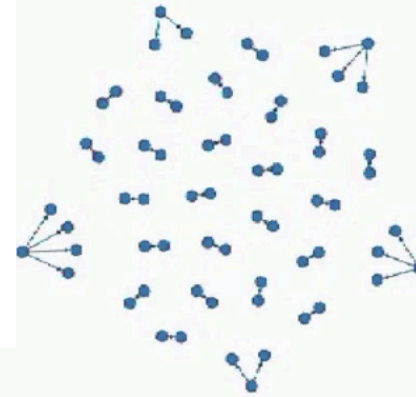
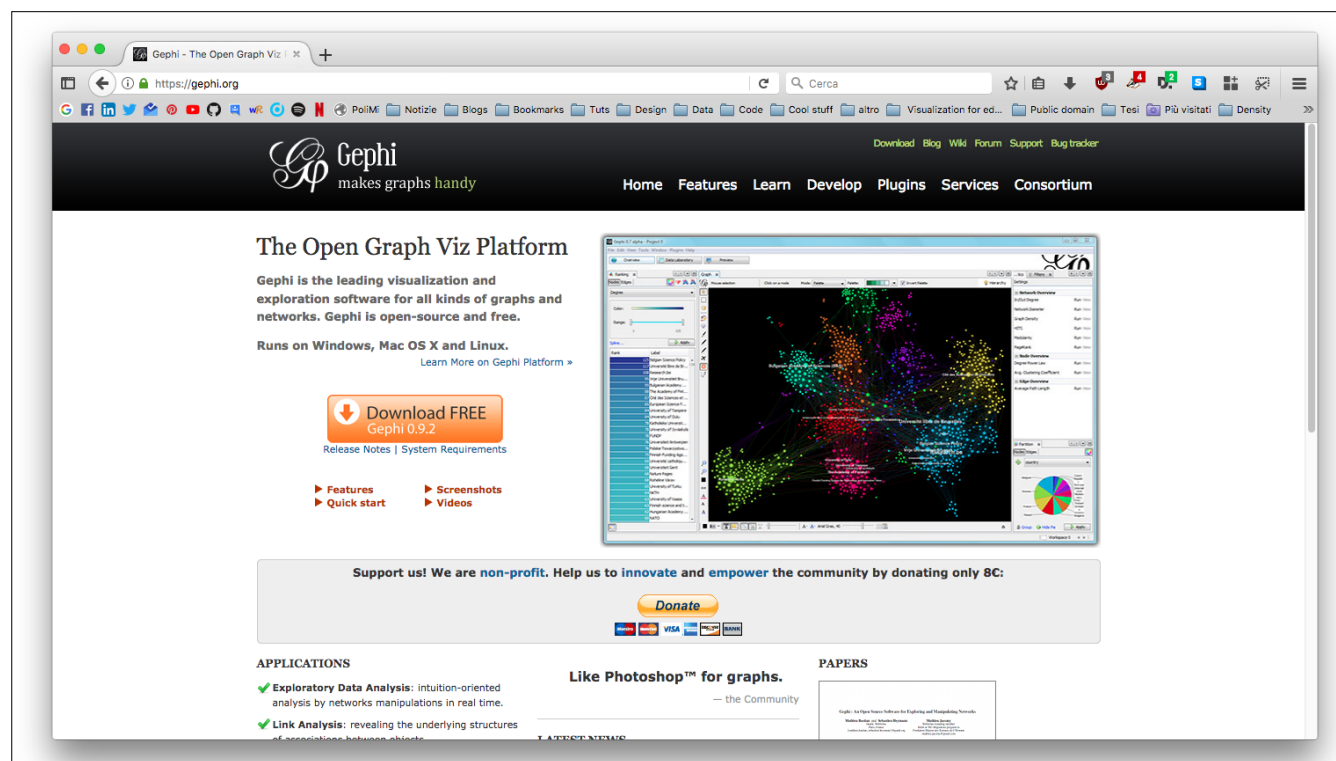


