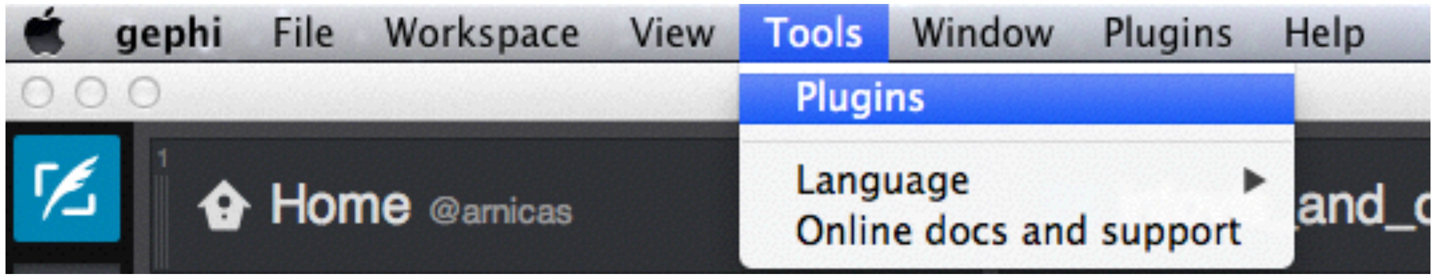
Some Layout and Export Tricks in Gephi

Lynn Cherny (@arnicas)

If you're following along...

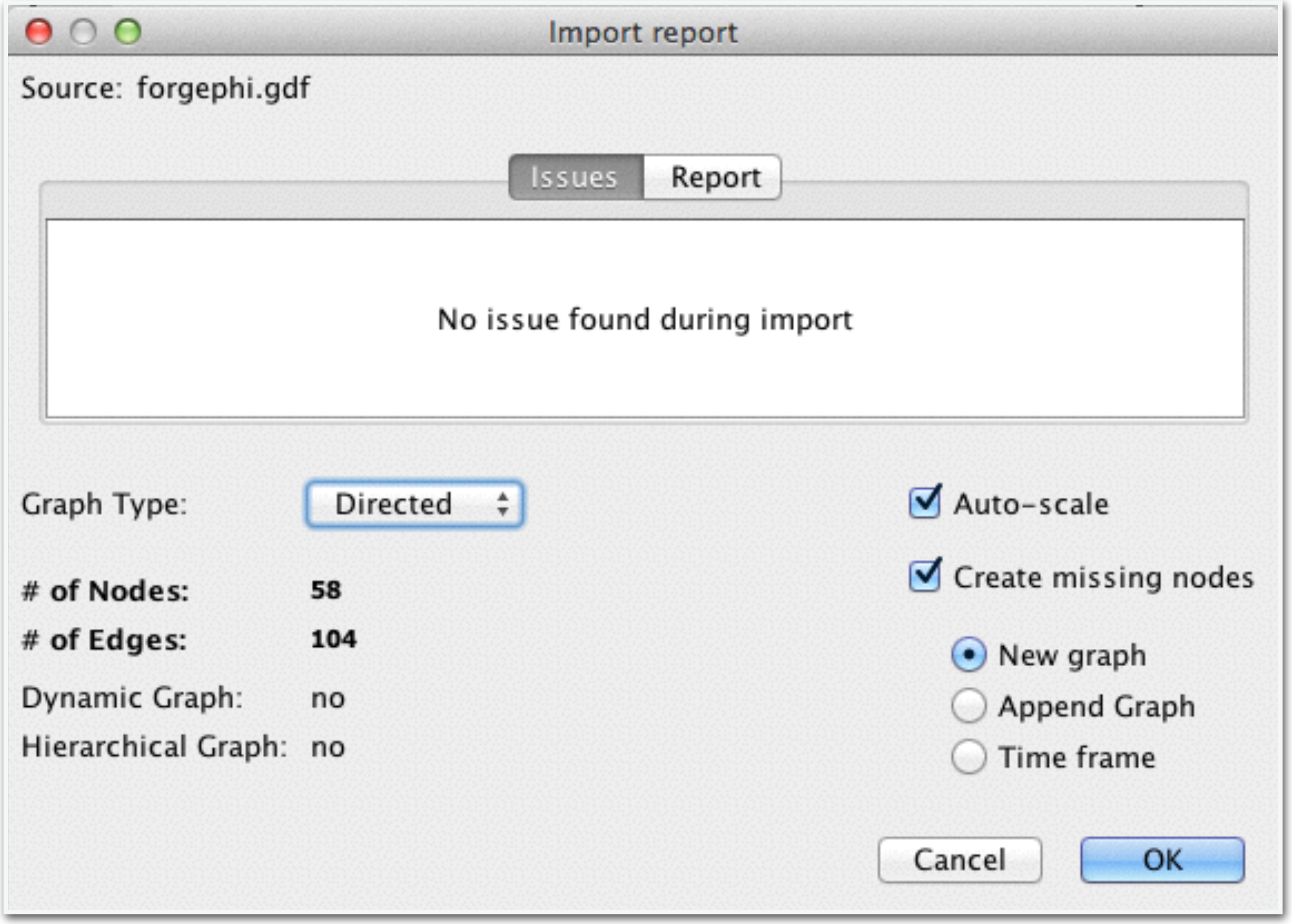
- All the files are in https://github.com/arnicas/TopicsPythonGephi
- You should have a gephi appropriate files now, such as files/forgephi.gdf: https://github.com/arnicas/TopicsPythonGephi/blob/master/files/forgephi.gdf

Plugins to Add to Gephi



- Circular Layout
- SigmaExporter

Launch Gephi. "Open" on file menu... Use defaults you see here.



Source: forgephi.gdf

No issue found during import

Graph Type: Directed

# of Nodes: **58**

# of Edges: **104**

Dynamic Graph: no

Hierarchical Graph: no

☑ Auto-scale

☑ Create missing nodes

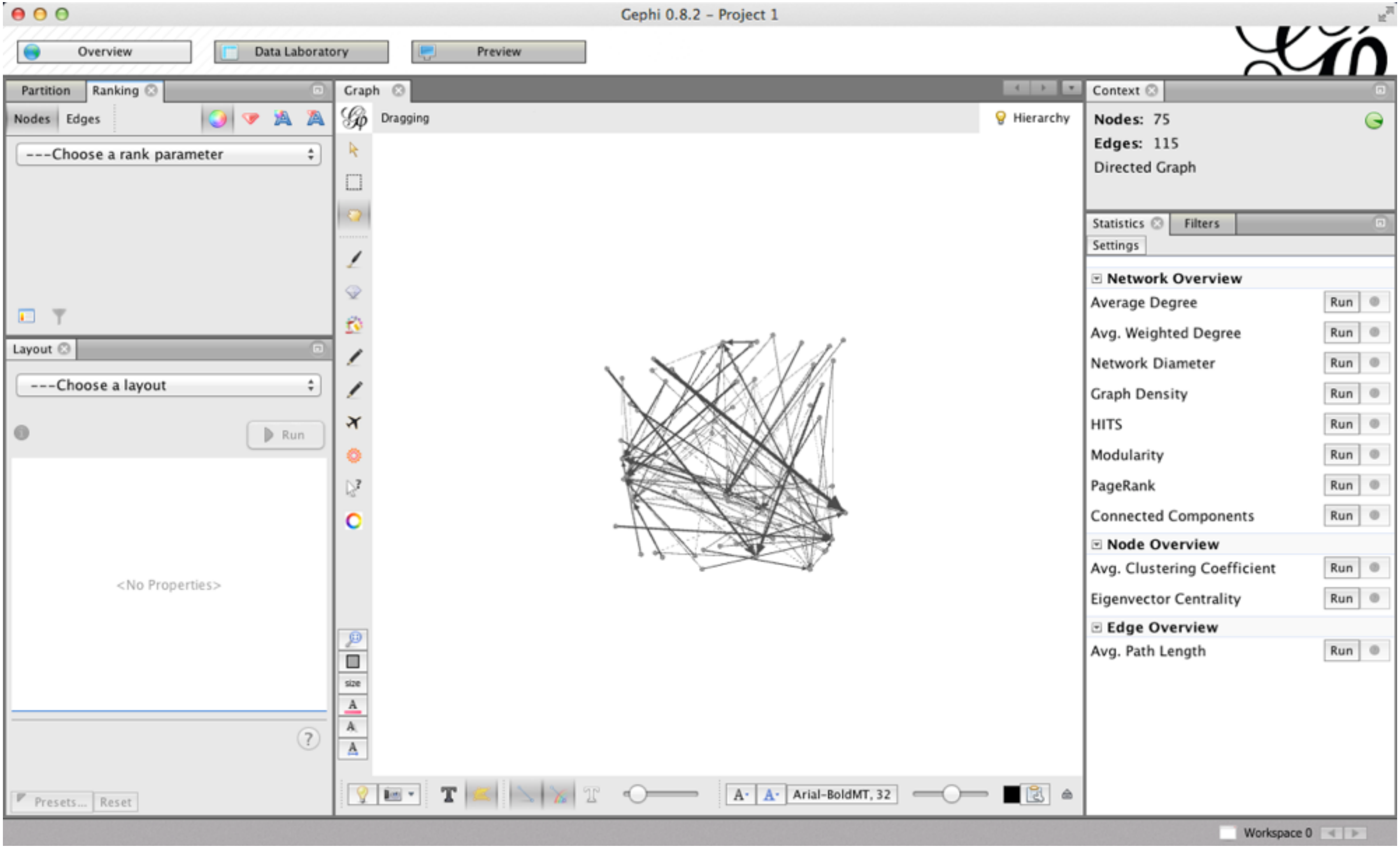
● New graph

○ Append Graph

○ Time frame

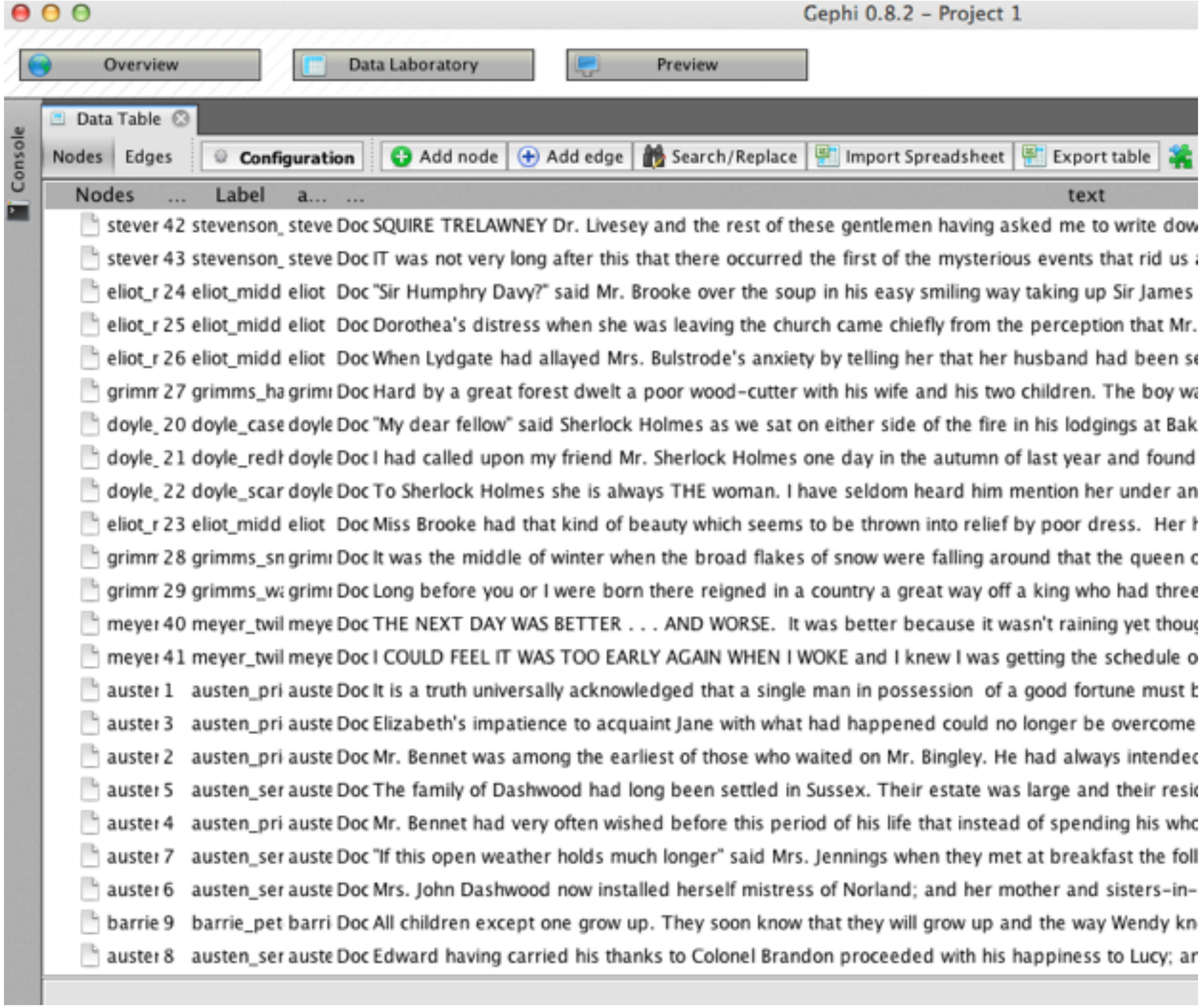
If your number of nodes does NOT = # docs + # topics, you have a problem! (Check your nodes files as csv.)

If all goes well, you should see something like this....



