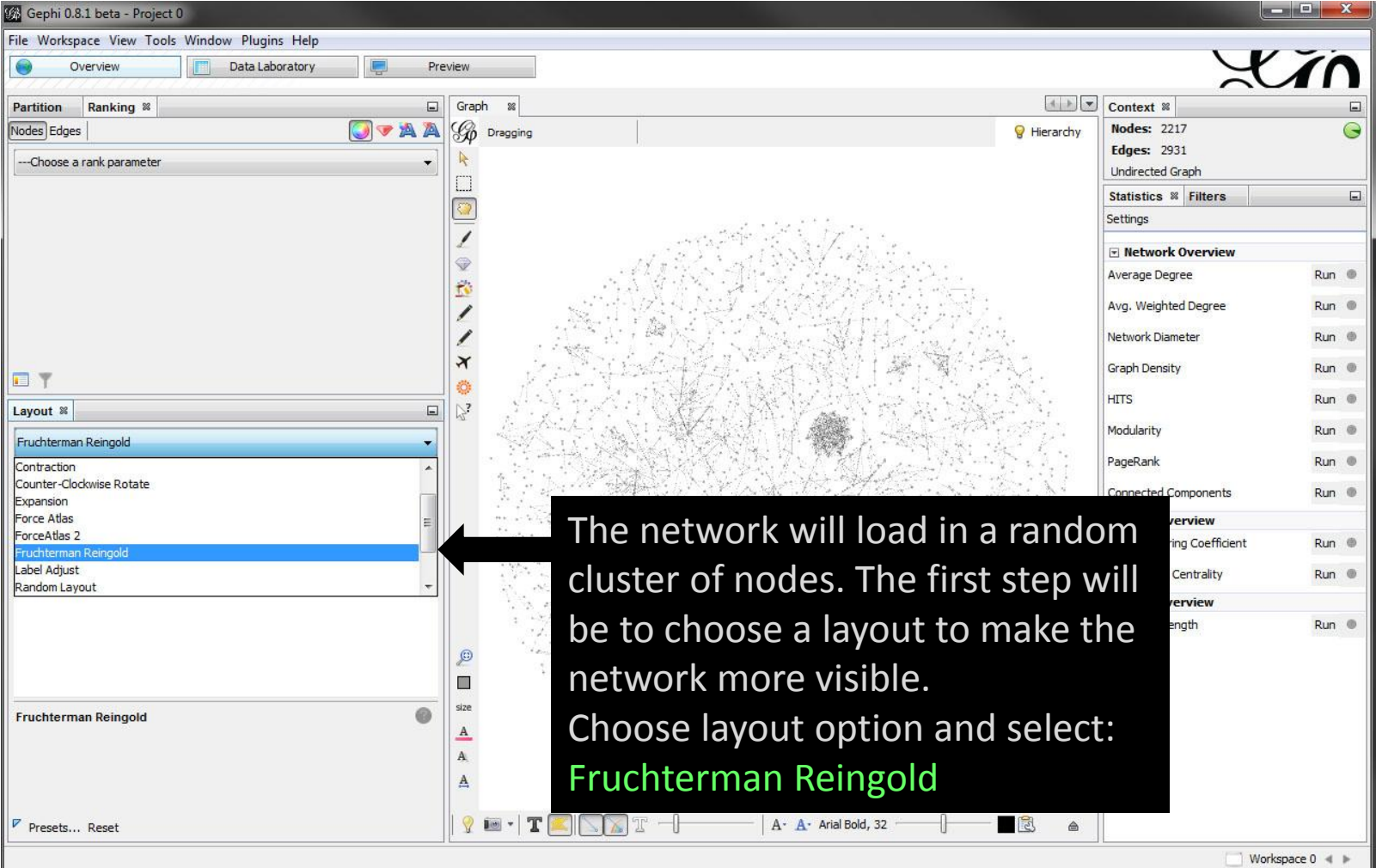
Section	Metric	Action
Network Overview	Average Degree	Run
	Avg. Weighted Degree	Run
	Network Diameter	Run
	Graph Density	Run
	HITS	Run
	Modularity	Run
	PageRank	Run
Node Overview	Connected Components	Run
	Avg. Clustering Coefficient	Run
Edge Overview	Eigenvector Centrality	Run
	Avg. Path Length	Run

# Calculating Basic Network Metrics

In this example the average degree was calculated and represented on a degree distribution scatter plot. This type of analysis is useful for understanding your network prior to visualization.



# Laying out the Network in Gephi



The screenshot shows the Gephi 0.8.1 beta interface. The main window displays a network graph with a dense, circular cluster of nodes and edges. The interface includes a menu bar (File, Workspace, View, Tools, Window, Plugins, Help), a toolbar, and several panels. The 'Layout' panel on the left is open, showing a list of layout options: Fruchterman Reingold (selected), Contraction, Counter-Clockwise Rotate, Expansion, Force Atlas, ForceAtlas 2, Label Adjust, and Random Layout. The 'Context' panel on the right shows network statistics: Nodes: 2217, Edges: 2931, Undirected Graph. A black text box with a white arrow pointing to the 'Fruchterman Reingold' option in the layout panel contains the following text:

The network will load in a random cluster of nodes. The first step will be to choose a layout to make the network more visible. Choose layout option and select: **Fruchterman Reingold**

# Laying out the Network in Gephi

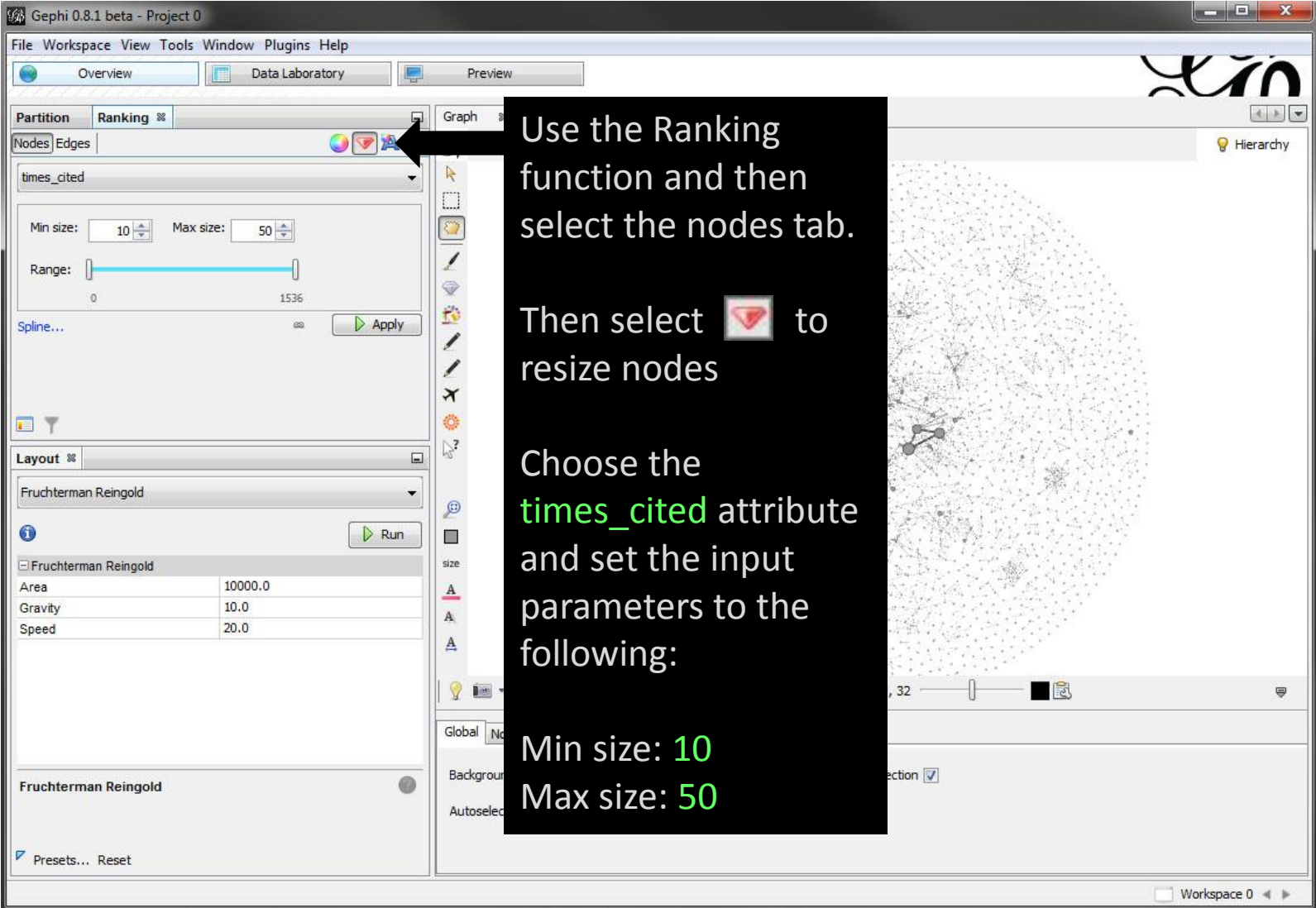
The screenshot shows the Gephi 0.8.1 beta interface. The main window displays a large, circular network graph layout. The interface includes a menu bar (File, Workspace, View, Tools, Window, Plugins, Help), a toolbar, and several panels. The 'Layout' panel is active, showing the 'Fruchterman Reingold' layout algorithm. A callout box with an arrow points to the 'Fruchterman Reingold' parameters table.