Carlo de Gaetano

19-07-2019

VISUAL NETWORK ANALYSES WITH GEPHI





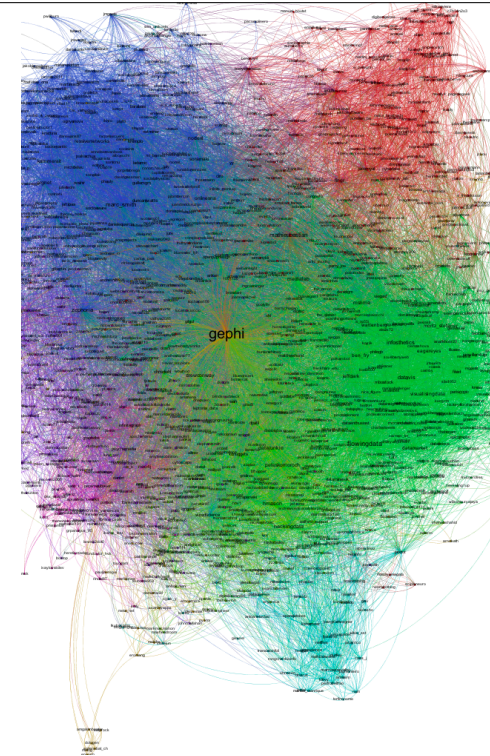
“Like Photoshop...but for Graphs.”

the Community



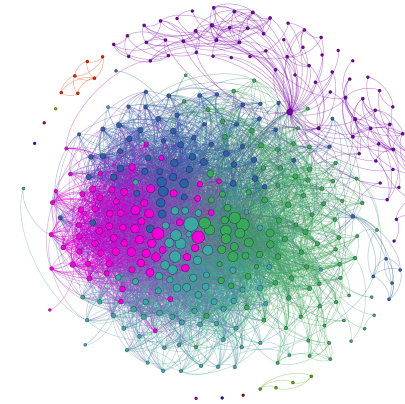
WHAT IS GEPHI?

Gephi is an interactive visualisation and exploration platform for all kinds of networks and complex systems, dynamic and hierarchical graphs.

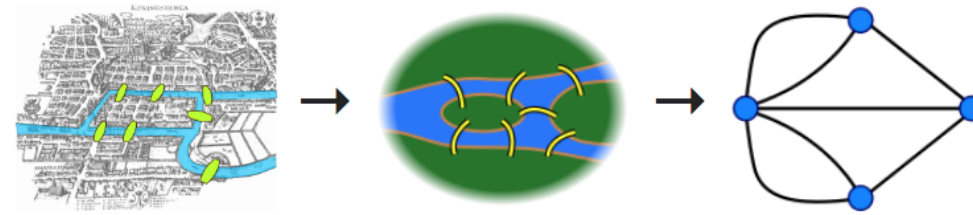


WHAT ARE NETWORKS?

**A group or system of
interconnected elements.**



WHAT ARE NETWORKS?