Nodes: 75
Edges: 115
Directed Graph

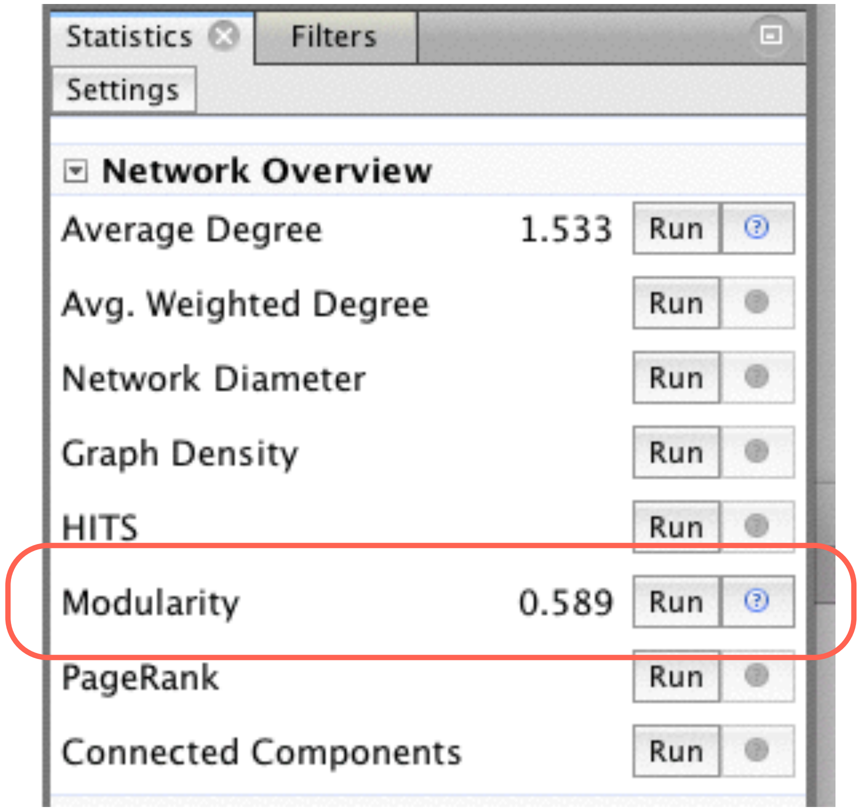
On the Data Laboratory Tab, you'll see what we imported. This is another method for debugging your file…



Nodes	...	Label	a...	...	text
stever	42	stevenson_	steve	Doc	SQUIRE TRELAWNEY Dr. Livesey and the rest of these gentlemen having asked me to write dow
stever	43	stevenson_	steve	Doc	IT was not very long after this that there occurred the first of the mysterious events that rid us
eliot_r	24	eliot_midd	eliot	Doc	"Sir Humphry Davy?" said Mr. Brooke over the soup in his easy smiling way taking up Sir James
eliot_r	25	eliot_midd	eliot	Doc	Dorothea's distress when she was leaving the church came chiefly from the perception that Mr.
eliot_r	26	eliot_midd	eliot	Doc	When Lydgate had allayed Mrs. Bulstrode's anxiety by telling her that her husband had been se
grimm	27	grimms_ha	grim	Doc	Hard by a great forest dwelt a poor wood-cutter with his wife and his two children. The boy wa
doyle_	20	doyle_case	doyle	Doc	"My dear fellow" said Sherlock Holmes as we sat on either side of the fire in his lodgings at Bak
doyle_	21	doyle_redh	doyle	Doc	I had called upon my friend Mr. Sherlock Holmes one day in the autumn of last year and found
doyle_	22	doyle_scar	doyle	Doc	To Sherlock Holmes she is always THE woman. I have seldom heard him mention her under an
eliot_r	23	eliot_midd	eliot	Doc	Miss Brooke had that kind of beauty which seems to be thrown into relief by poor dress. Her h
grimm	28	grimms_sn	grim	Doc	It was the middle of winter when the broad flakes of snow were falling around that the queen c
grimm	29	grimms_wa	grim	Doc	Long before you or I were born there reigned in a country a great way off a king who had three
meyer	40	meyer_twil	meye	Doc	THE NEXT DAY WAS BETTER . . . AND WORSE. It was better because it wasn't raining yet thoug
meyer	41	meyer_twil	meye	Doc	I COULD FEEL IT WAS TOO EARLY AGAIN WHEN I WOKE and I knew I was getting the schedule o
auster	1	austen_pri	auste	Doc	It is a truth universally acknowledged that a single man in possession of a good fortune must b
auster	3	austen_pri	auste	Doc	Elizabeth's impatience to acquaint Jane with what had happened could no longer be overcome
auster	2	austen_pri	auste	Doc	Mr. Bennet was among the earliest of those who waited on Mr. Bingley. He had always intendec
auster	5	austen_ser	auste	Doc	The family of Dashwood had long been settled in Sussex. Their estate was large and their resic
auster	4	austen_pri	auste	Doc	Mr. Bennet had very often wished before this period of his life that instead of spending his whc
auster	7	austen_ser	auste	Doc	"If this open weather holds much longer" said Mrs. Jennings when they met at breakfast the foll
auster	6	austen_ser	auste	Doc	Mrs. John Dashwood now installed herself mistress of Norland; and her mother and sisters-in-
barrie	9	barrie_pet	barri	Doc	All children except one grow up. They soon know that they will grow up and the way Wendy kn
auster	8	austen_ser	auste	Doc	Edward having carried his thanks to Colonel Brandon proceeded with his happiness to Lucy; ar

Over on the right side, you should have a "statistics" panel. "Run" a few of them and dismiss the dialogs. This adds stats to your data file you can use in layout and design.

Run Modularity at least -- it's a "community finding" algorithm.



Network Overview

Average Degree 1.533

Avg. Weighted Degree

Network Diameter

Graph Density

HITS

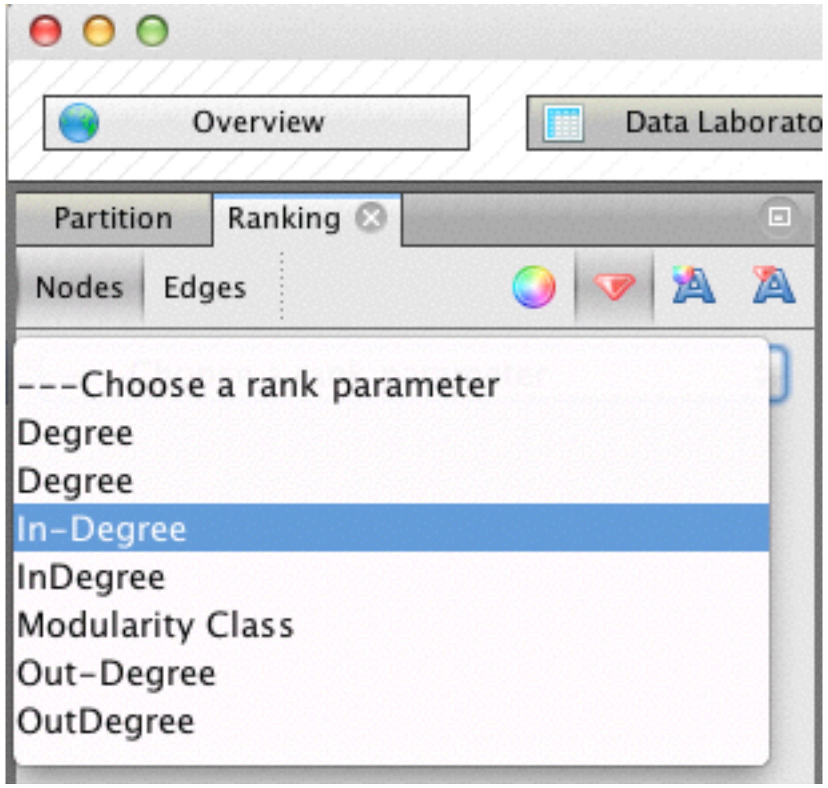
Modularity 0.589

PageRank

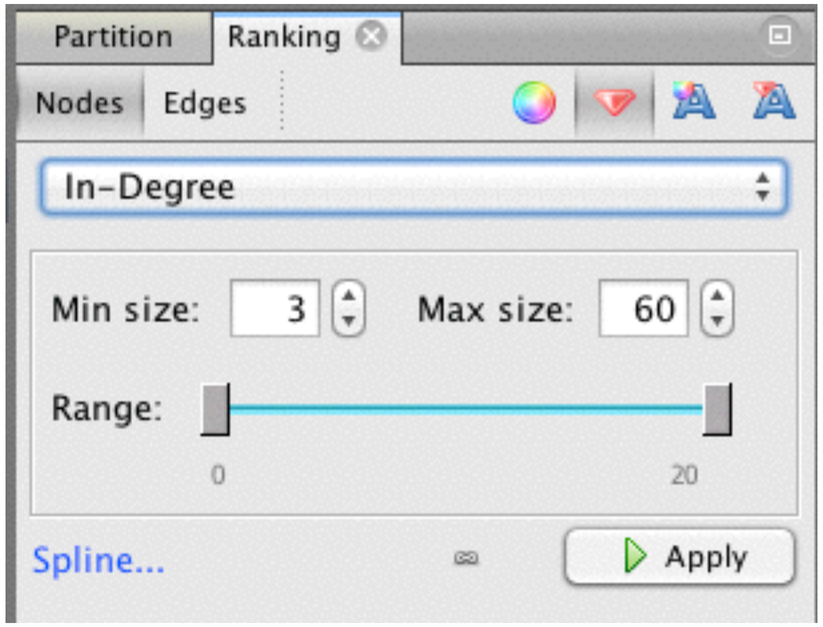
Connected Components

Now, on upper left side, in Ranking, select nodes, and the diamond. Pick "In-Degree" to size by.

1.



2.

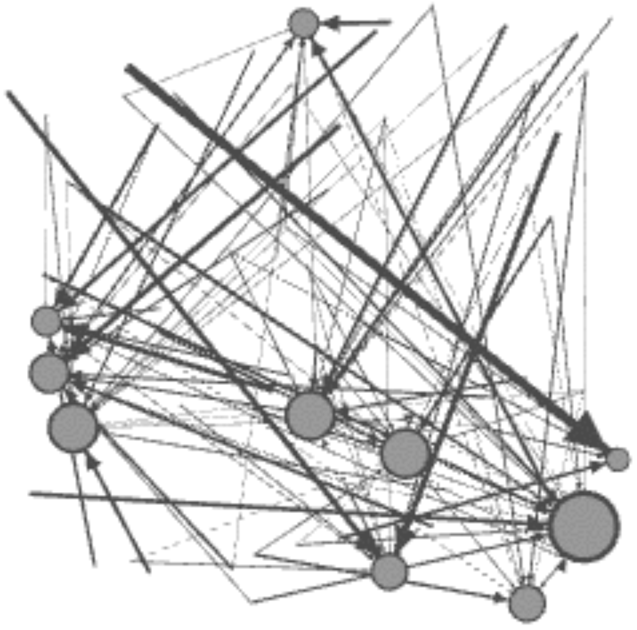


In-Degree

Min size: 3

Max size: 60

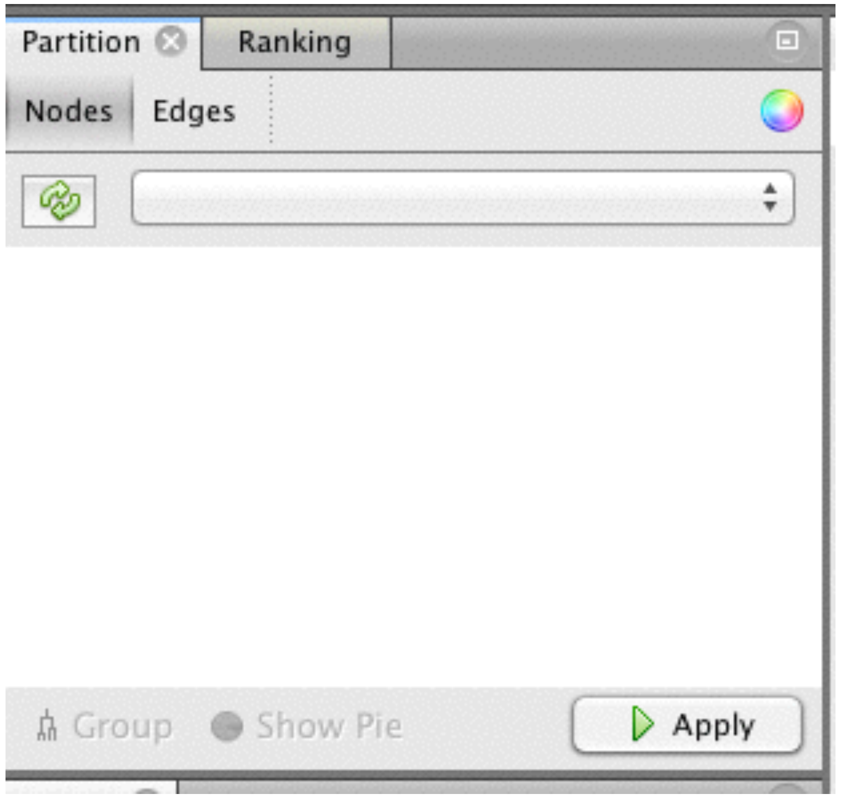
3. after Apply:



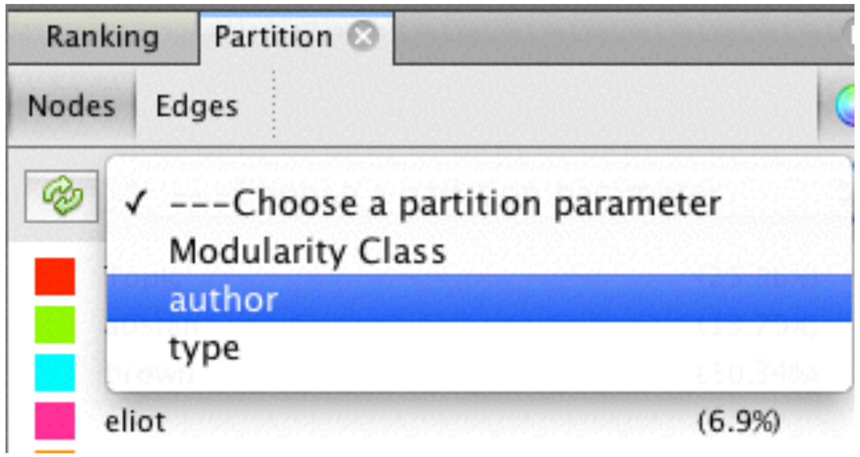
These are the nodes with the most "in arrows," or highest in-degree. They are the "topics."

Color by "Author" First

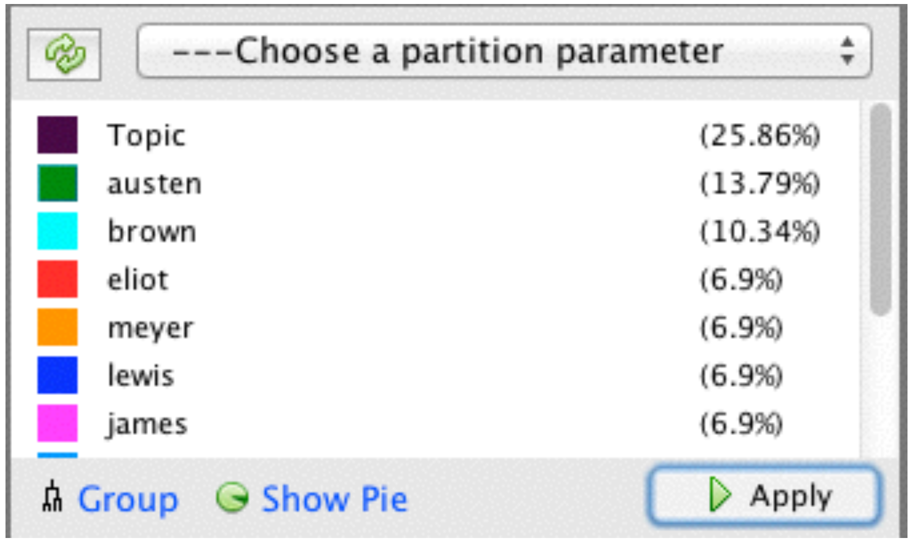
1. Hit green refresh arrow:



2. Then choose "author" from menu:



3. You'll see the "groups" and random assigned colors. Click on a color to pick a new one. Make them as different as you can.