Fruchterman Reingold	
Area	10000.0
Gravity	10.0
Speed	20.0


Other panels visible include 'Partition', 'Ranking', 'Graph', 'Context', and 'Settings'. The 'Context' panel shows 'Nodes: 2217' and 'Edges: 2931'. The 'Settings' panel includes sections for 'Network Overview', 'Node Overview', and 'Edge Overview'.

You can change the layout parameters such as area, gravity and speed.

# Using Ranking to Enhance Visualization



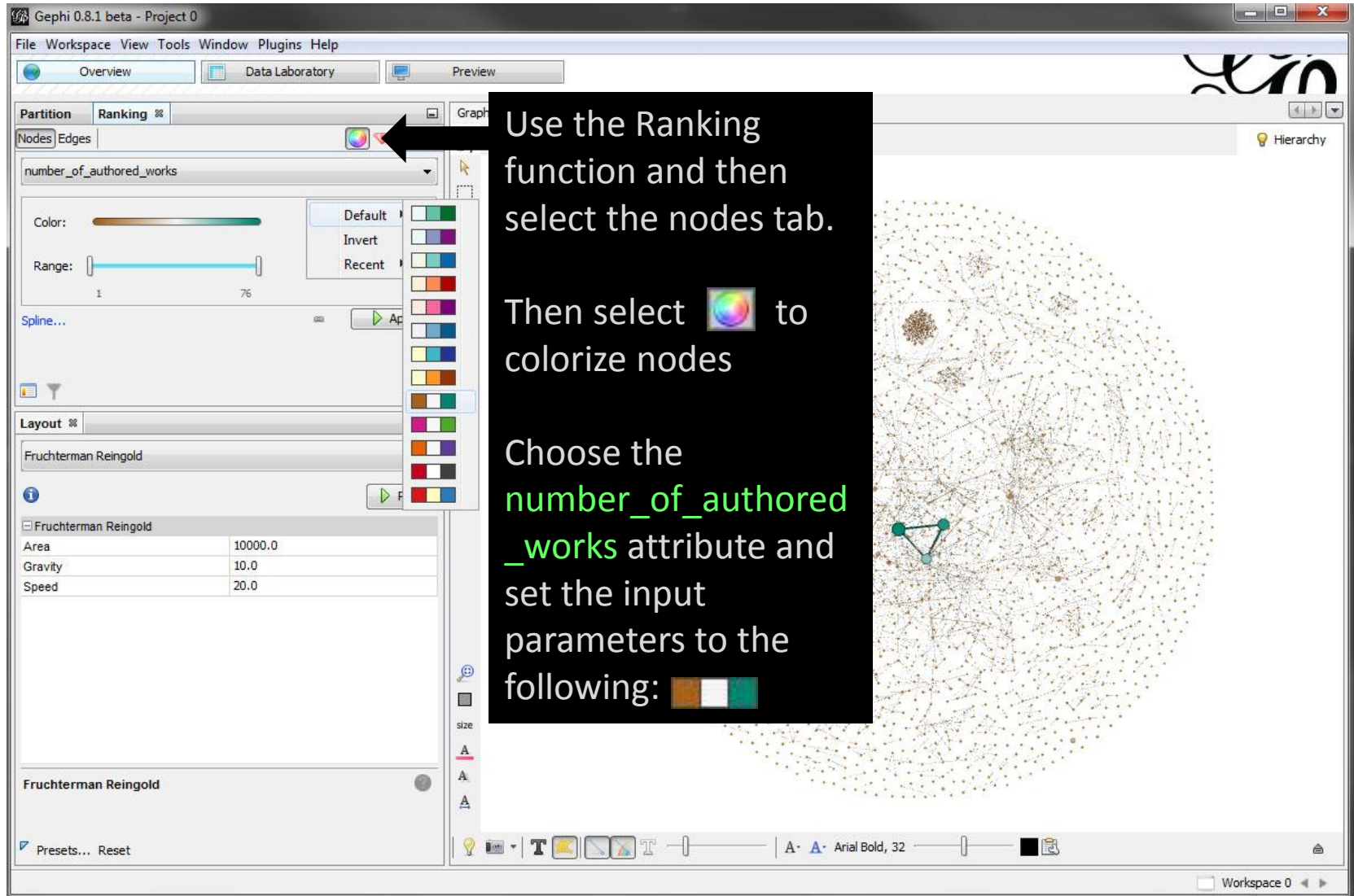
Use the Ranking function and then select the nodes tab.

Then select  to resize nodes


Choose the **times\_cited** attribute and set the input parameters to the following:


Min size: 10  
Max size: 50

# Using Ranking to Enhance Visualization

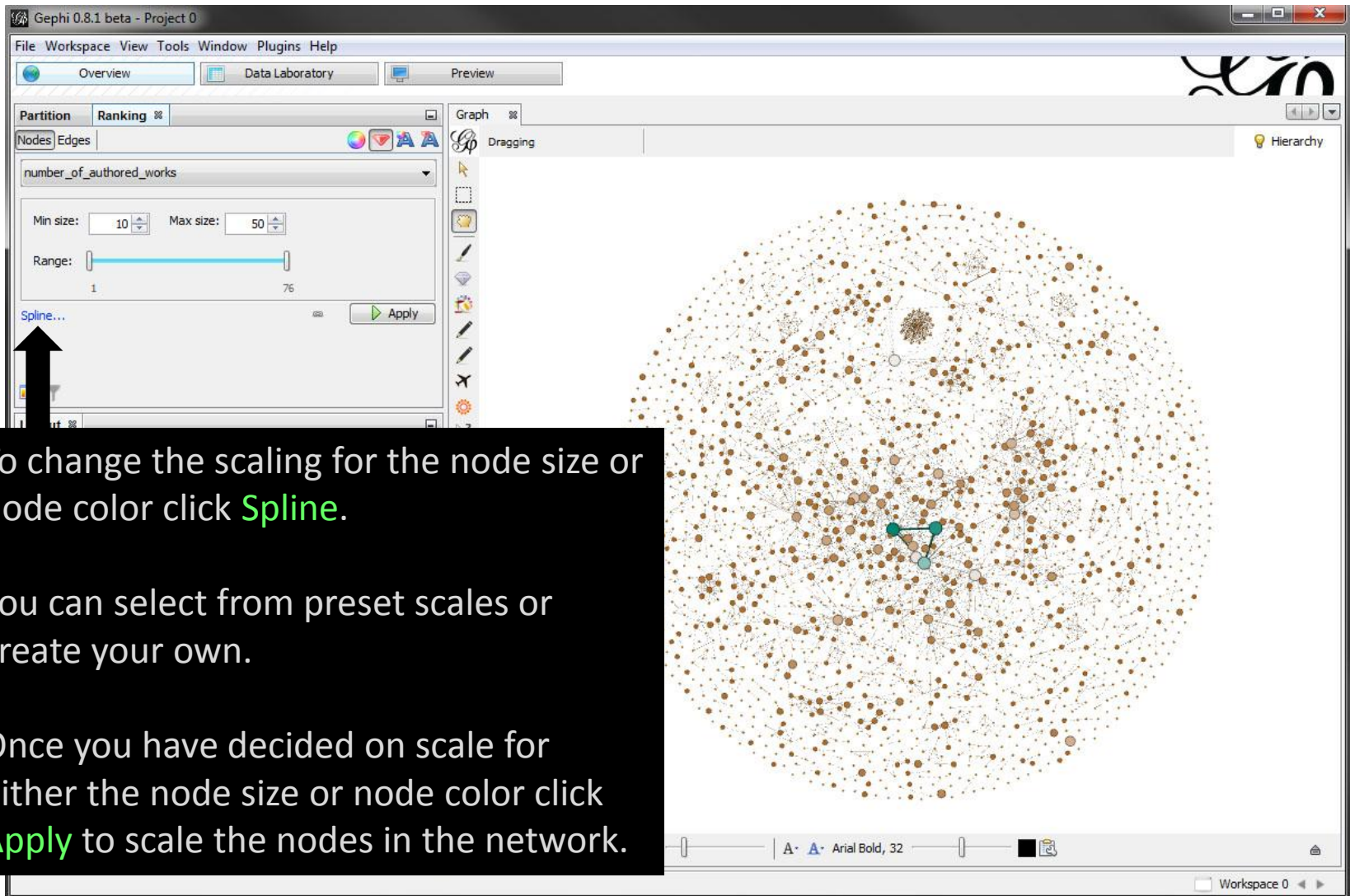


Use the Ranking function and then select the nodes tab.

Then select  to colorize nodes

Choose the **number\_of\_authored\_works** attribute and set the input parameters to the following: 

# Scaling the Size and Color of the Nodes



The screenshot shows the Gephi 0.8.1 beta interface. The 'Ranking' panel is active, showing a dropdown menu for 'number\_of\_authored\_works'. Below the dropdown, there are input fields for 'Min size: 10' and 'Max size: 50', and a 'Range' slider from 1 to 76. A 'Spline...' button is visible at the bottom left of the panel, with a black arrow pointing to it. The main workspace displays a large, circular network graph with many nodes and edges. A few nodes in the center are highlighted in blue. The interface includes a menu bar (File, Workspace, View, Tools, Window, Plugins, Help), a toolbar, and a status bar at the bottom.

To change the scaling for the node size or node color click **Spline**.

You can select from preset scales or create your own.

Once you have decided on scale for either the node size or node color click **Apply** to scale the nodes in the network.

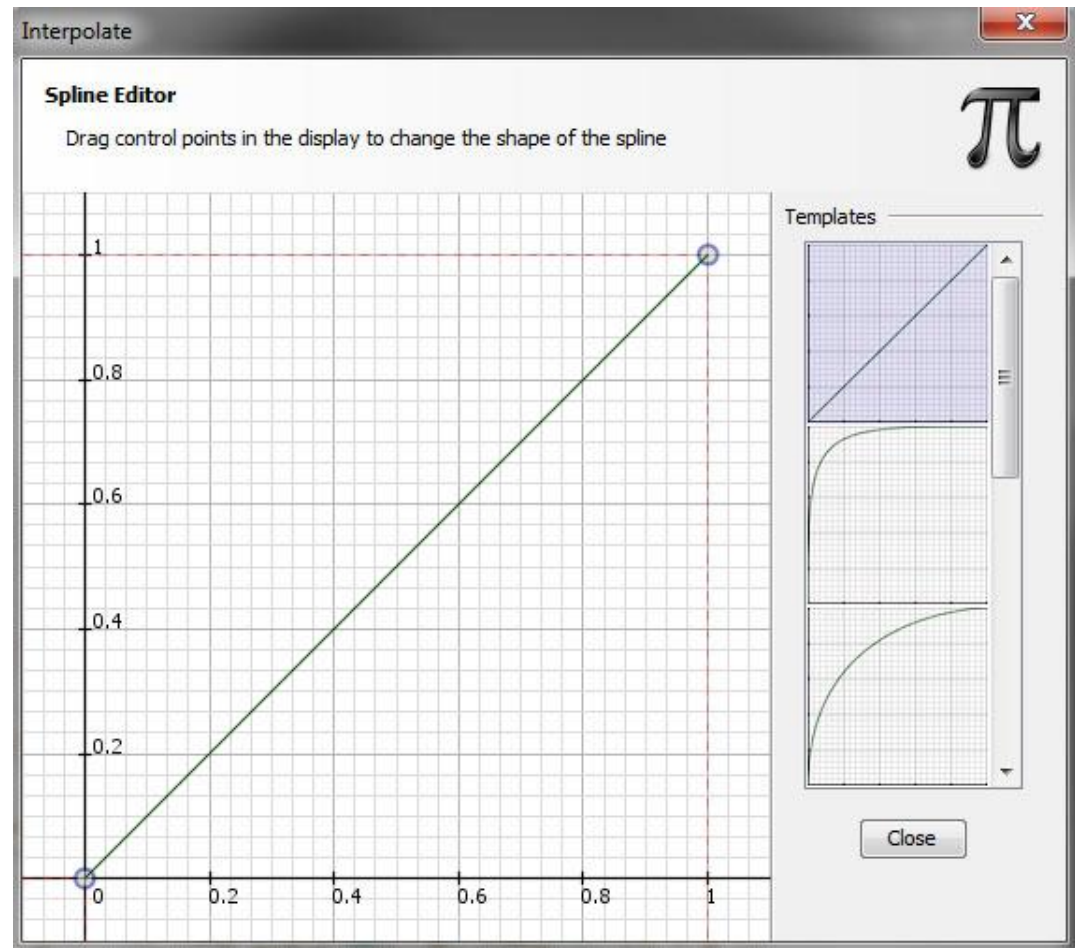


# Scaling the Size and Color of the Nodes

The default scale is linear. On this graph node size (or color) is plotted on the y-axis and the attribute you have selected to size by is plotted on the x-axis.

The linear scale means that if you had a set of nodes with `times_cited` values ranging from 1 to 100 and you wanted to size those nodes from 1 to 50, you assign a `times_cited` value of 1 to size 1 and a `times_cited` value of 100 to size 50.

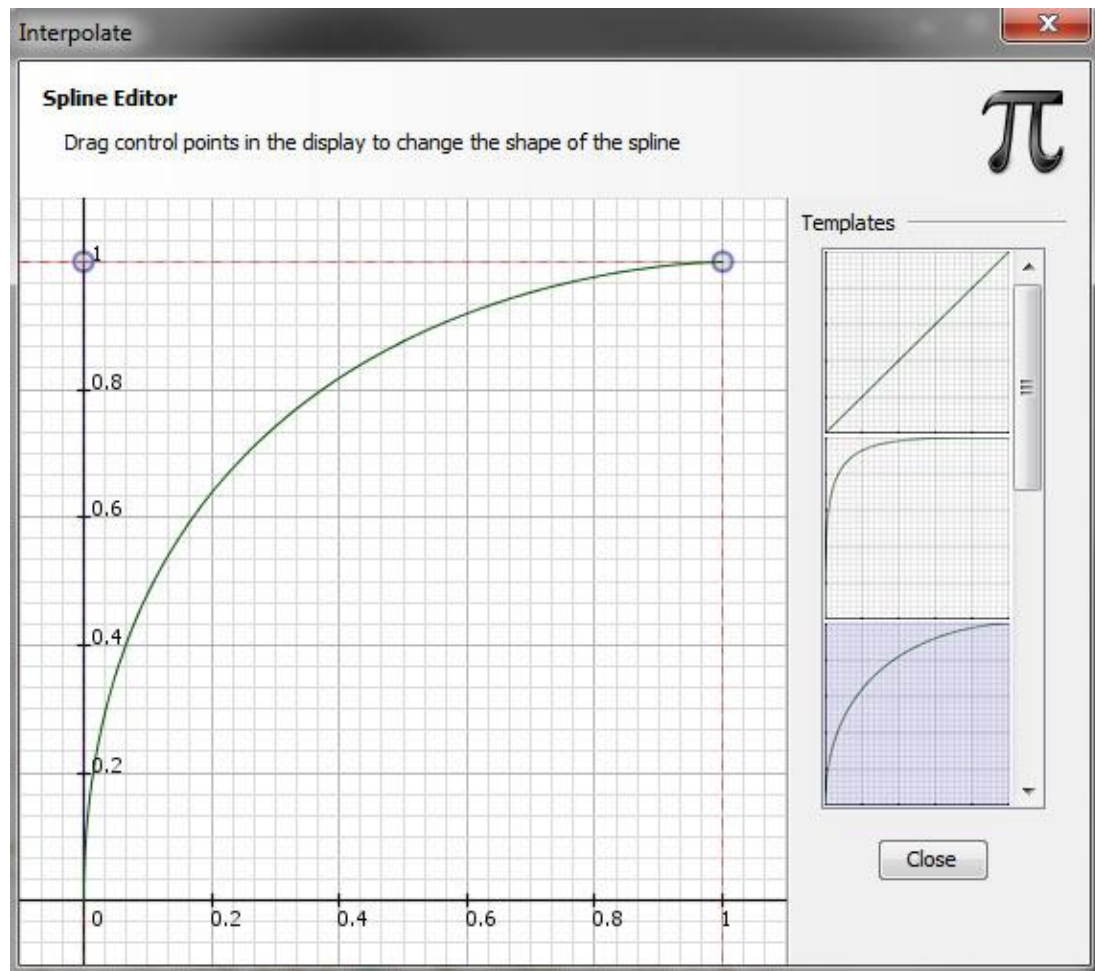
This approach works well if the `times_cited` values are normally distributed, but what if they are skewed?