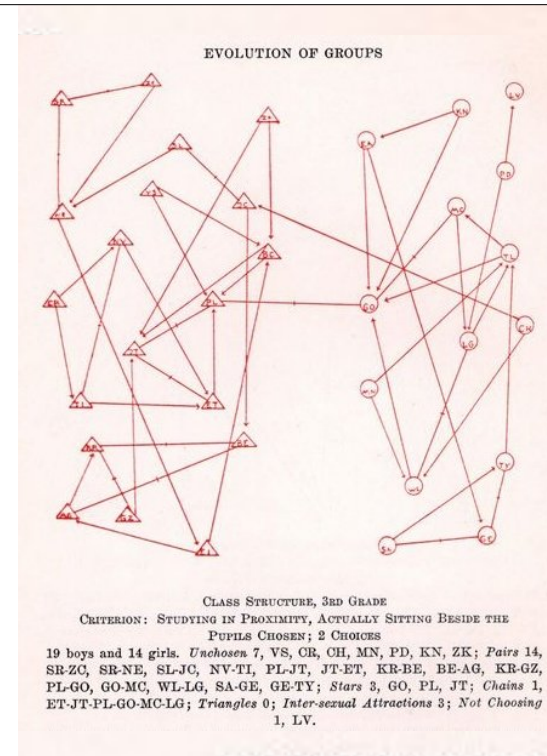


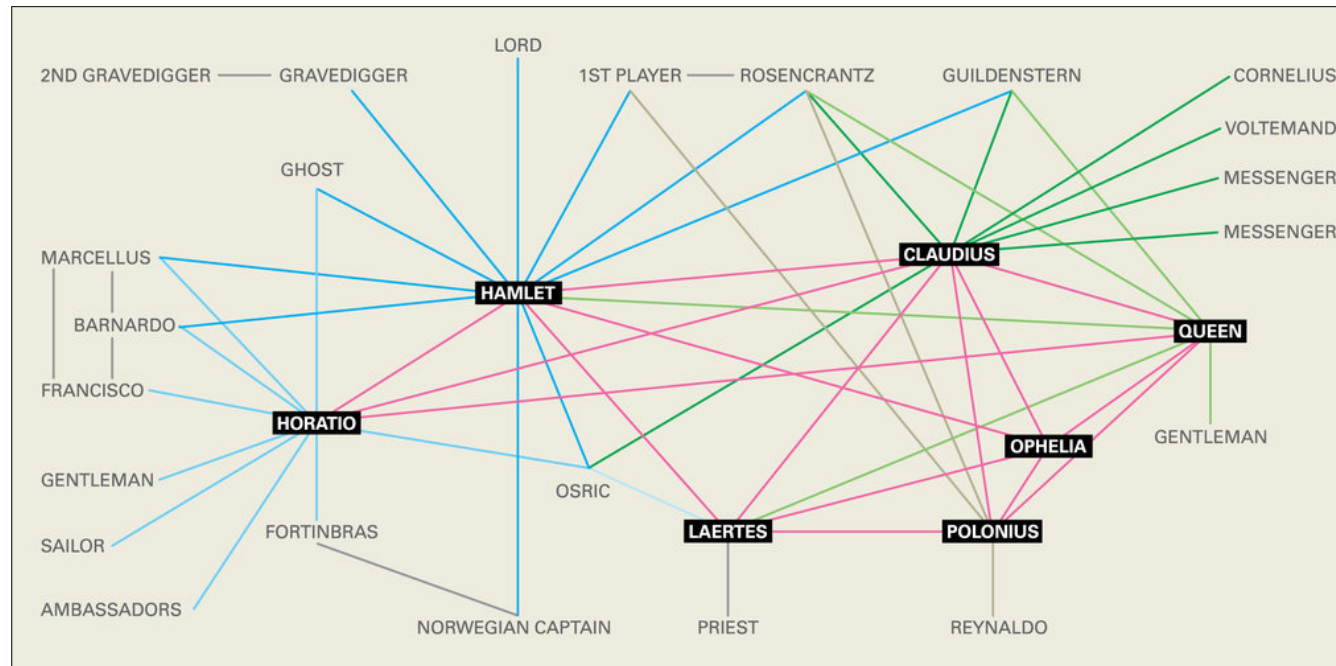
Seven Bridges of Königsberg - Leonhard Euler, 1736

WHAT ARE NETWORKS?

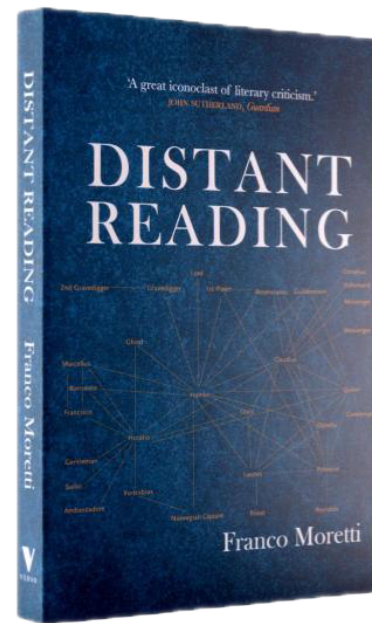
Who wants to be sitting next to whom?