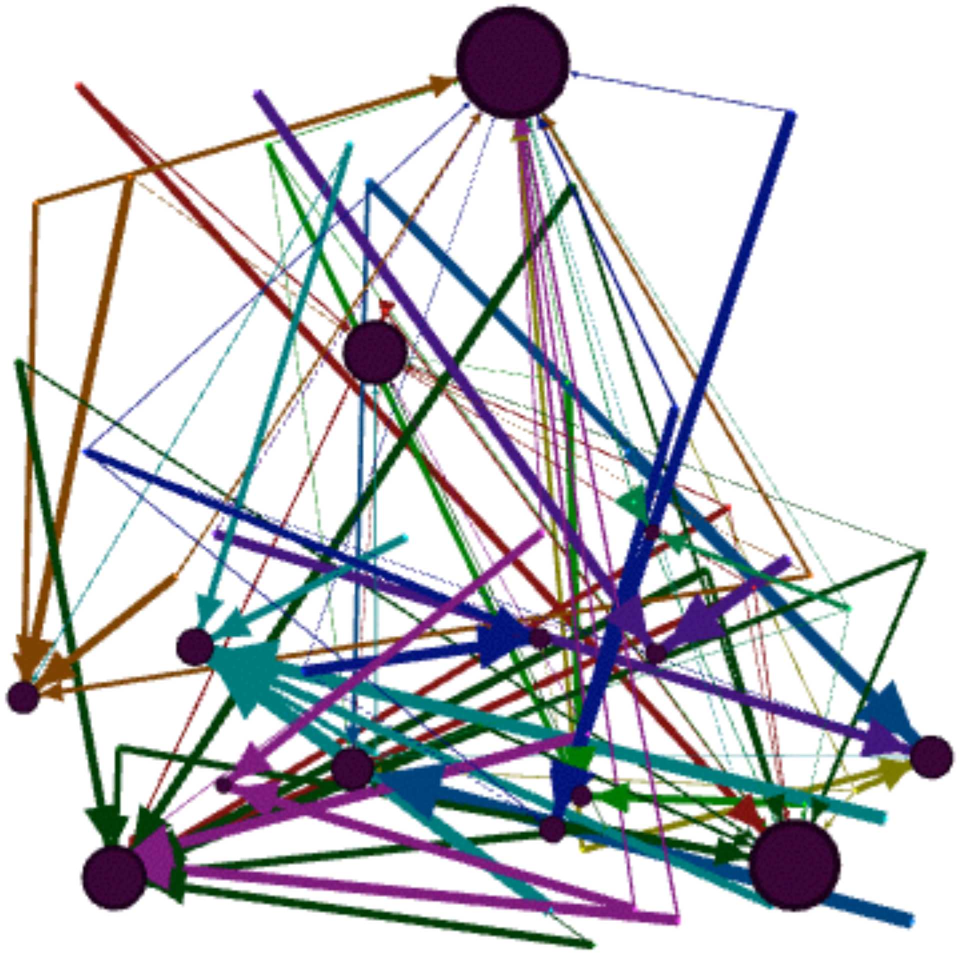


🟪	Topic	(25.86%)
🟩	austen	(13.79%)
🟦	brown	(10.34%)
🟥	eliot	(6.9%)
🟧	meyer	(6.9%)
🟦	lewis	(6.9%)
🟪	james	(6.9%)

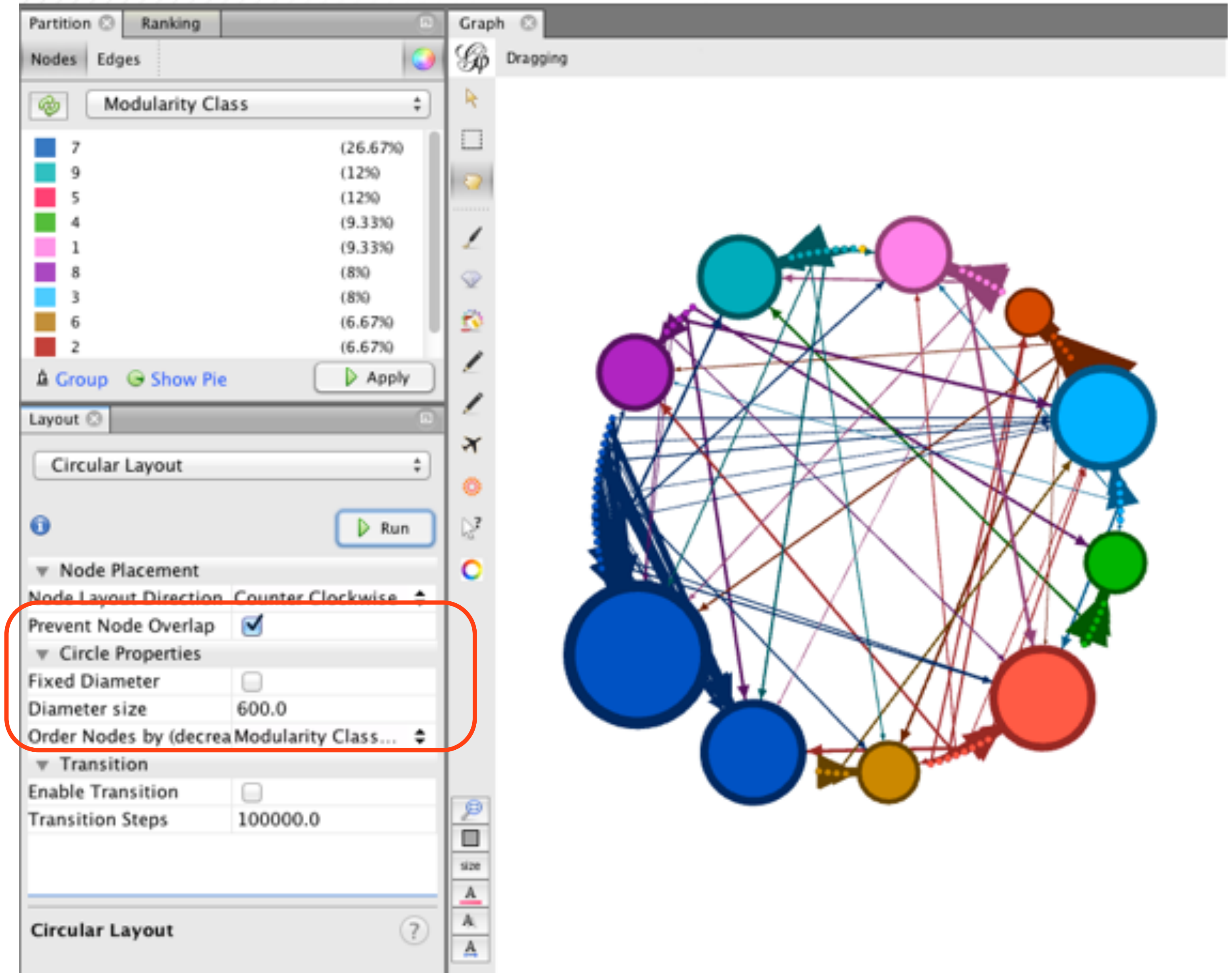
Tip: If you hate all of them, try a right click on one - pick randomize.

4. Then hit "Apply."

What are the big nodes?



Let’s try to lay it out a bit... Circular is nice for topics. You’ll need to hand-adjust in any case.



Modularity Class

🟦	7	(26.67%)
🟦	9	(12%)
🟥	5	(12%)
🟩	4	(9.33%)
🟪	1	(9.33%)
🟪	8	(8%)
🟦	3	(8%)
🟫	6	(6.67%)
🟥	2	(6.67%)

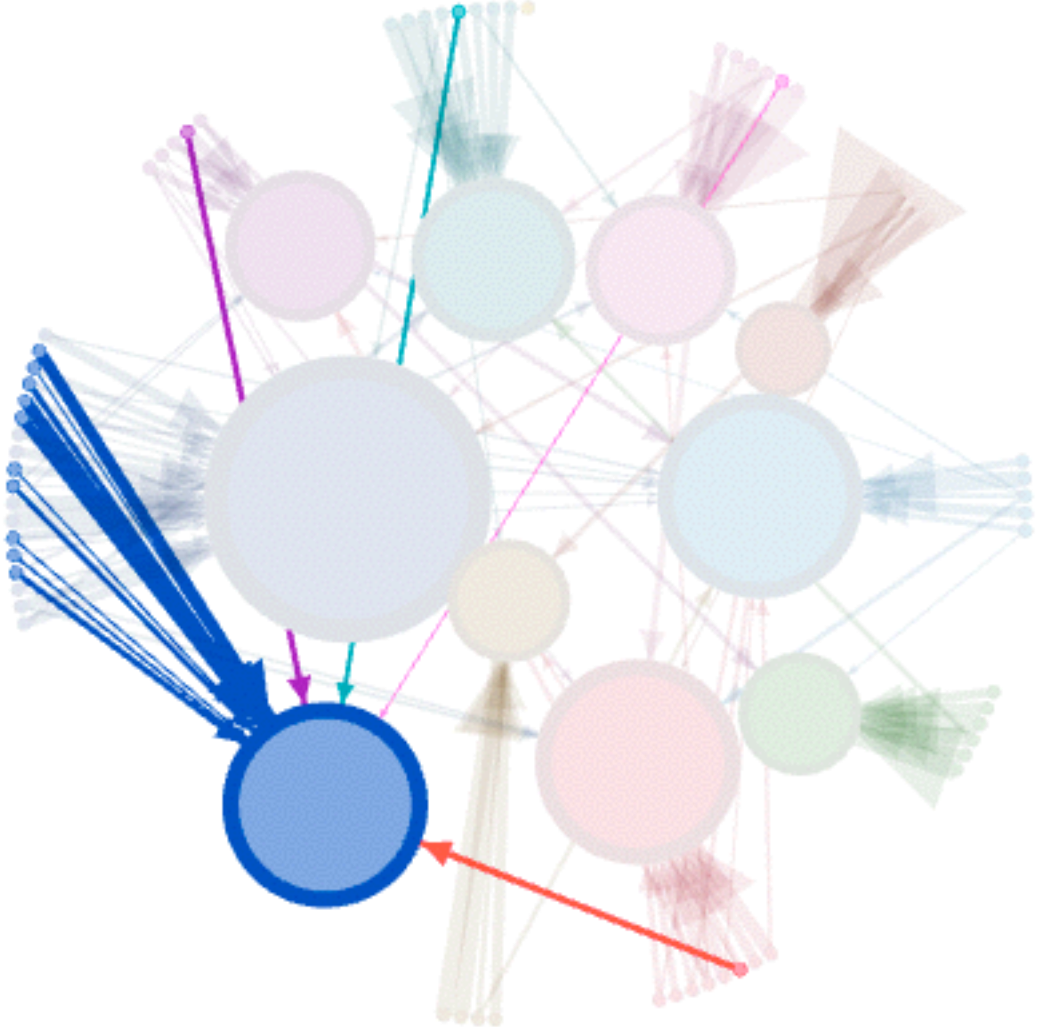
Circular Layout

Node Placement	
Node Layout Direction	Counter Clockwise
Prevent Node Overlap	☑
Circle Properties	
Fixed Diameter	□
Diameter size	600.0
Order Nodes by (decrea	Modularity Class...
Transition	
Enable Transition	□
Transition Steps	100000.0

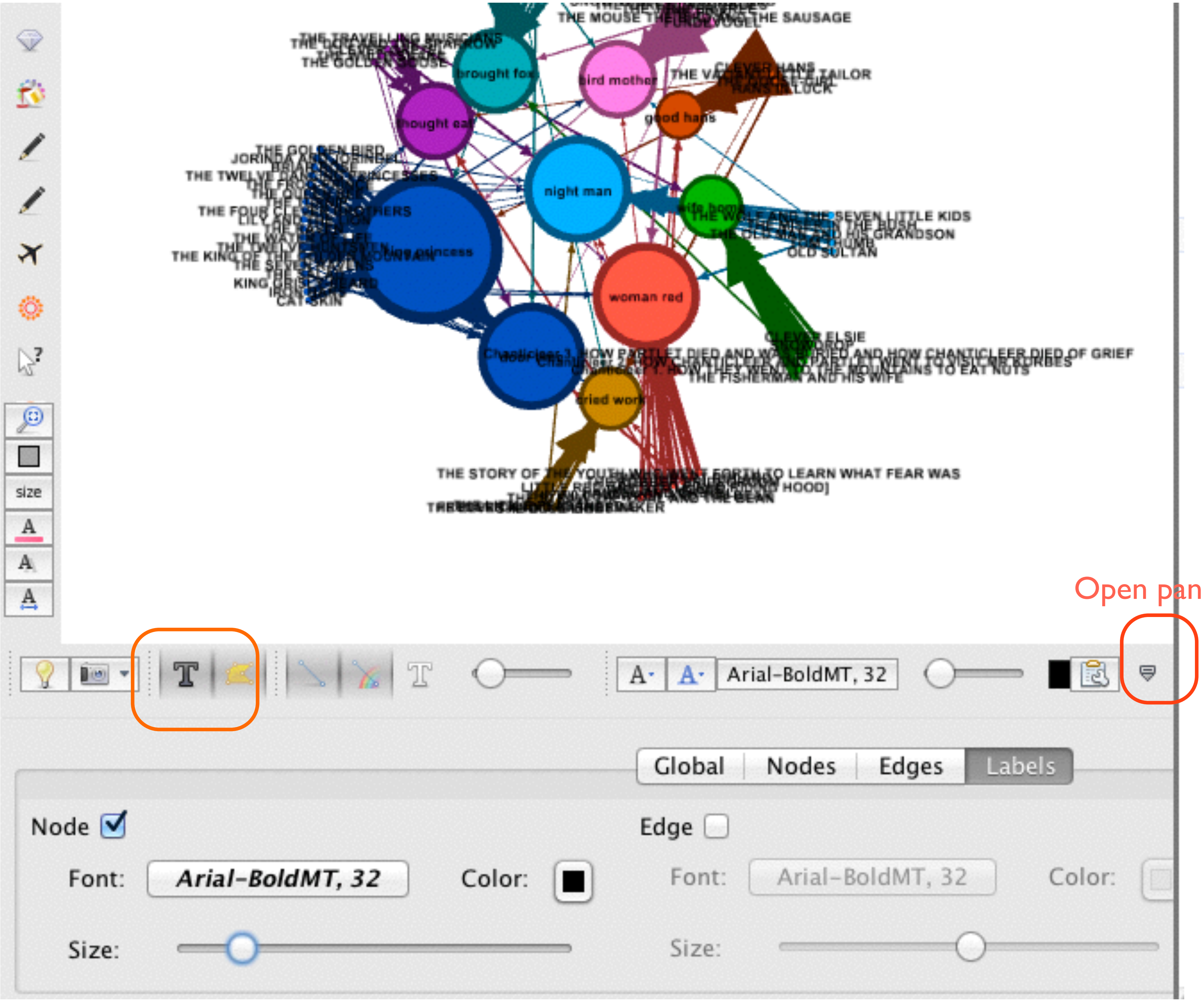
Circular Layout

Order nodes by modularity class!

Hand-tweak to move the topic nodes inside.



Turn on labels and adjust sizes...