# Scaling the Size and Color of the Nodes

What if your network contains many nodes with a low `times_cited` values and only a few with a high `times_cited` value. You may want to show the differences between those nodes with a lower `times_cited` value more clearly.

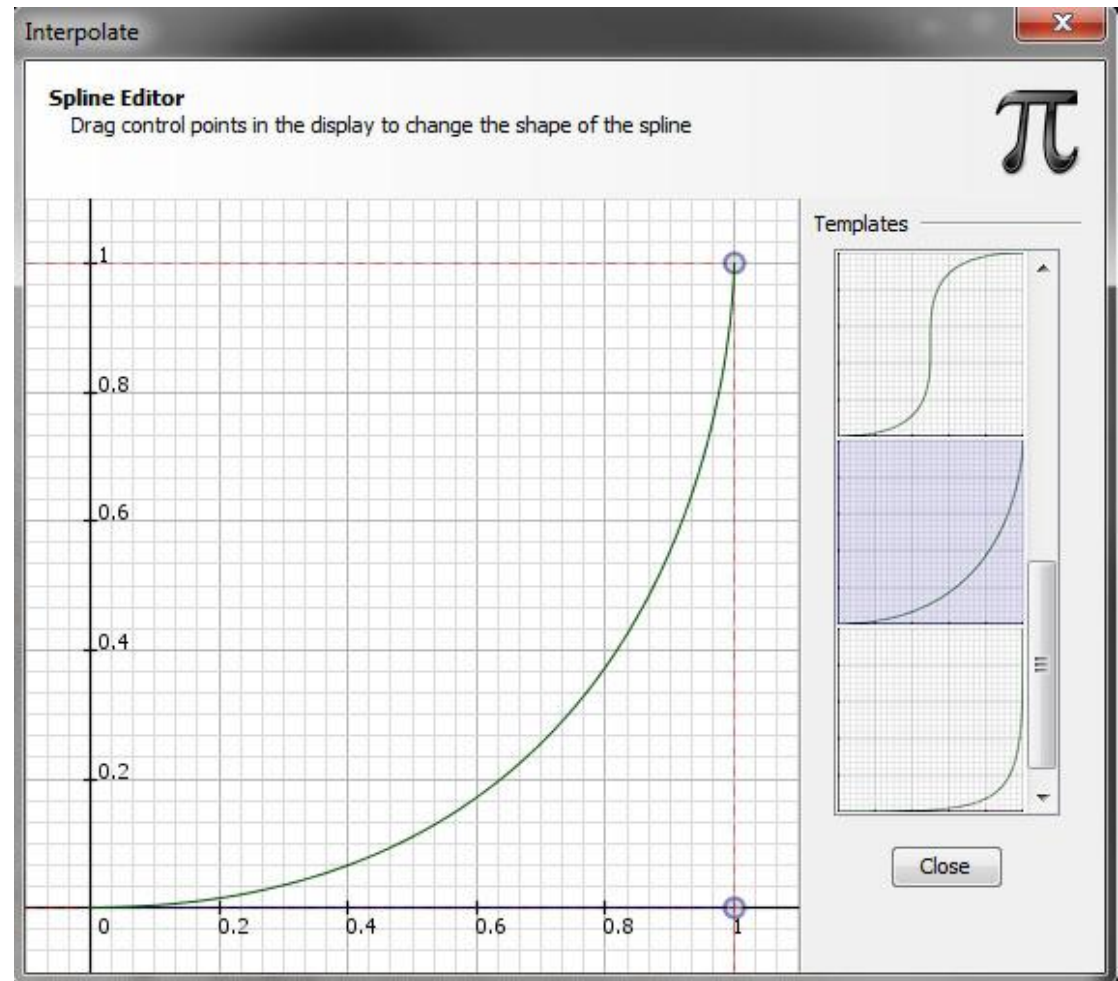
In this case you may want to choose a logarithmic scale. The scale to the right will show differences in nodes with a smaller `times_cited` value more clearly, because the size increases more rapidly in relation to the `times_cited` value.



# Scaling the Size and Color of the Nodes

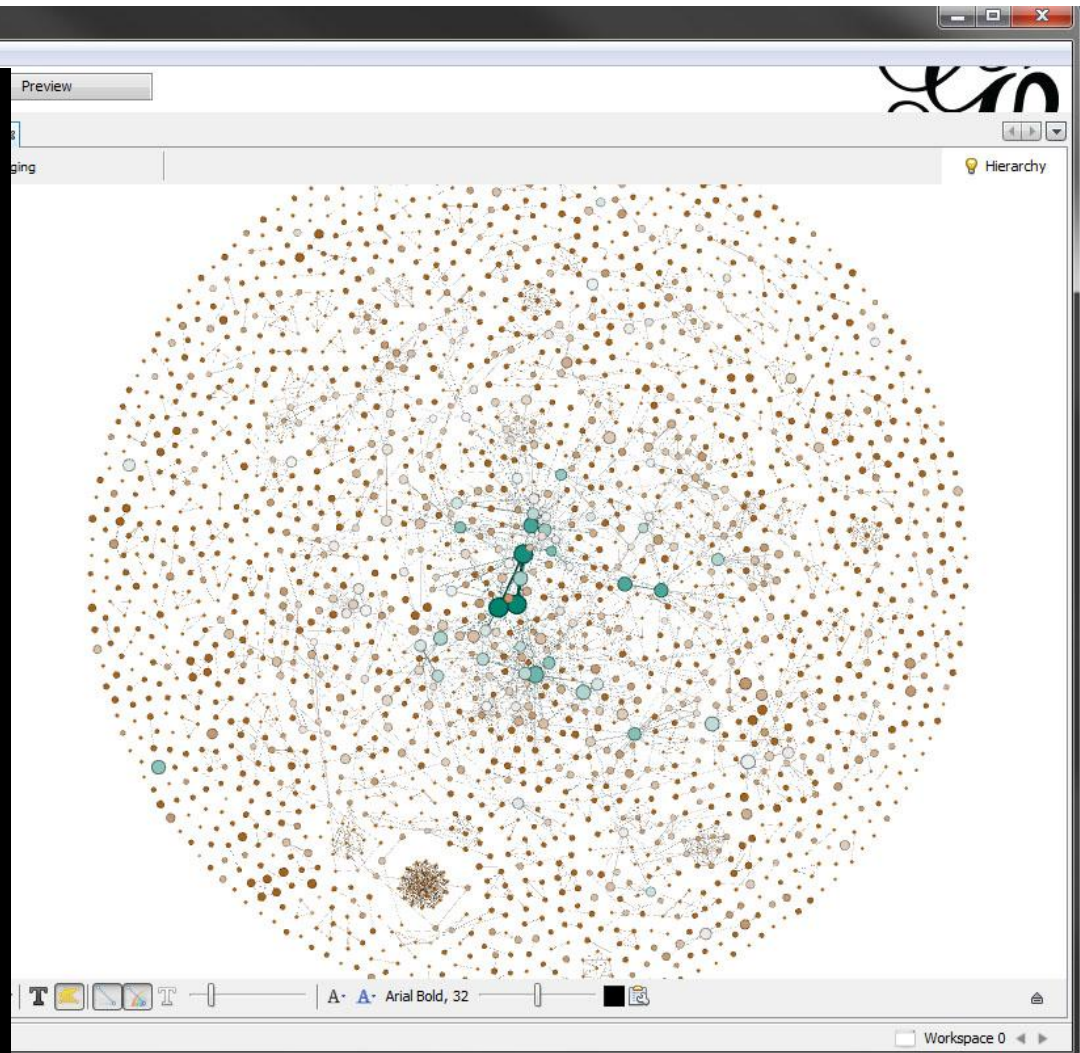
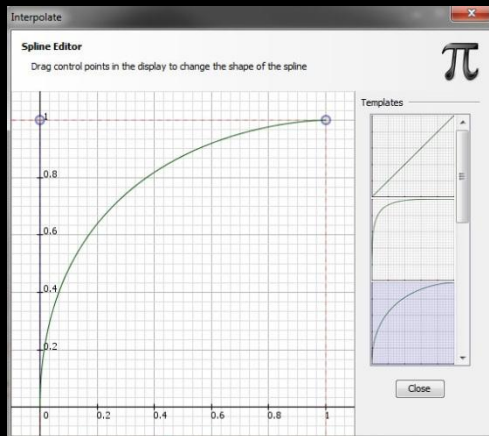
Conversely, if you want to convey the differences between the nodes with a higher `times_cited` value more clearly and you are less worried about nodes with smaller `times_cited` value, then you may want to choose a layout like the one the right.