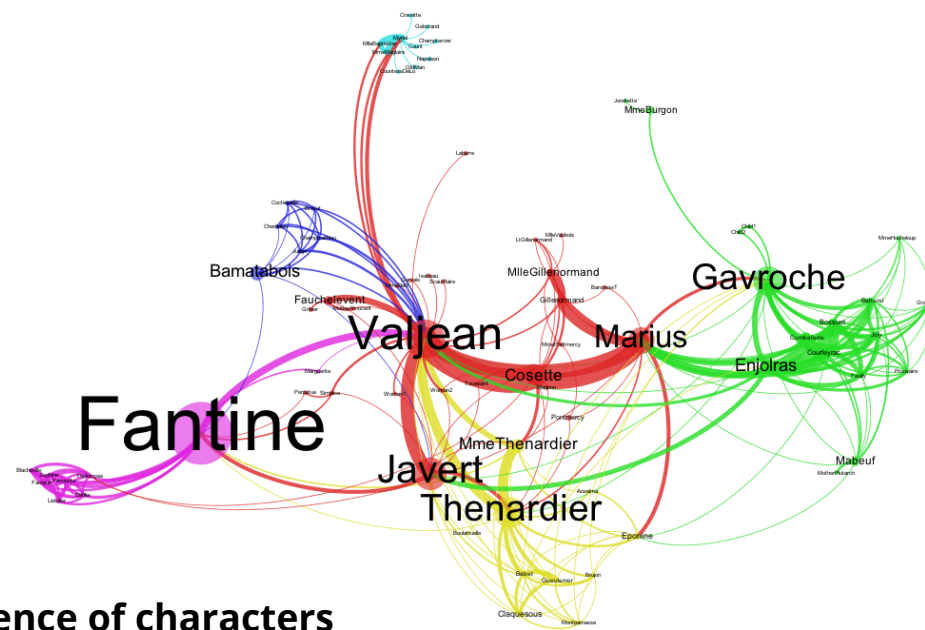
Redesigned network strictly based on Jacob L. Moreno (1934),
Who Shall Survive.