Global | Nodes | Edges | Labels

Node ☑

Font: Arial-BoldMT, 32 Color: ■

Size:

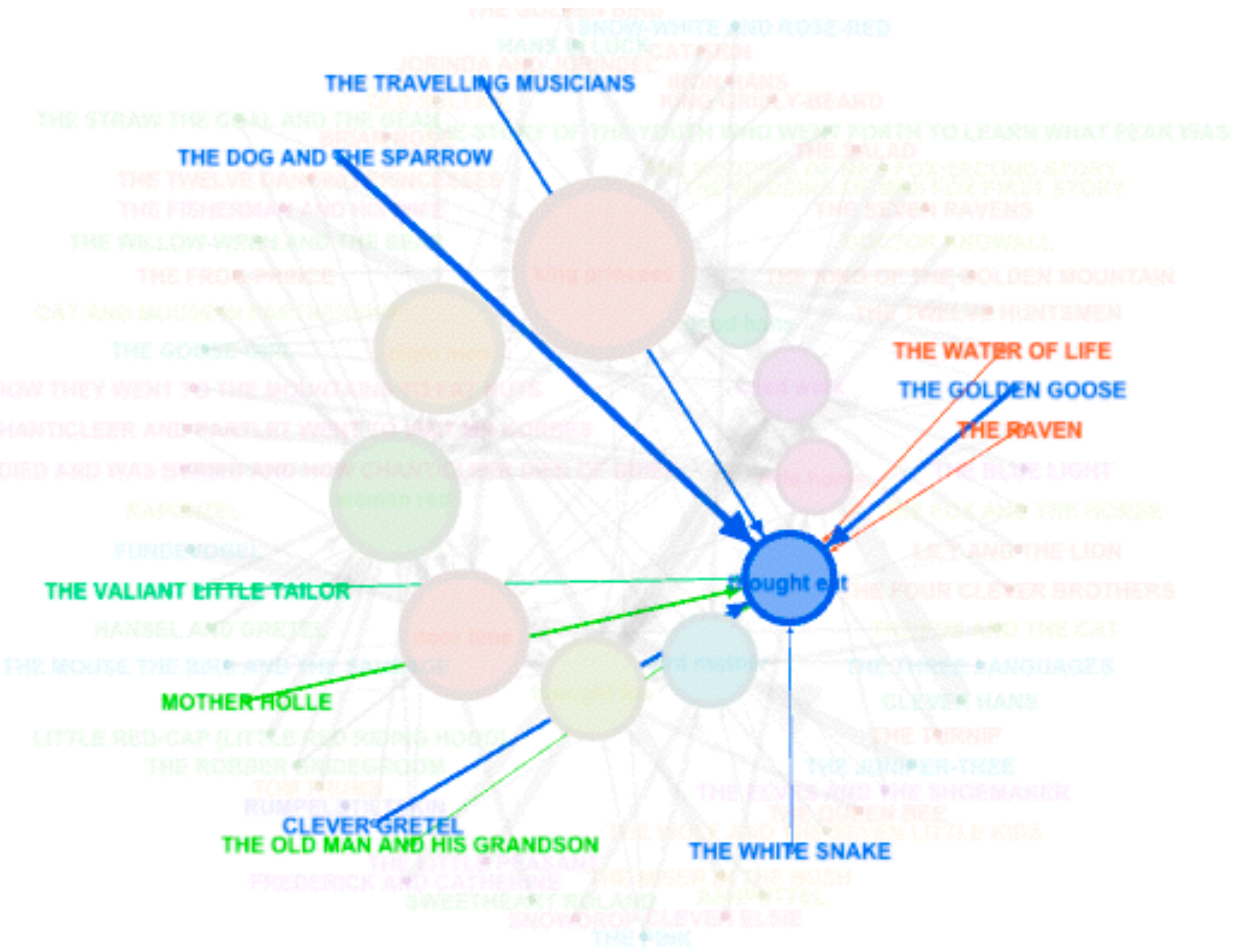
Edge □

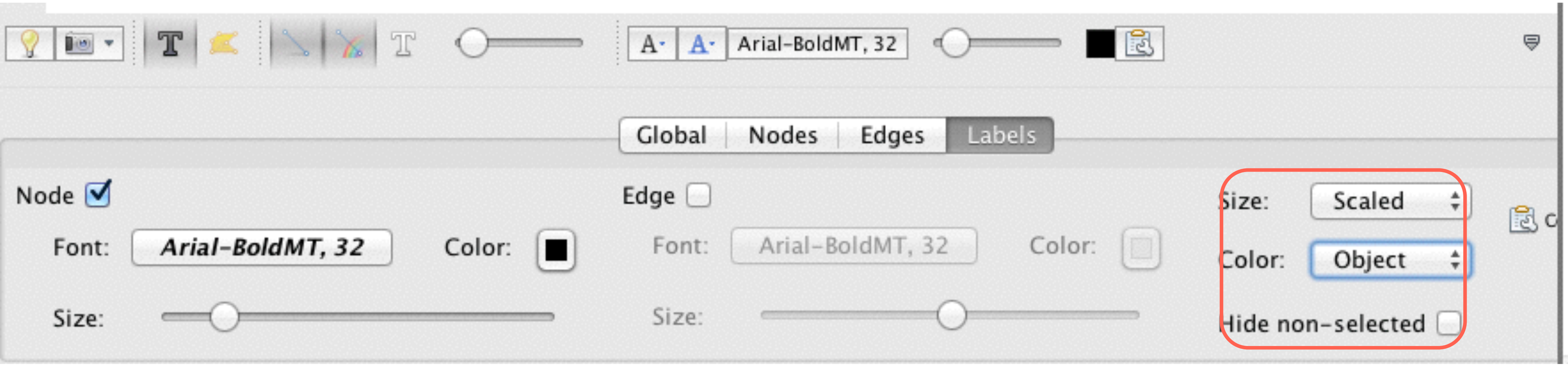
Font: Arial-BoldMT, 32 Color:

Size:

Open panel here

There are various options for coloring and sizing at the bottom.





Global | Nodes | Edges | Labels

Node ☑

Font: Arial-BoldMT, 32 Color: ■

Size:

Edge □

Font: Arial-BoldMT, 32 Color:

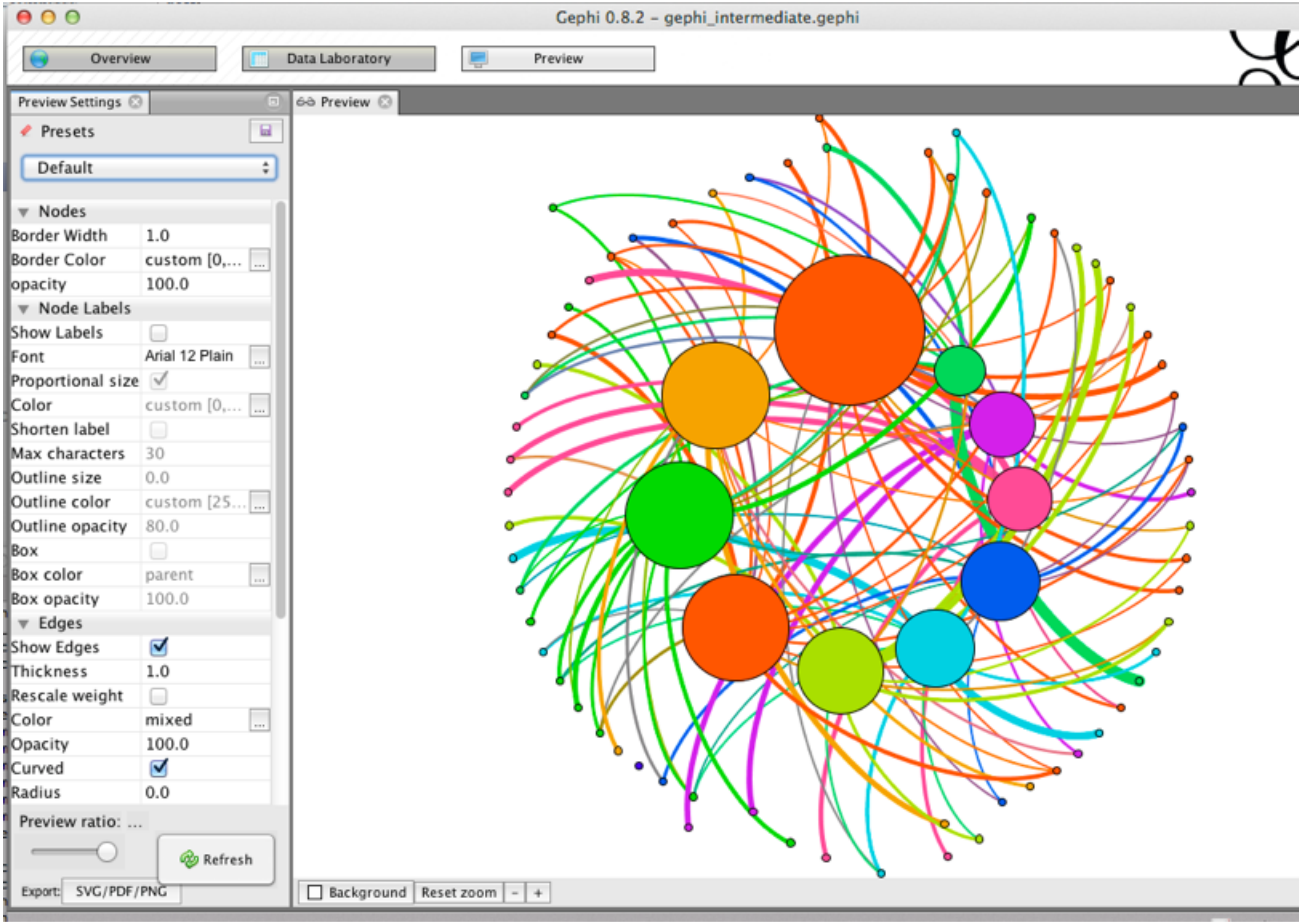
Size:

Size: Scaled

Color: Object

Hide non-selected □

The "pretty" exportable version is on the Preview Tab. Finish adjusting in here. But for adjustments to locations you need to go back to Overview, then come here and REFRESH.



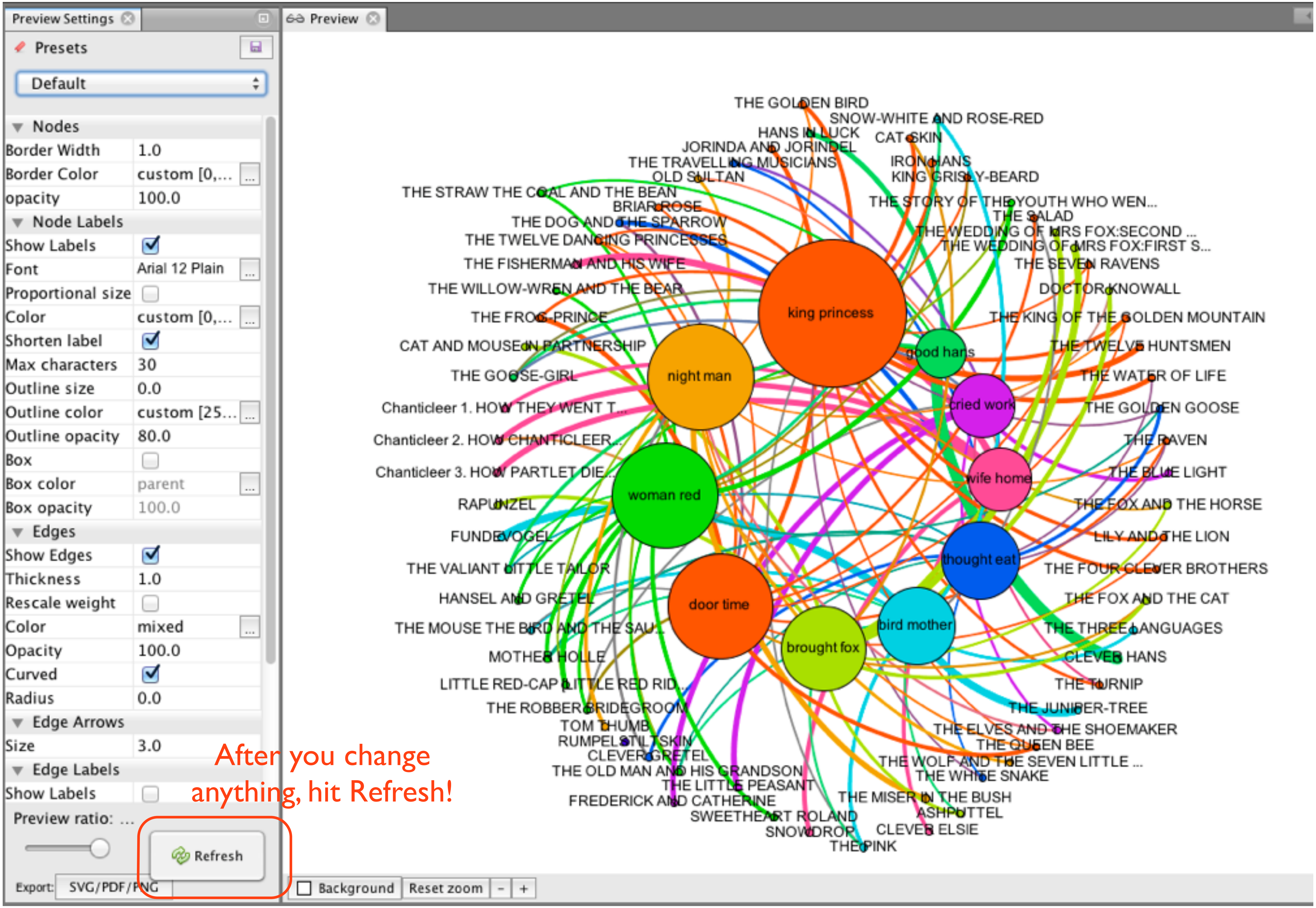
Gephi 0.8.2 – gephi_intermediate.gephi

Presets

Default

▼ Nodes	
Border Width	1.0
Border Color	custom [0,...
opacity	100.0
▼ Node Labels	
Show Labels	☐
Font	Arial 12 Plain
Proportional size	☑
Color	custom [0,...
Shorten label	☐
Max characters	30
Outline size	0.0
Outline color	custom [25...
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

Preview ratio: ...



Preview Settings

Presets

Default

▼ Nodes

Border Width	1.0
Border Color	custom [0,...
opacity	100.0

▼ Node Labels

Show Labels	☑
Font	Arial 12 Plain
Proportional size	□
Color	custom [0,...
Shorten label	☑
Max characters	30
Outline size	0.0
Outline color	custom [25...
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

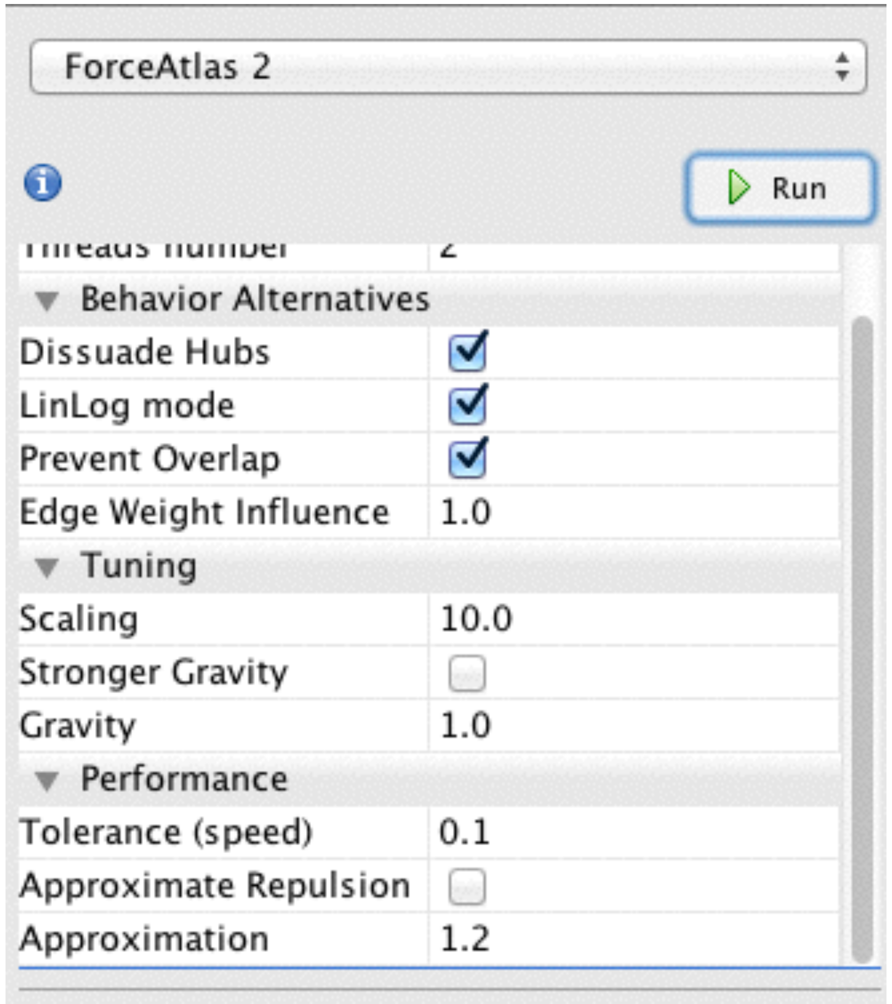
Show Labels	□

Preview ratio: ...