This layout changes the size of nodes with a higher `times_cited` value more drastically than nodes with smaller `times_cited`.



# Scaling the Size and Color of the Nodes

For this network there are many nodes with low `times_cited` values and low `number_of_authored_works` values. Thus, the following scale was chosen to make the differences in both size and color of the majority of the nodes more visible

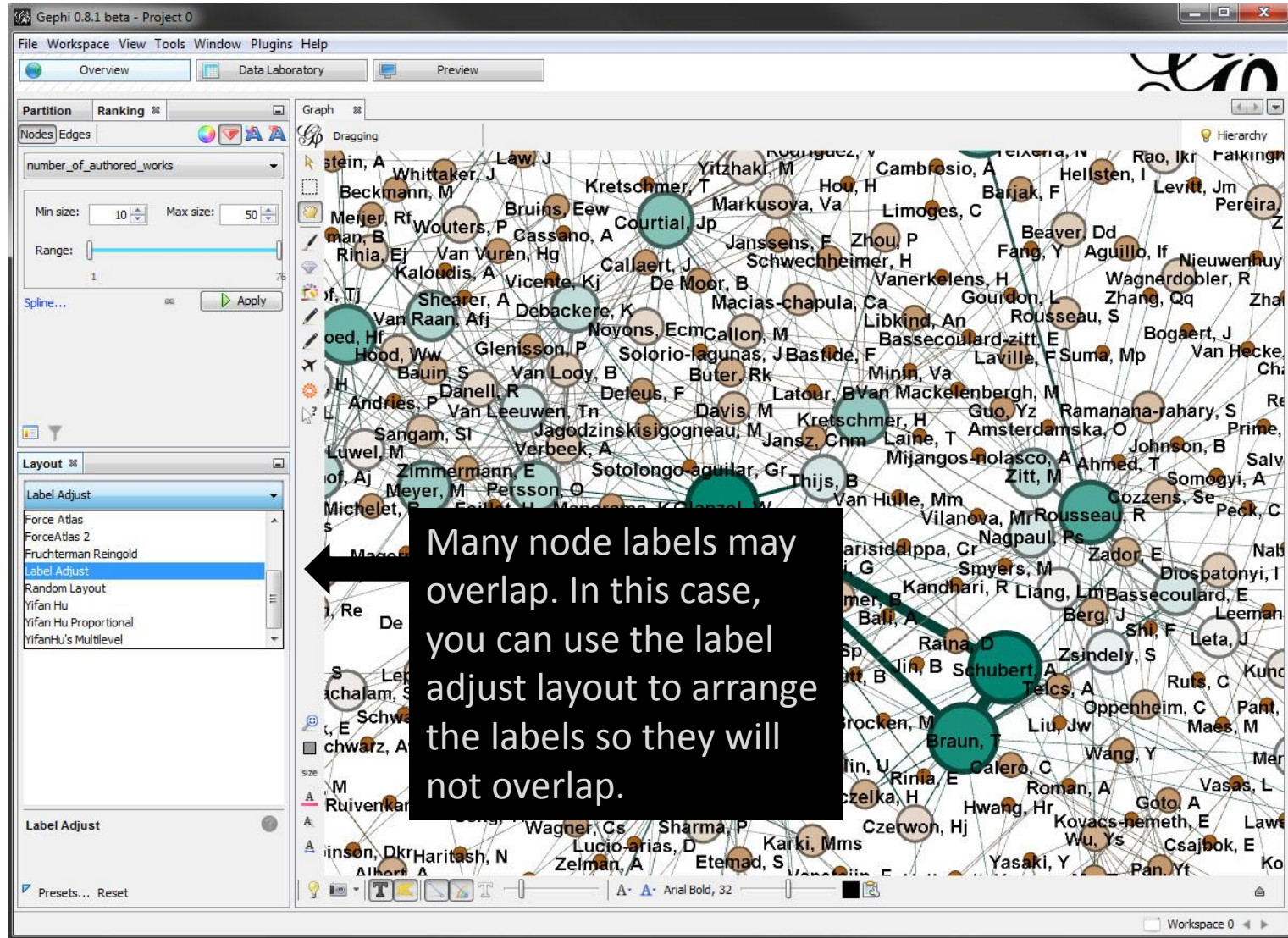


# Enhancing Visualization - Adding Node Labels

The screenshot shows the Gephi 0.8.1 beta interface. The main window displays a network graph with nodes of varying sizes and colors (green, orange, grey) connected by edges. The nodes are labeled with names, such as 'stein, A', 'Whittaker, J', 'Rodriguez, V', 'Cambrosio, A', 'Helsten, I', 'Rao, Ikr', 'Levit, Jm', 'Beckmann, M', 'Bruins, Eew', 'Kretschmer, J', 'Yitzhaki, M', 'Hou, H', 'Limoges, R', 'Barjak, H', 'Rao, Ikr', 'Levit, Jm', 'Pereira, Z', 'Meijer, Rf', 'Wouters, P', 'Cassano, A', 'Coulmas, Ya', 'Zhou, P', 'Beaver, Dd', 'Aguillo, If', 'Fang, Y', 'Van Vuren, Hg', 'Vicente, G', 'Gallaert, J', 'Vanherke, S', 'Soudon, L', 'Wagner, D', 'Nieuwenhuysen, M', 'Glenisson, M', 'De Moor, B', 'Macias-chapula, Gr', 'Brind, An', 'Rousseau, Zh', 'Sng, Qq', 'Van Raan, Afj', 'Debackere, K', 'Bassecoulard-zitt, E', 'Suma, M', 'Bogava, Hecke, C', 'Hood, Ww', 'Danell, R', 'Solorio-lagunas, J', 'Van Mackelenbergh, M', 'Guo, Yz', 'Ramanana-rahary, P', 'CRe', 'Mijangos-nolasco, A', 'Johnson, B', 'Luwer, M', 'Sangam, Sl', 'van Leeuwen, Tn', 'van Beck, M', 'Laine, T', 'Zitt, M', 'Ahmed, T', 'Somogyi, Salva', 'Zimmermann, E', 'Jansz, Crm', 'Uthar, H', 'Hulle, Mm', 'Vilanova, Mr', 'Rousseau, G', 'Zens, Se', 'Peck, C', 'Meyer, W', 'Peterson, O', 'Sotolongo-aguilan, Gr', 'Uthar, H', 'Hulle, Mm', 'Zitt, M', 'Ahmed, T', 'Somogyi, Salva', 'Michelet, B', 'Mandrama, K', 'Ganzel, W', 'Magde, Van', 'Wirk, E', 'Karisiddappa, Cr', 'Nagpaul, Ps', 'Zador, B', 'Rospatony, Nab', 'Mello, Tj', 'Tjssen, Rjw', 'Melin, G', 'Hanchi, G', 'Smyers, M', 'Zador, B', 'Rospatony, Nab', 'Jw', 'Cahlin, I', 'Fannaiah, S', 'Muller, R', 'desfontaines, M', 'Kandhari, R', 'Liang, Lm', 'Bassecoulard, E', 'Berg, J', 'Shi, F', 'Leta, J', 'De Lange, C', 'Lee, Jd', 'Leysdesfontaines, M', 'Kandhari, R', 'Liang, Lm', 'Bassecoulard, E', 'Berg, J', 'Shi, F', 'Leta, J', 'Vandenberg, Wp', 'Rip, A', 'Banerjee, P', 'Dutt, B', 'Schubert, A', 'Telcs, A', 'Ruts, C', 'Kunc', 'achalapatir, C', 'Vanhouten, J', 'Gupta, Bn', 'Roy, SB', 'Brocken, M', 'Braun, T', 'Liu, Jw', 'Oppenheim, C', 'Pant, M', 'Schwarz, S', 'Karisiddappa, Cr', 'Kumar, S', 'Sharma, L', 'Calero, C', 'Wang, Y', 'Maes, M', 'E', 'Manick, P', 'g', 'Sharma, P', 'Karki, Mm', 'Czerwon, Hj', 'Hwang, Hr', 'Kovacs-nemeth, E', 'Lawl', 'Kamp, W', 'Song, Y', 'Wagner, Cs', 'Sivertsen, G', 'Maczelka, H', 'Roman, A', 'Goto, Y', 'Sas, L', 'Wu, Ys', 'Csajbok, E', 'Haritash, N', 'Lucio-aras, D', 'Sharma, P', 'Karki, Mm', 'Czerwon, Hj', 'Hwang, Hr', 'Kovacs-nemeth, E', 'Lawl', 'Albert, A', 'Aggarwal, Z', 'Etemad, S', 'Hellebrand, K', 'Y', 'Pan, Yt', 'Ko', 'Presets... Reset