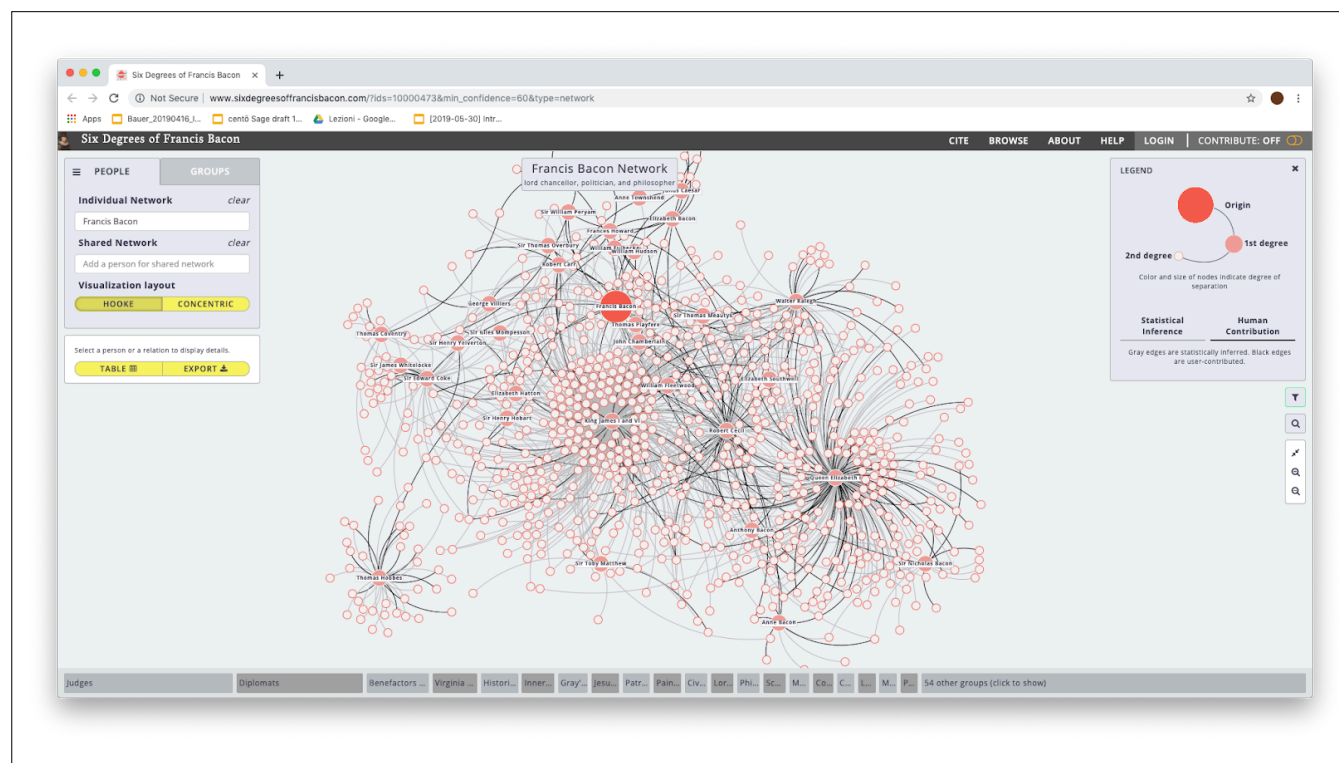


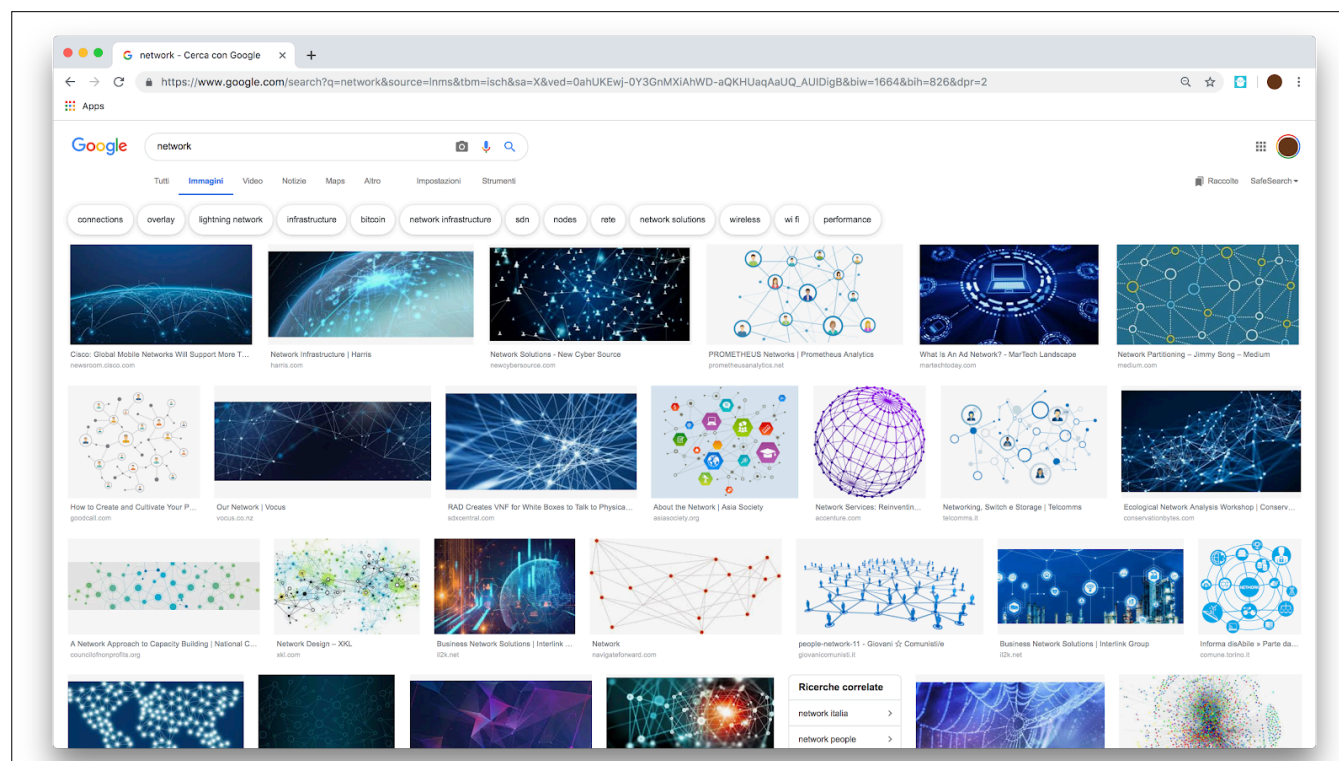
Joon Mo Kang - Stanford Literary Lab - Franco Moretti