Export: SVG/PDF/PNG

After you change anything, hit Refresh!

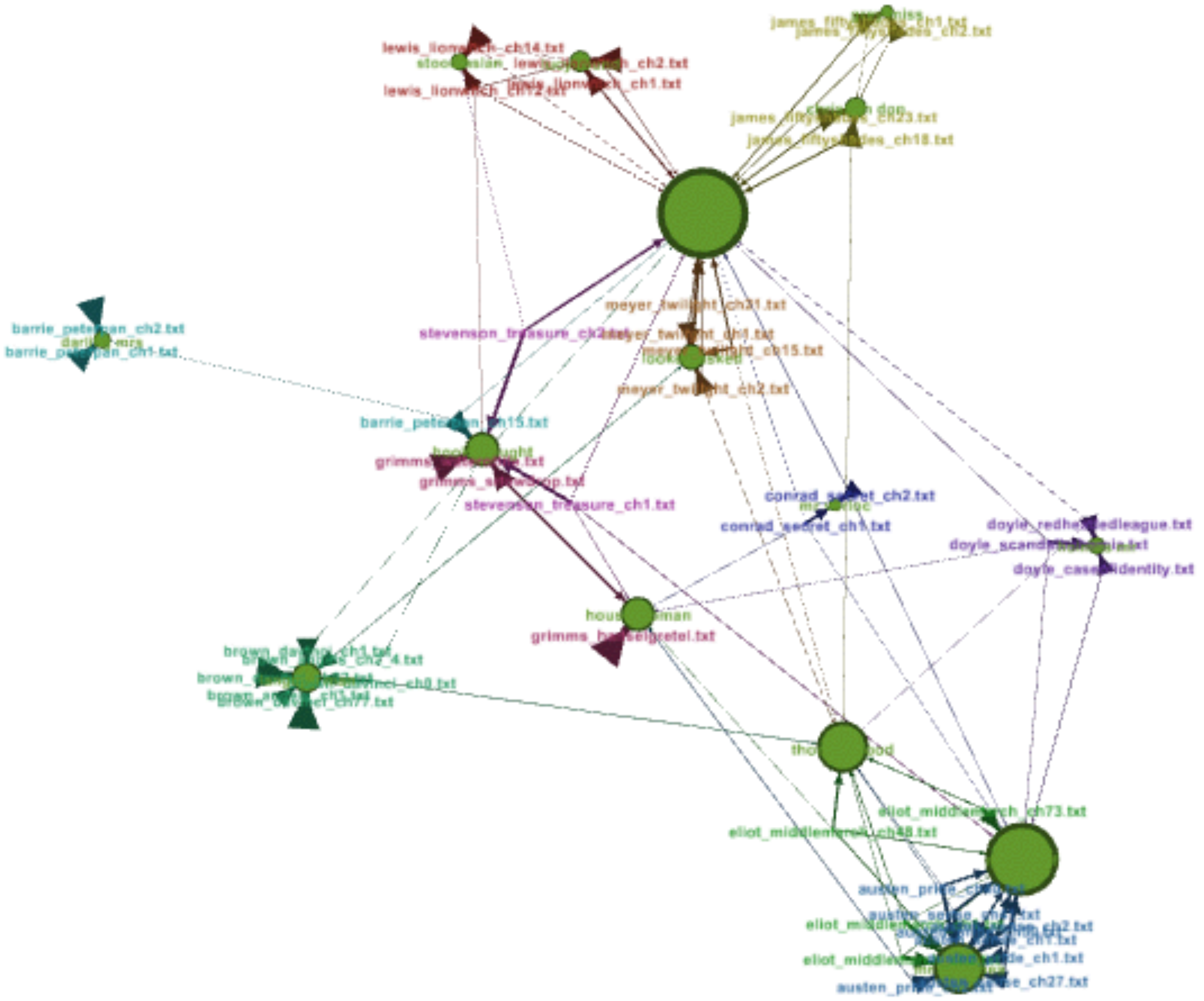
A Force Atlas2 Layout for the Mixed Chapters:



ForceAtlas 2

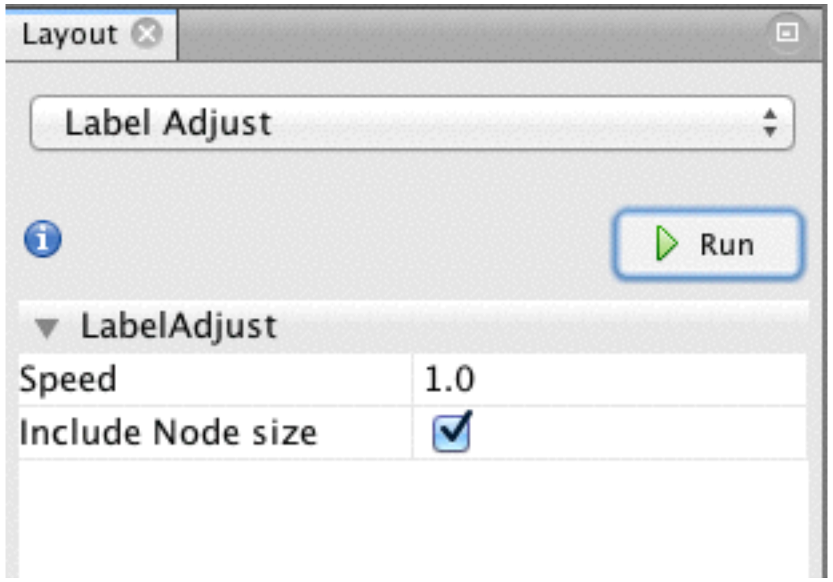
Run

Threads number	2
Behavior Alternatives	
Dissuade Hubs	☑
LinLog mode	☑
Prevent Overlap	☑
Edge Weight Influence	1.0
Tuning	
Scaling	10.0
Stronger Gravity	☐
Gravity	1.0
Performance	
Tolerance (speed)	0.1
Approximate Repulsion	☐
Approximation	1.2



Tip: After running this, stop it before it gets too big.

Always use Label Adjust after you use Force Atlas (or any one, actually). Use it, and still manually adjust if you want to perfect your output PDF or SVG.