**Add node labels**

# Enhancing Visualization – Adjusting Node Labels



The screenshot displays the Gephi 0.8.1 beta interface. The main window shows a network graph with numerous nodes and edges. Many node labels are overlapping, making them difficult to read. A black text box with a white arrow points to the 'Label Adjust' layout option in the left sidebar. The text box contains the following text:

Many node labels may overlap. In this case, you can use the label adjust layout to arrange the labels so they will not overlap.

The left sidebar shows the 'Layout' section with the following options:

- Label Adjust
- Force Atlas
- ForceAtlas 2
- Fruchterman Reingold
- Label Adjust
- Random Layout
- Yifan Hu
- Yifan Hu Proportional
- YifanHu's Multilevel

The 'Label Adjust' option is highlighted in blue. The top menu bar includes File, Workspace, View, Tools, Window, Plugins, and Help. The top toolbar includes Overview, Data Laboratory, and Preview. The bottom status bar shows 'Workspace 0'.

# Enhancing Visualization – Making Network More Visible

Even with the label adjust layout run, the nodes can still be too densely clustered for easy reading. You can try expanding the area in which the network is visualized.

# Enhancing Visualization – Using Filters

The screenshot displays the Gephi 0.8.1 beta software interface. The main window shows a network graph with nodes and edges. A text box is overlaid on the graph, providing instructions on how to use filters. The Filters window is open on the right side of the interface, showing a list of filter categories and a 'Queries' section with a 'Drag filter here' prompt. The interface includes a menu bar (File, Workspace, View, Tools, Window, Plugins, Help), a toolbar, and several panels for configuration and visualization.

If you do not want to expand the area of the network, but would rather reduce the size of the network you can use the filters to reduce the size of the network in various ways. If the filters window does not appear follow **Window > Filters** at the top of the tool.

Statistics Filters

Reset

Library

- Attributes
- Dynamic
- Edges
- Operator
- Topology
- Saved queries

Queries

Drag filter here

Select Filter

Workspace 0



# Enhancing Visualization – Using Filters

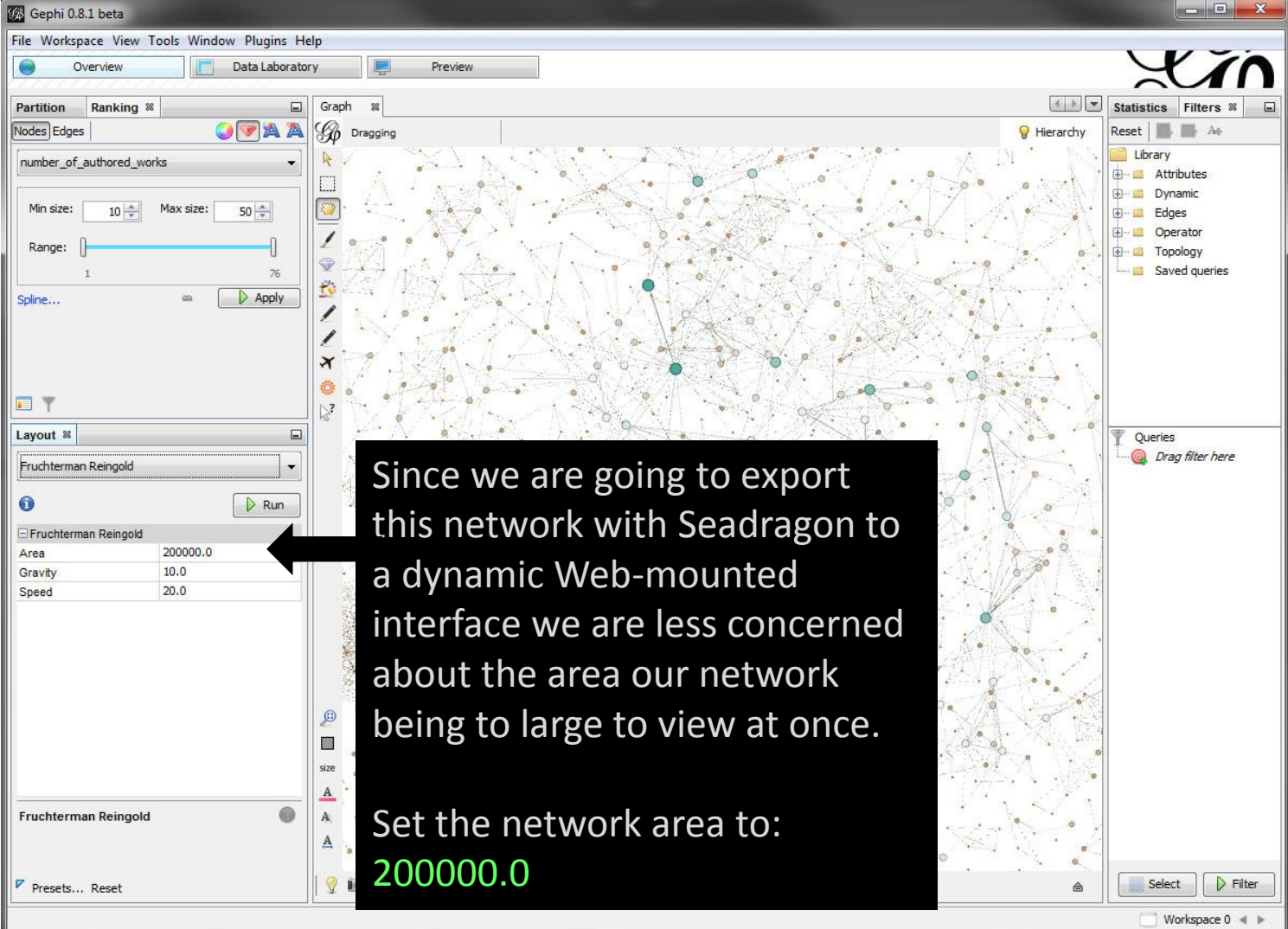
To filter by degree, select **Topology** and drag the Degree Range filter the window below the list

Once the filter appears below the queries icon, like this:

You can set the range using the slide too:

Once you have set the degree range click **Filter**

# Enhancing Visualization – Making Network More Visible



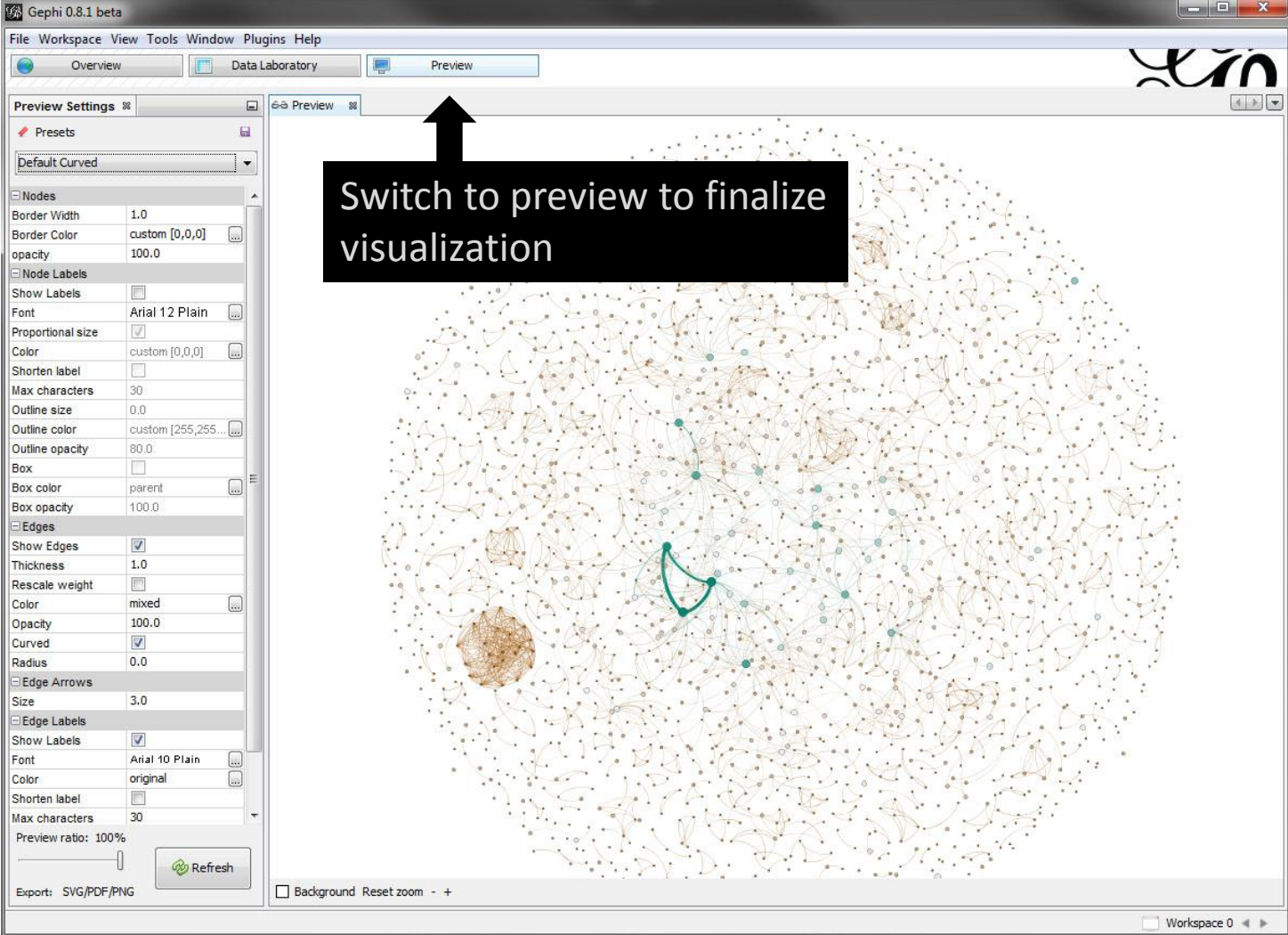
The screenshot shows the Gephi 0.8.1 beta interface. The main window displays a dense network graph with nodes and edges. The left sidebar contains several panels: 'Partition' (Ranking) with 'number\_of\_authored\_works' selected, 'Layout' (Fruchterman Reingold) with a 'Run' button, and a table of layout parameters. The right sidebar contains 'Statistics' and 'Filters' panels. A black text box with a white arrow pointing to the 'Area' parameter in the layout table contains the following text:

Since we are going to export this network with Seadragon to a dynamic Web-mounted interface we are less concerned about the area our network being too large to view at once.

Set the network area to:  
**200000.0**

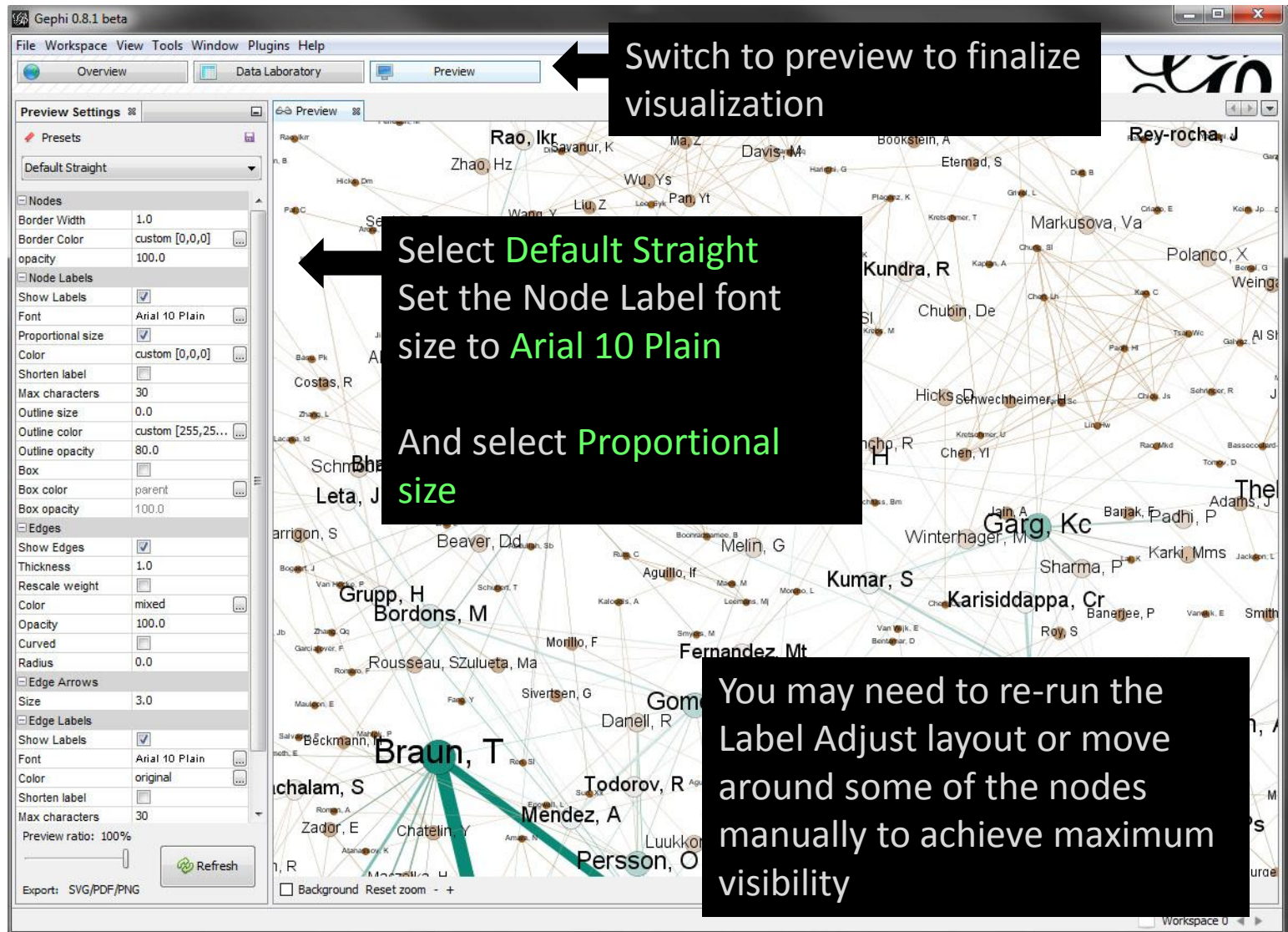
Fruchterman Reingold	
Area	200000.0
Gravity	10.0
Speed	20.0

# Finalizing Visualization in Preview



The screenshot shows the Gephi 0.8.1 beta interface. The 'Preview' tab is selected in the top navigation bar. On the left, the 'Preview Settings' panel is visible, showing various configuration options for nodes, edges, and labels. A black callout box with white text and an arrow points to the 'Preview' tab, containing the text: "Switch to preview to finalize visualization". The main workspace displays a large, complex network graph with many nodes and edges, rendered in a circular layout. The nodes are small circles, and the edges are thin lines connecting them. A few nodes and edges are highlighted in a darker green color. At the bottom of the interface, there are options for 'Export: SVG/PDF/PNG', a 'Refresh' button, and a 'Background Reset zoom' option.