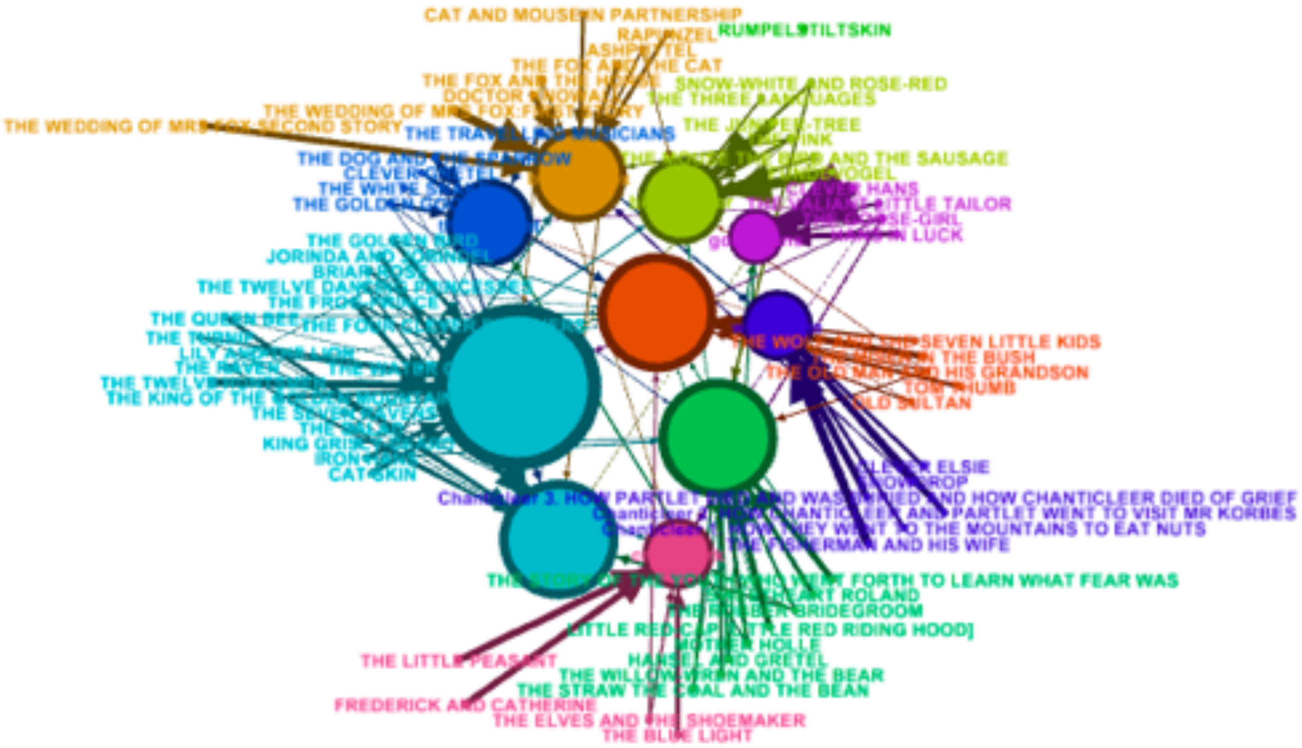


Label Adjust

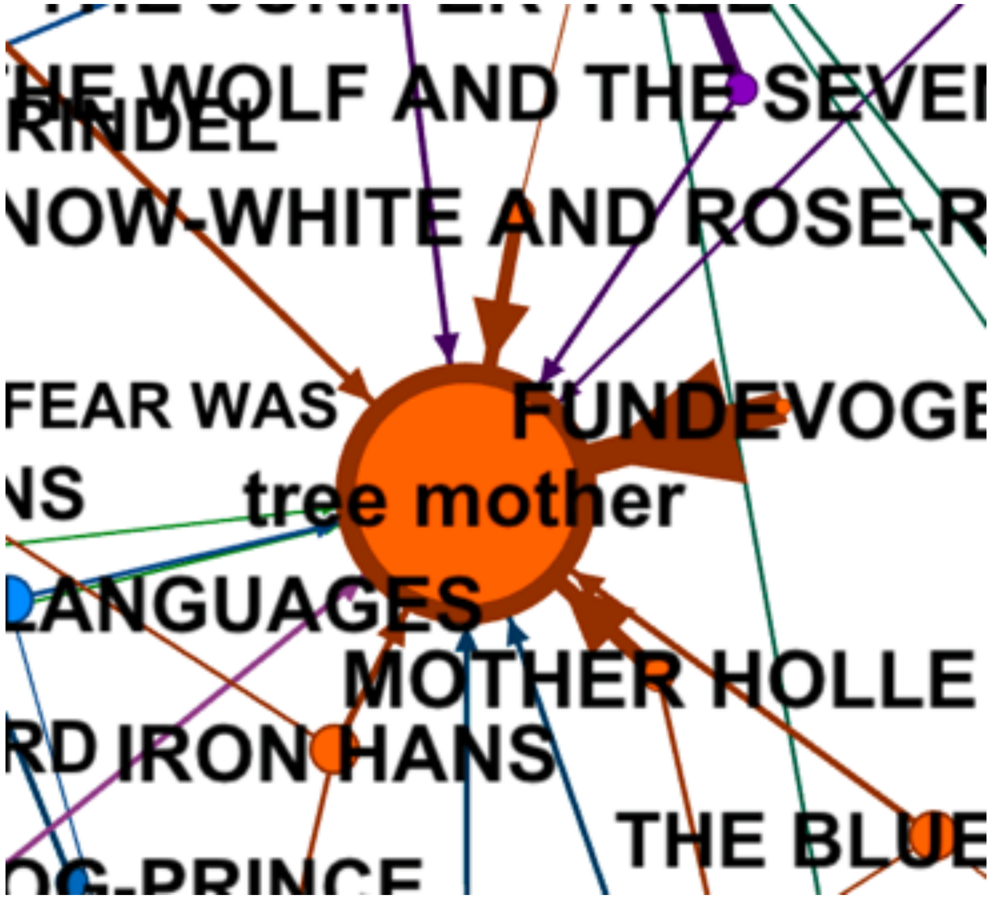
LabelAdjust

Speed 1.0

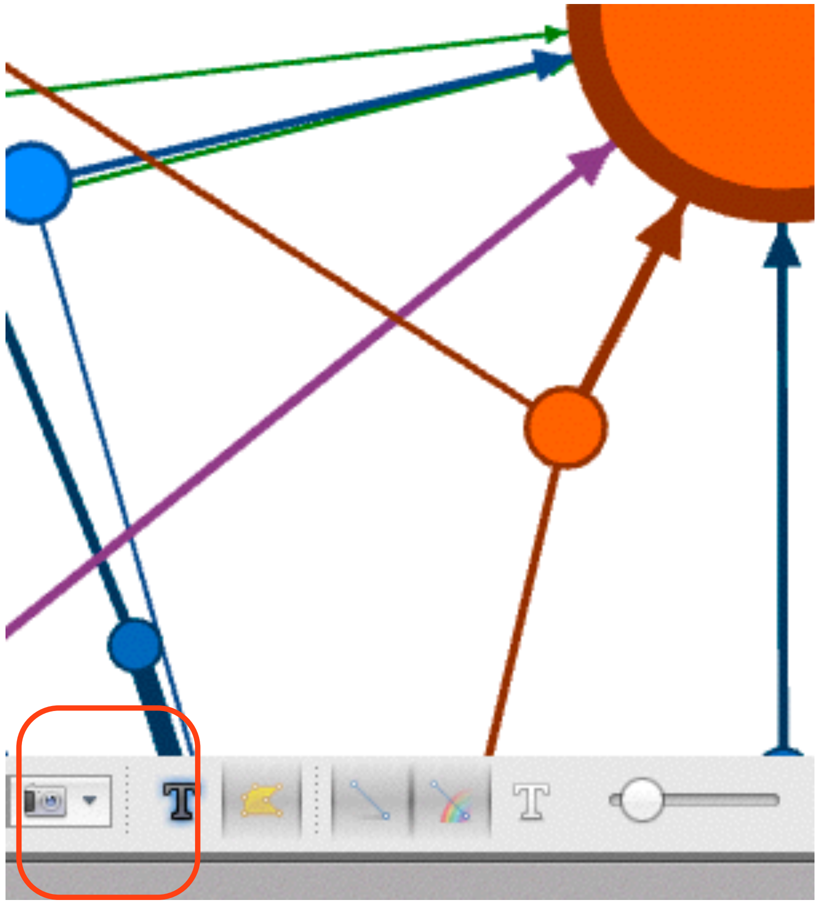
Include Node size ☑


CAT AND MOUSE IN PARTNERSHIP
RUMPELSTILTSKIN
RAPUNZEL
ASHPUTTEL
THE FOX AND THE CAT
THE FOX AND THE HORSE
SNOW-WHITE AND ROSE-RED
DOCTOR KNOWALL
THE THREE LANGUAGES
THE WEDDING OF MRS FOX:FIRST STORY
THE WEDDING OF MRS FOX:SECOND STORY
THE TRAVELLING MUSICIANS
THE JUNIPER-TREE
THE DOG AND THE SPARROW
CLEVER GRETEL
THE WHITE SNAKE
THE GOLDEN GOOSE
THE MOUSE, THE BIRD AND THE SAUSAGE
FUNDEVOGEL
CLEVER HANS
THE VALIANT LITTLE TAILOR
THE GOOSE-GIRL
HANS IN LUCK
THE GOLDEN BIRD
JORINDA AND JORINDEL
BRIAR ROSE
THE TWELVE DANCING PRINCESSES
THE FROG-PRINCE
THE QUEEN BEE
THE FOUR CLEVER BROTHERS
THE TURNIP
LILY AND THE LION
THE RAVEN
THE TWELVE HUNTSMEN
THE KING OF THE GOLDEN MOUNTAIN
THE SEVEN RAVENS
KING GRISLY-BEARD
IRON HANS
CAT-SKIN
THE WOLF AND THE SEVEN LITTLE KIDS
THE JEW AMONG THORNS
THE OLD MAN AND HIS GRANDSON
TOM THUMB
OLD SULTAN
CLEVER ELSIE
SNOWDROP
Chanticleer 3. HOW PARTLET DIED AND WAS BURIED AND HOW CHANTICLEER DIED OF GRIEF
Chanticleer 2. HOW CHANTICLEER AND PARTLET WENT TO VISIT MR KORBES
Chanticleer 1. HOW THEY WENT TO THE MOUNTAINS TO EAT NUTS
THE FISHERMAN AND HIS WIFE
THE STORY OF THE YOUTH WHO WENT FORTH TO LEARN WHAT FEAR WAS
SWEETHEART ROLAND
THE ROBBER BRIDEGROOM
LITTLE RED-CAP [LITTLE RED RIDING HOOD]
MOTHER HOLLE
HANSEL AND GRETEL
THE WILLOW-WREN AND THE BEAR
THE STRAW THE COAL AND THE BEAN
THE LITTLE PEASANT
FREDERICK AND CATHERINE
THE ELVES AND THE SHOEMAKER
THE BLUE LIGHT

A nice final adjustment workflow is to zoom in on an area....



Turn off the labels if they're on...

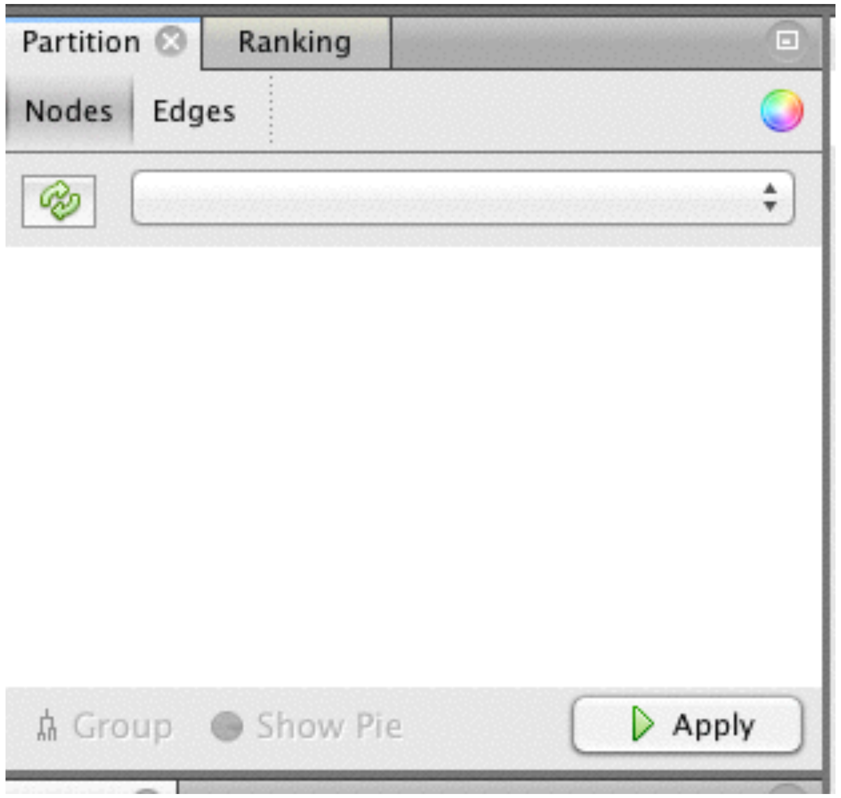


Now drag & move nodes around carefully to space things as you prefer...

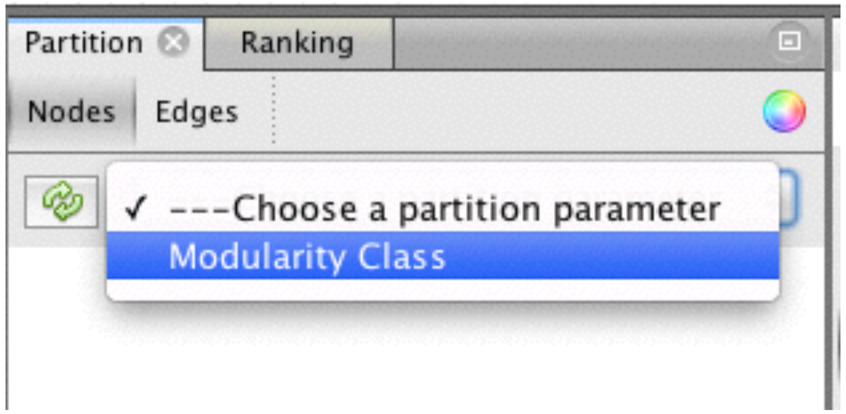
Then switch back to Preview and hit REFRESH to see if you like that layout better.

For an interesting analysis of your topics, try changing to color by "Modularity" and compare to Authors. What clusters do you see?

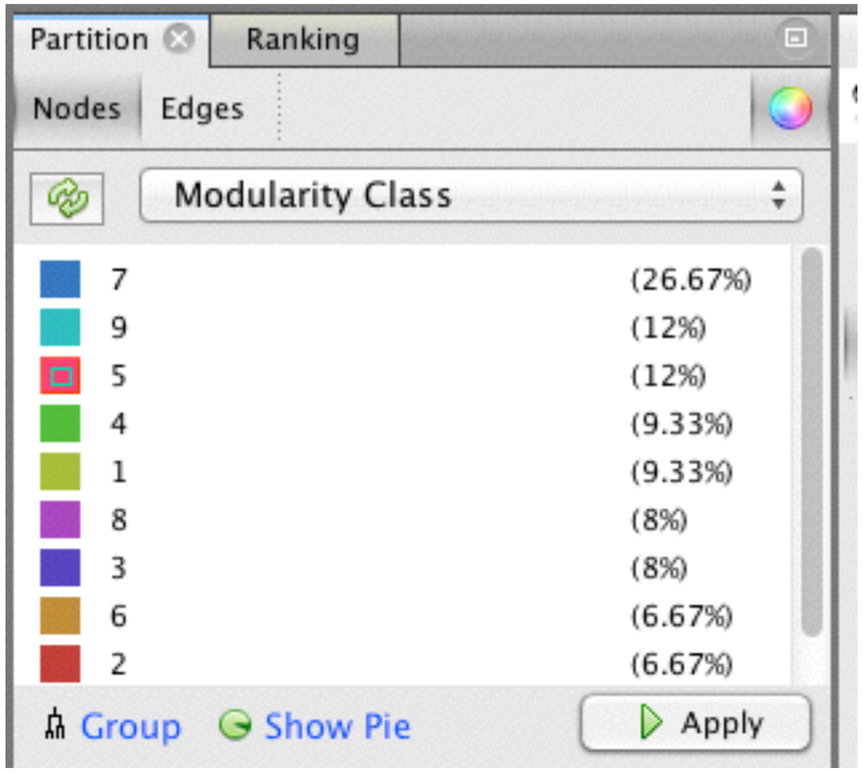
1. Hit green refresh arrow:



2. Then choose "Modularity Class" from menu:



3. You'll see the "groups" and random assigned colors. Click on a color to pick a new one. Make them as different as you can.



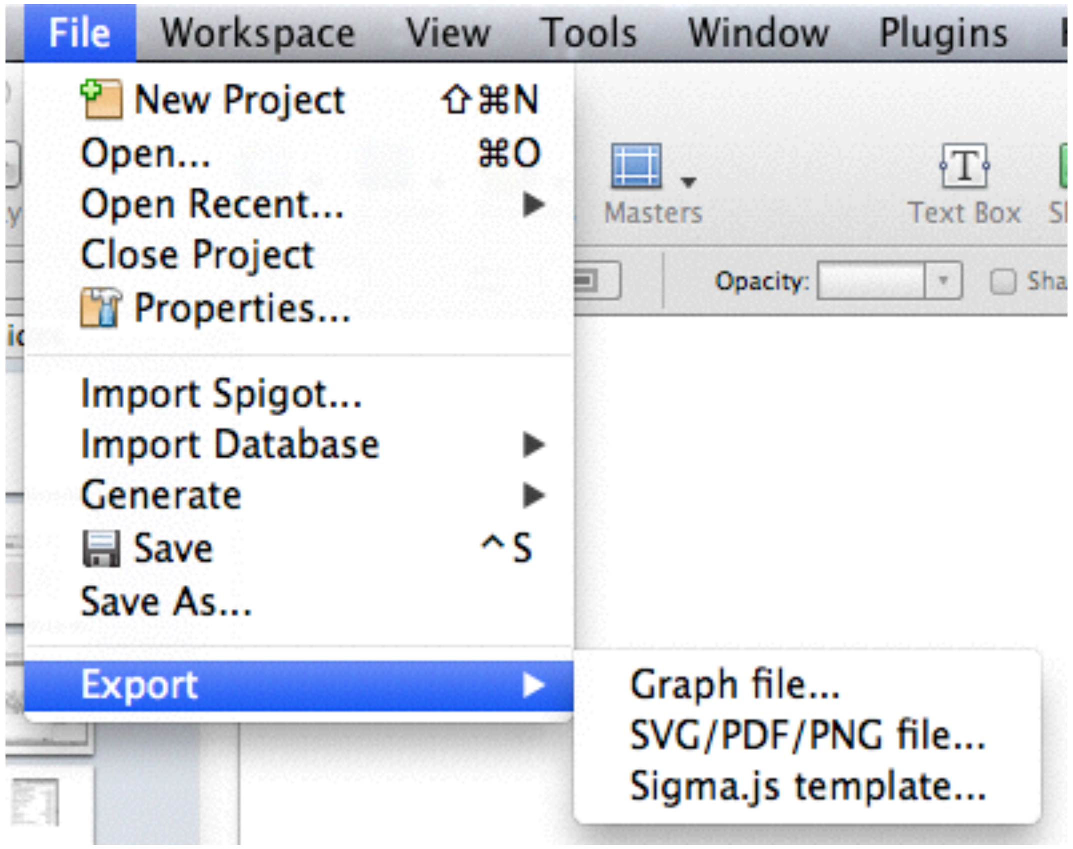
Modularity Class

🟦	7	(26.67%)
🟦	9	(12%)
🟥	5	(12%)
🟩	4	(9.33%)
🟩	1	(9.33%)
🟪	8	(8%)
🟪	3	(8%)
🟧	6	(6.67%)
🟥	2	(6.67%)

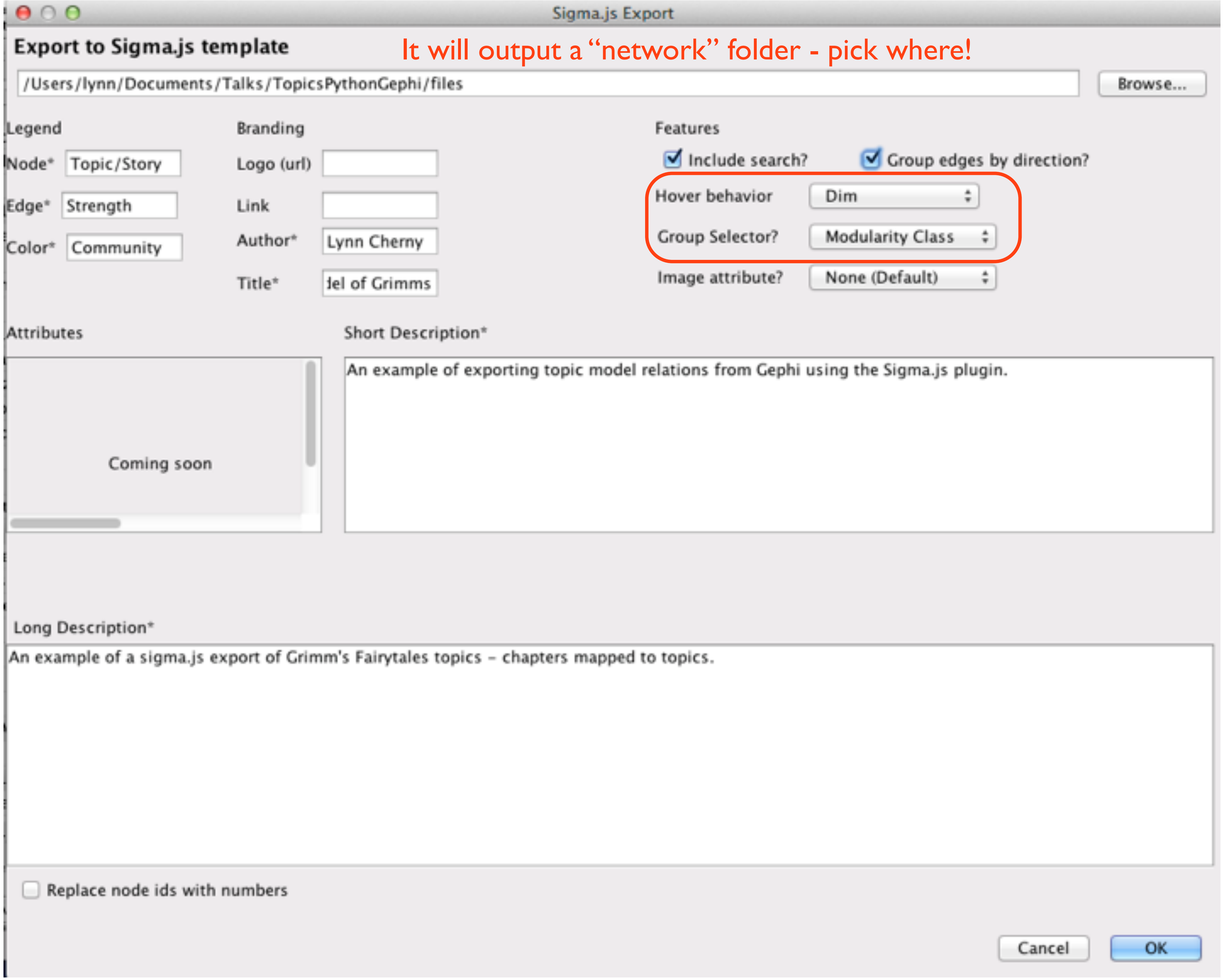
4. Then hit "Apply."

Export to SigmaJS

To export to an interactive web project after your Layout, pick Export... Sigma.js template.



Put in whatever useful, informative text you can supply. I like “Dim” for Hover behavior. Let’s use Modularity Class for Group.



Export to Sigma.js template

It will output a “network” folder - pick where!

/Users/lynn/Documents/Talks/TopicsPythonGephi/files

Legend

Node* Topic/Story

Edge* Strength

Color* Community

Branding

Logo (url)

Link

Author* Lynn Cherny

Title* łel of Grimms

Features

☑ Include search? ☑ Group edges by direction?

Hover behavior: Dim

Group Selector? Modularity Class

Image attribute? None (Default)

Attributes

Coming soon

Short Description*

An example of exporting topic model relations from Gephi using the Sigma.js plugin.

Long Description*

An example of a sigma.js export of Grimm's Fairytales topics - chapters mapped to topics.

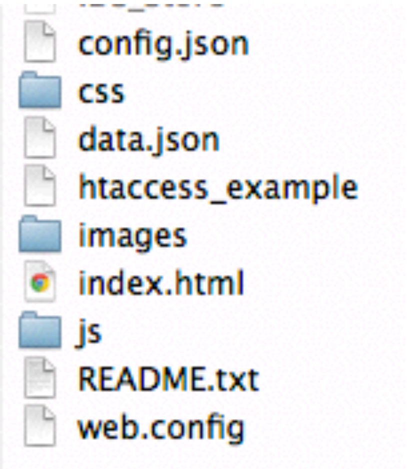
□ Replace node ids with numbers

A shortcut to fix and run the network you made:

If you are in the directory with the sigmajs network directory and the script run_network.py, you can type:

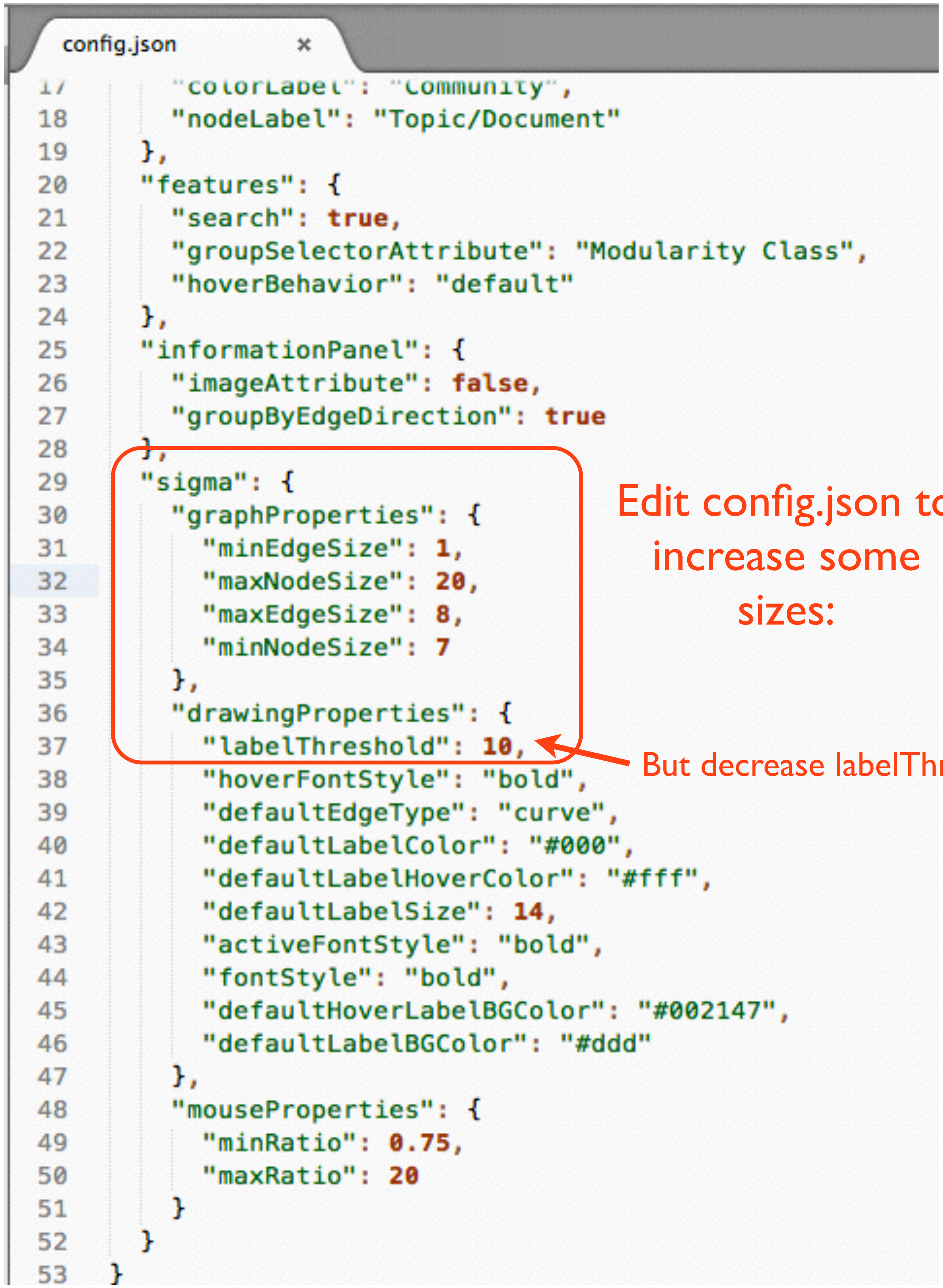
```
>python run_network.py network [optl port #]
```

The sigmajs "network" folder has these:



- config.json
- css
- data.json
- htaccess_example
- images
- index.html
- js
- README.txt
- web.config

The run_network.py script will fix these values for you and start the server.

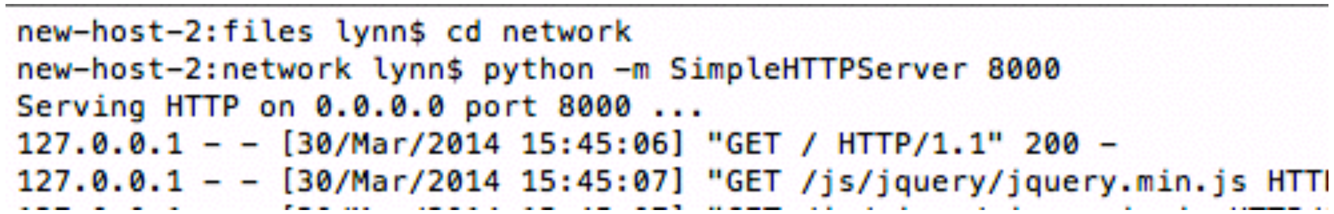


```
    "colorLabel": "Community",
    "nodeLabel": "Topic/Document"
  },
  "features": {
    "search": true,
    "groupSelectorAttribute": "Modularity Class",
    "hoverBehavior": "default"
  },
  "informationPanel": {
    "imageAttribute": false,
    "groupByEdgeDirection": true
  },
  "sigma": {
    "graphProperties": {
      "minEdgeSize": 1,
      "maxNodeSize": 20,
      "maxEdgeSize": 8,
      "minNodeSize": 7
    },
    "drawingProperties": {
      "labelThreshold": 10,
      "hoverFontStyle": "bold",
      "defaultEdgeType": "curve",
      "defaultLabelColor": "#000",
      "defaultLabelHoverColor": "#fff",
      "defaultLabelSize": 14,
      "activeFontStyle": "bold",
      "fontStyle": "bold",
      "defaultHoverLabelBGColor": "#002147",
      "defaultLabelBGColor": "#ddd"
    },
    "mouseProperties": {
      "minRatio": 0.75,
      "maxRatio": 20
    }
  }
}
```

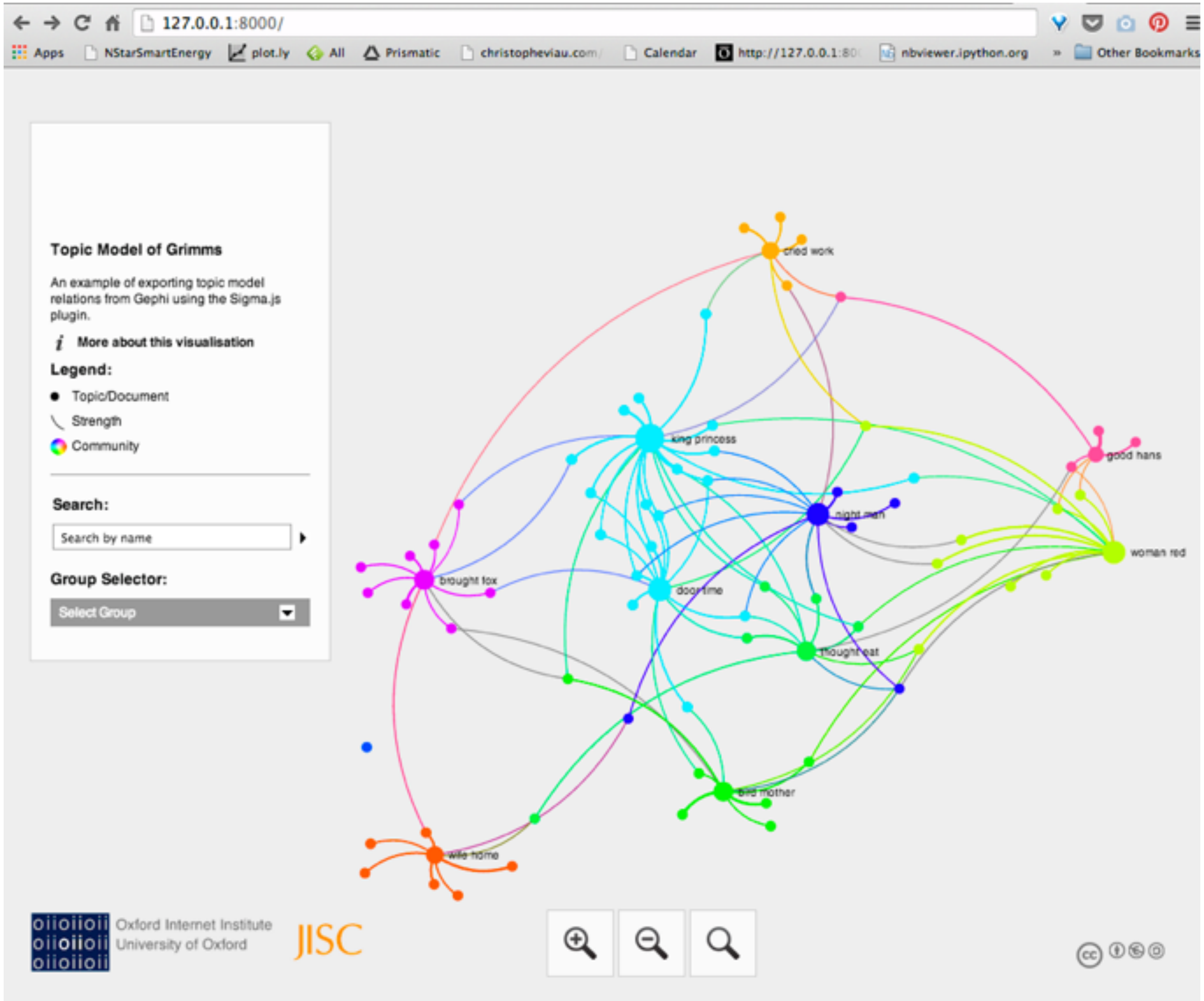
Edit config.json to increase some sizes:

But decrease labelThreshold to maybe 7...

Move your network folder to a web server or start one locally (or use the run_network.py script):



```
new-host-2:files lynn$ cd network
new-host-2:network lynn$ python -m SimpleHTTPServer 8000
Serving HTTP on 0.0.0.0 port 8000 ...
127.0.0.1 - - [30/Mar/2014 15:45:06] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [30/Mar/2014 15:45:07] "GET /js/jquery/jquery.min.js HTT
```



Topic Model of Grimms

An example of exporting topic model relations from Gephi using the Sigma.js plugin.

i **More about this visualisation**

Legend:

- ● Topic/Document
- Strength
- Community

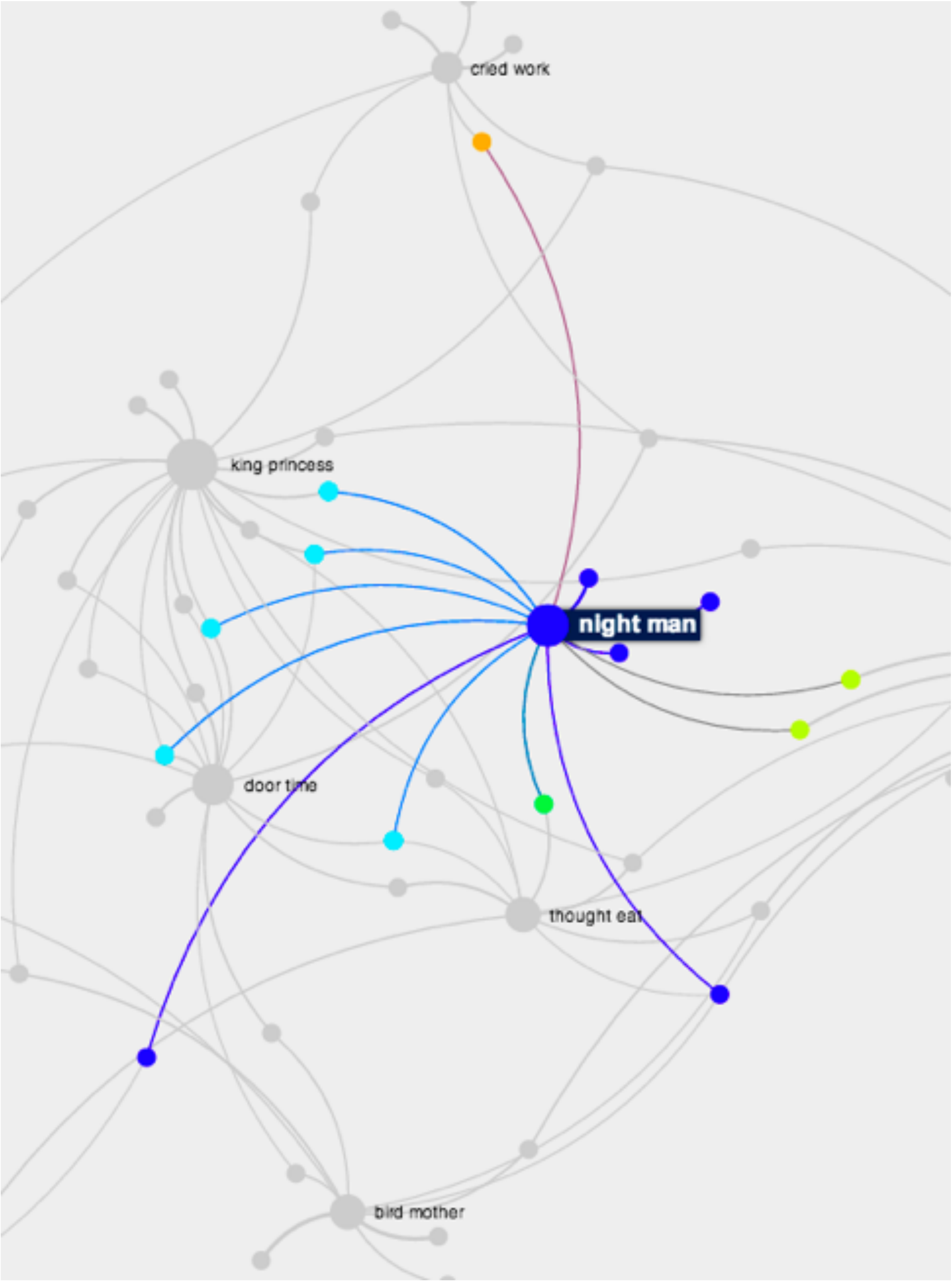
Search:

Search by name

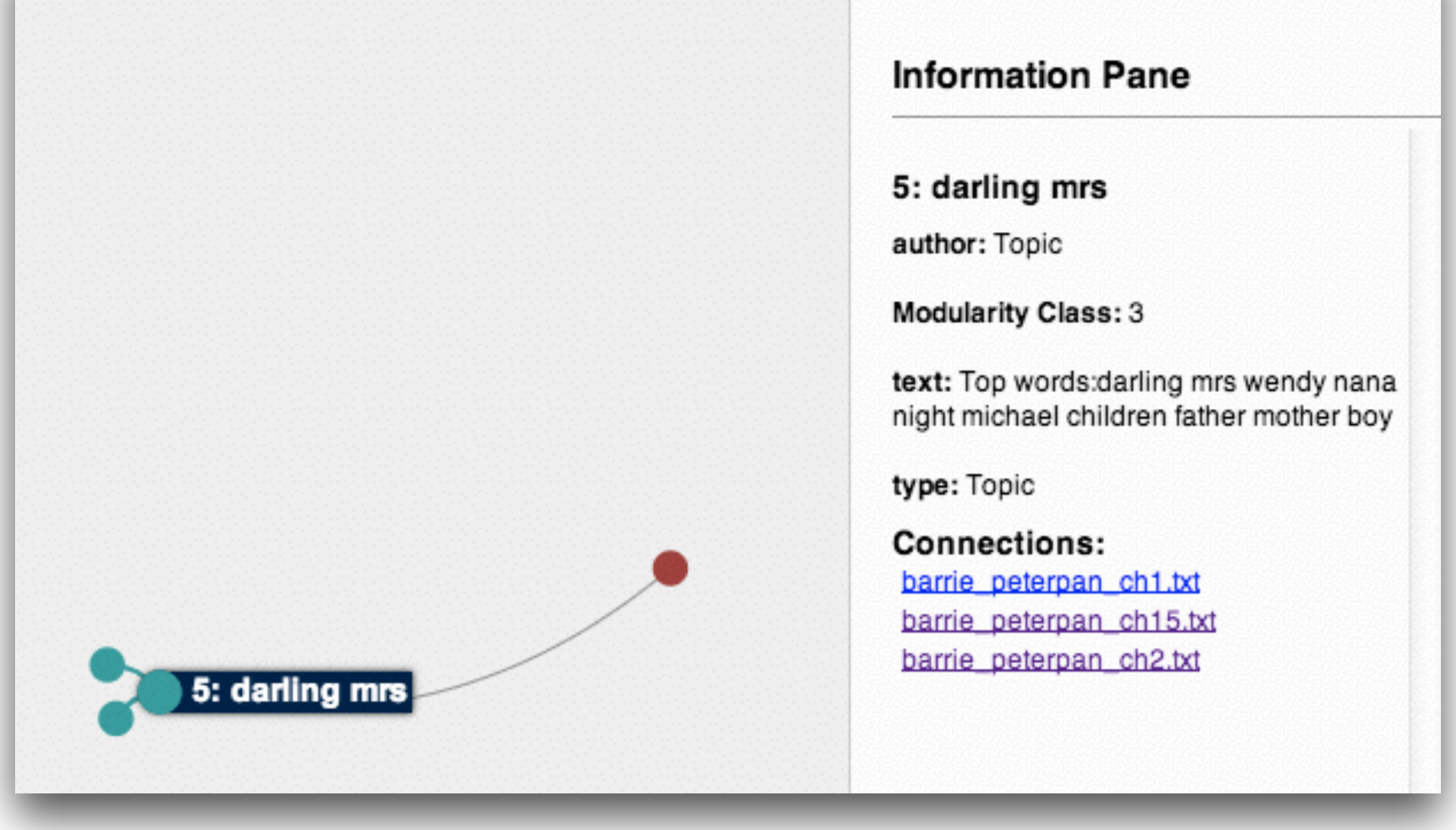
Group Selector:

Select Group

At this level, rollovers dim unconnected nodes, showing only connected nodes. Only the largest node labels are visible (topics).



Clicking gives you info on the right side, including the text we uploaded to the graph file from python!



Information Pane

5: darling mrs

author: Topic

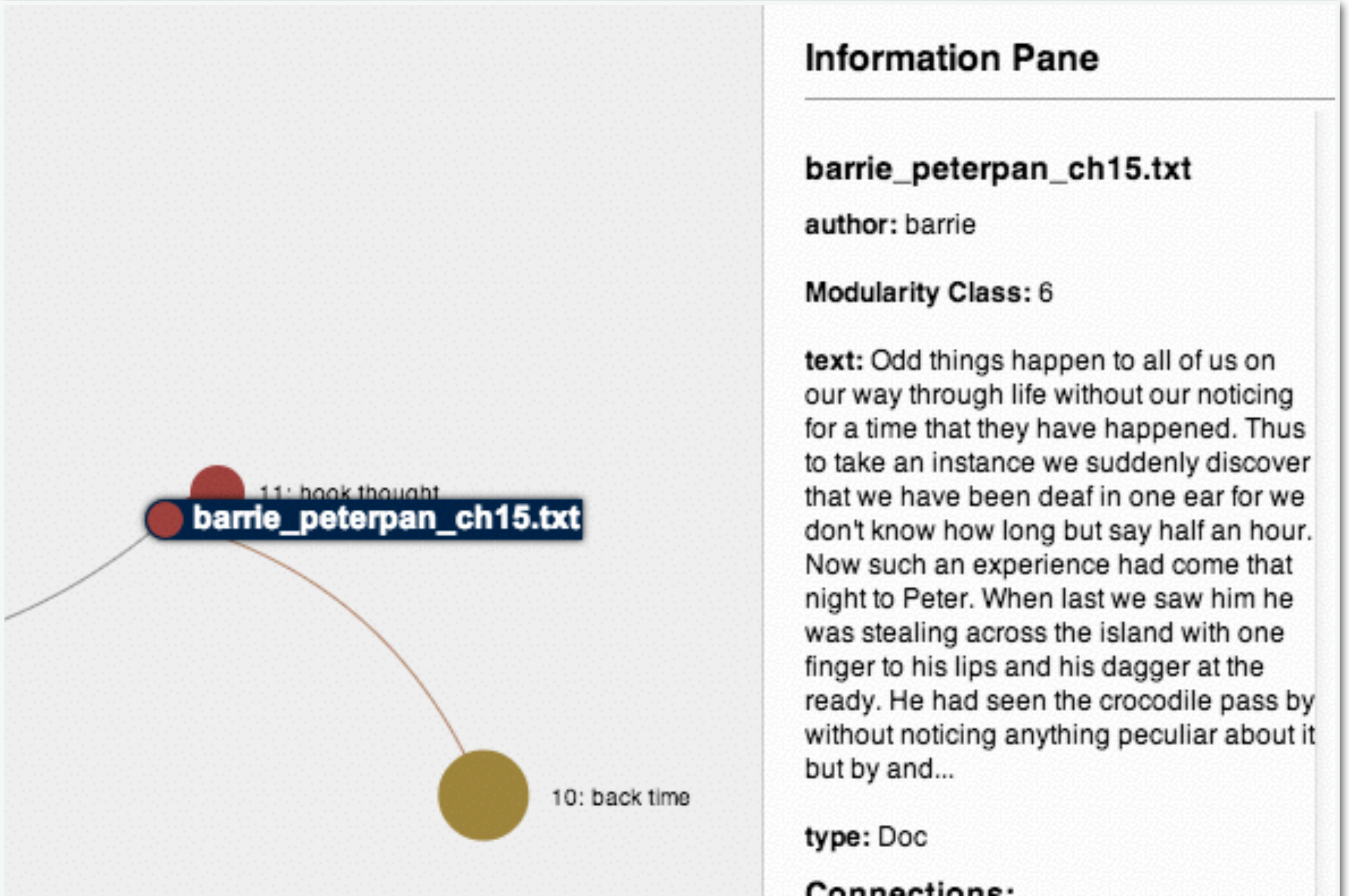
Modularity Class: 3

text: Top words:darling mrs wendy nana night michael children father mother boy

type: Topic

Connections:

barrie_peterpan_ch1.txt
barrie_peterpan_ch15.txt
barrie_peterpan_ch2.txt



Information Pane

barrie_peterpan_ch15.txt

author: barrie

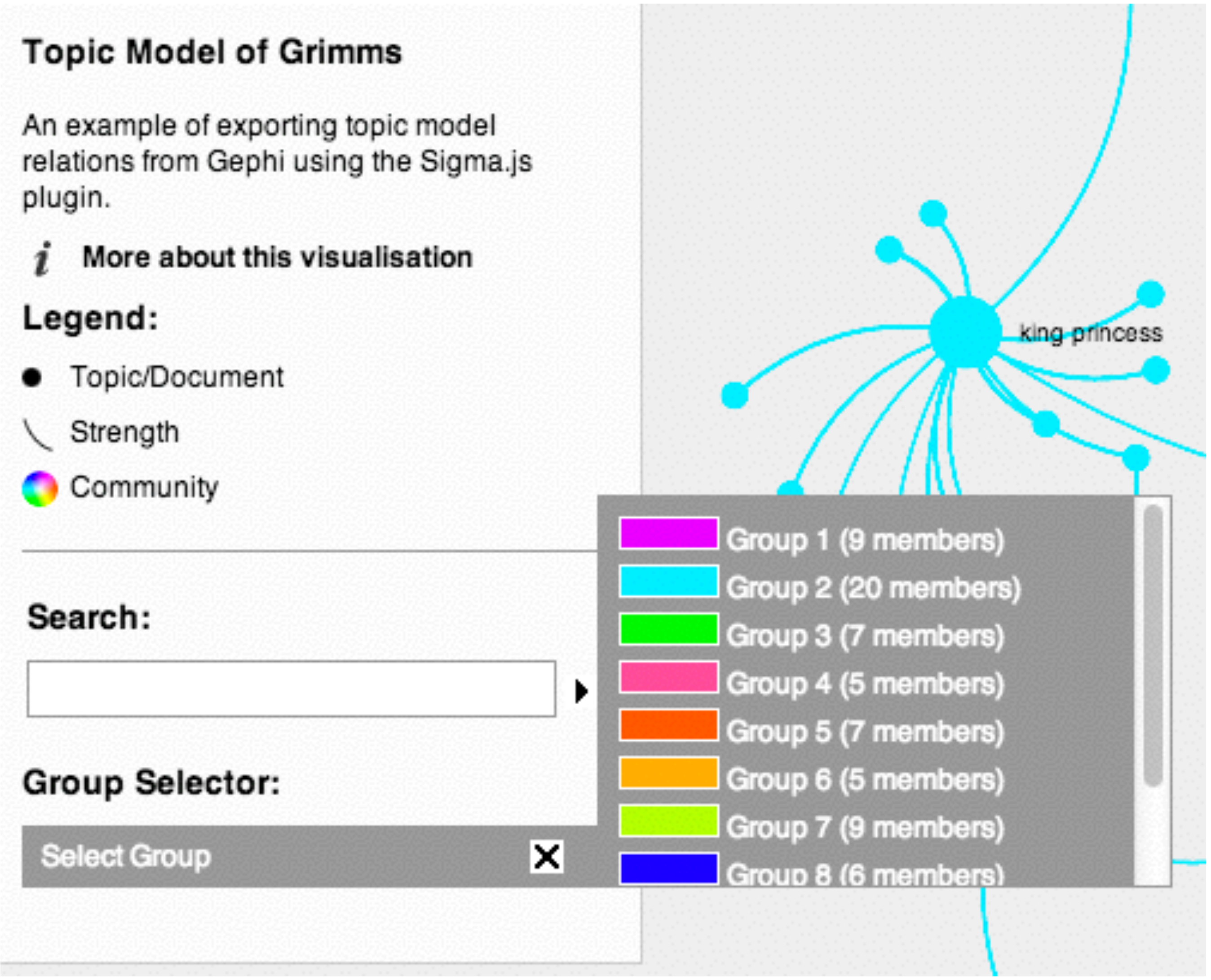
Modularity Class: 6

text: Odd things happen to all of us on our way through life without our noticing for a time that they have happened. Thus to take an instance we suddenly discover that we have been deaf in one ear for we don't know how long but say half an hour. Now such an experience had come that night to Peter. When last we saw him he was stealing across the island with one finger to his lips and his dagger at the ready. He had seen the crocodile pass by without noticing anything peculiar about it but by and...

type: Doc

Connections:

The groups are the modularity classes found. You can search for a node name too...



Topic Model of Grimms

An example of exporting topic model relations from Gephi using the Sigma.js plugin.

i **More about this visualisation**

Legend:

● Topic/Document

Strength

Community

Search:

Group Selector:

Select Group ☒

- 🟪 Group 1 (9 members)
- 🟦 Group 2 (20 members)
- 🟩 Group 3 (7 members)
- 🟥 Group 4 (5 members)
- 🟧 Group 5 (7 members)
- 🟧 Group 6 (5 members)
- 🟩 Group 7 (9 members)
- 🟦 Group 8 (6 members)

- The utility of this graph is improved by useful text/content additions in the graph file (the python exercise we went thru first) and some tweaks in the output visuals. For more info on “rollover”, add info to each node you export in python!

- It could be even better by post-processing the modularity groups to have better names than “group 2”... more cleanup work.

- NOTE: The sigma.js exporter from Gephi is out of date, using an old sigma.js format. It also seems to not differentiate weights/sizes of edges

Go back to the TopicWorkshop.pdf file now…

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