# Finalizing Visualization in Preview



Switch to preview to finalize visualization

Select **Default Straight**  
Set the Node Label font size to **Arial 10 Plain**  
And select **Proportional size**

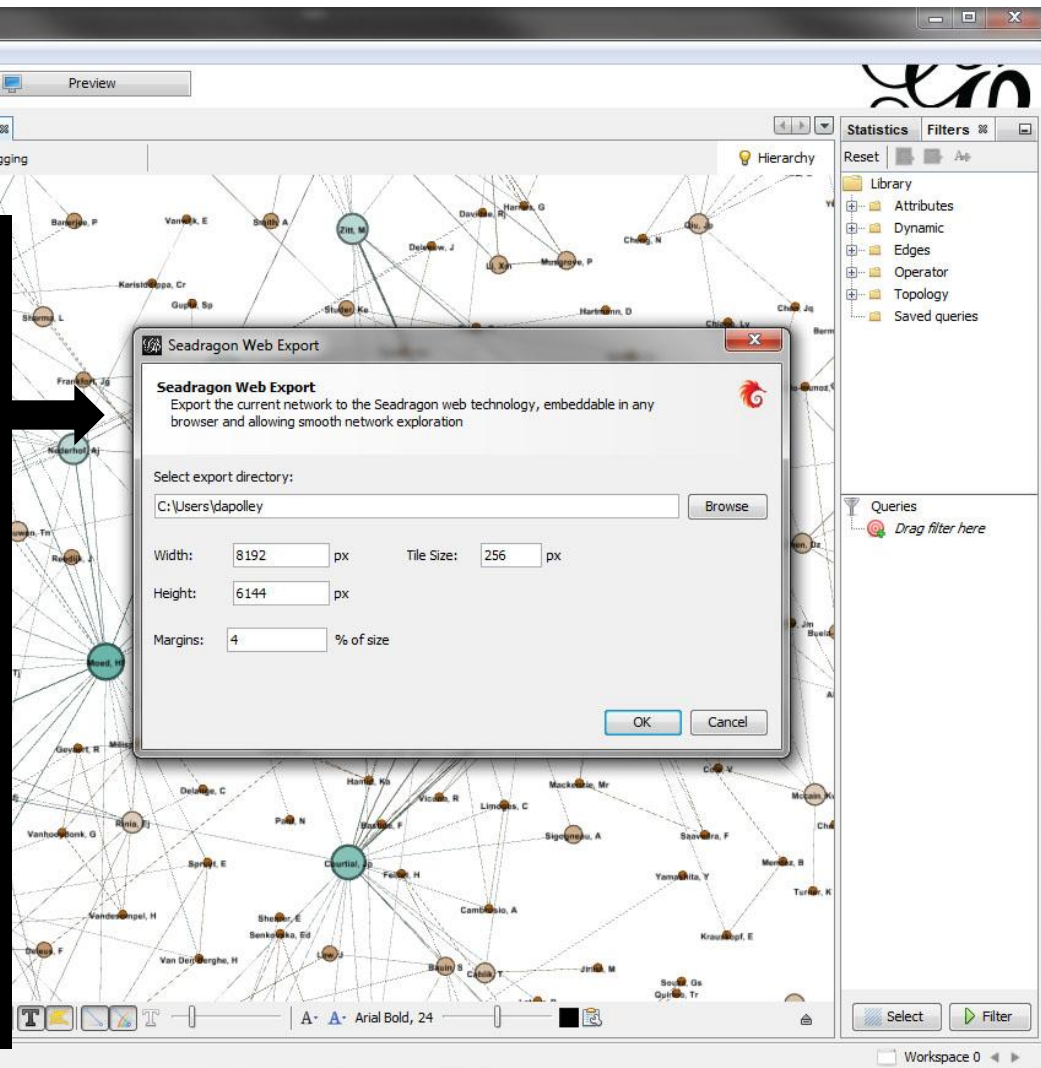
You may need to re-run the Label Adjust layout or move around some of the nodes manually to achieve maximum visibility

The screenshot shows the Gephi 0.8.1 beta interface. The 'Preview' tab is selected in the top navigation bar. The 'Preview Settings' panel on the left is open, showing the 'Default Straight' layout selected. Under 'Nodes', 'Show Labels' is checked, and the font is set to 'Arial 10 Plain'. Under 'Edges', 'Show Edges' is checked. The main workspace displays a network graph with nodes labeled with names and edges connecting them. A large green arrow points from the 'Preview' tab to the 'Default Straight' layout selection. Another large green arrow points from the 'Preview Settings' panel to the 'Node Labels' section. A third large green arrow points from the 'Preview Settings' panel to the 'Proportional size' option. A fourth large green arrow points from the 'Preview Settings' panel to the 'Font' dropdown menu.

# Exporting the Final Visualization with Seadragon

Change back to the overview tab to export with Seadragon and follow **File > Export > Seadragon Web...**

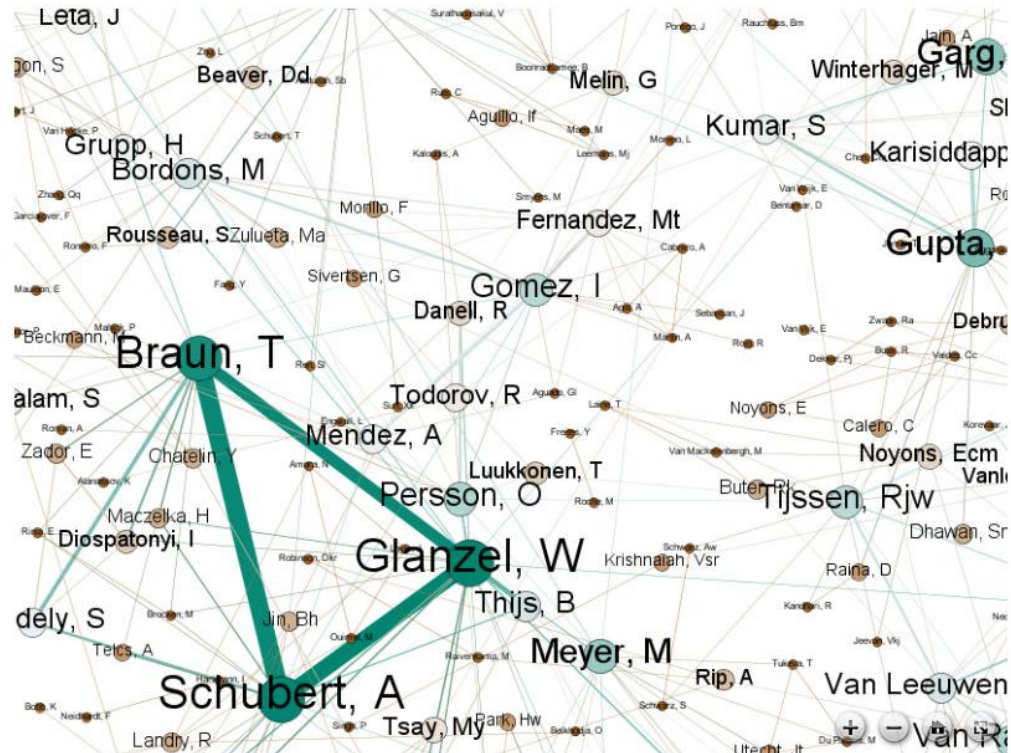
You will have to select the save location and set the size parameters (the default size is extremely large and will probably need to be scaled down to speed up the export).



# Exporting the Final Visualization with Seadragon

Once the export is finished you can view the result in a web browser. Seadragon creates all the files you will need and provides instructions on how to mount the visualization to the Web. You can include it on your personal web site or blog as part of your own original research!

## Gephi Seadragon Export



### Instructions to put online

- Copy all files on your server.
- Use this HTML file as an example, copy the script and define a **seadragon** div in your page.
- Find help on the [Seadragon AJAX website](#).
- Note that its not possible to preview Seadragon locally with Chrome browser.

# Questions?

- Do you have any questions about the features or capabilities of Gephi?
- Be sure to check out the Gephi forums if you have any further questions <https://forum.gephi.org/>
- Feel free to email me dapolley [at] indiana [dot] edu