**Co-occurrence of characters
in Victor Hugo's Les Misérables**





In Europe And Their Counter-measures:

Right-Wing Ecosystem:

**EXTREME RIGHT
(ALSO IN PARLIAMENT)**

JOBBIK.HU

**POPULIST RIGHT
(ALSO IN PARLIAMENT)**

FIDESZ.HU

**RADICAL RIGHT
INCLUDING PARAMILITARY GROUPS
WITH LINKS TO JOBBIK**

Legend:

- main party
- national
- relevant

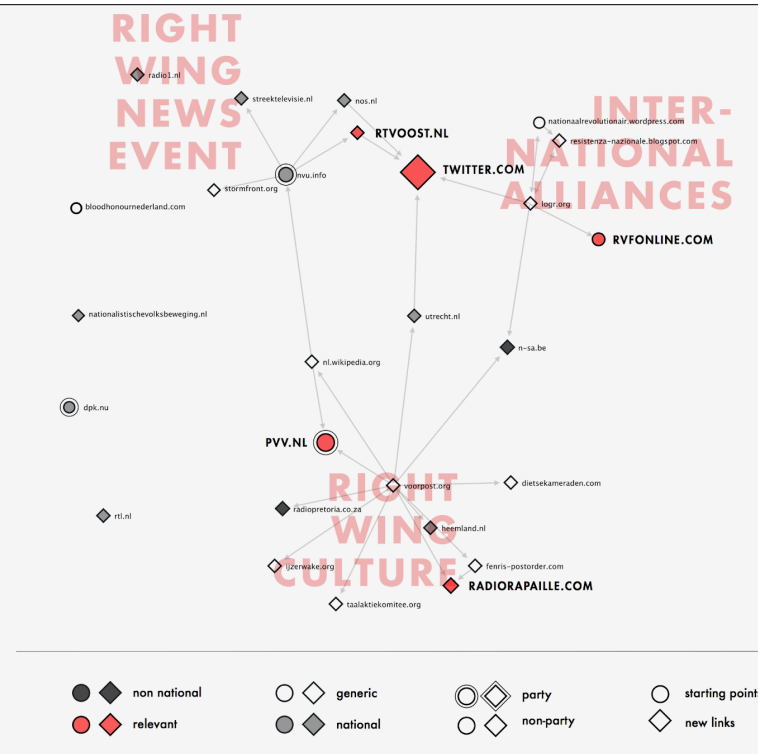
Right-wing Formations

In Europe And Their Counter-measures:

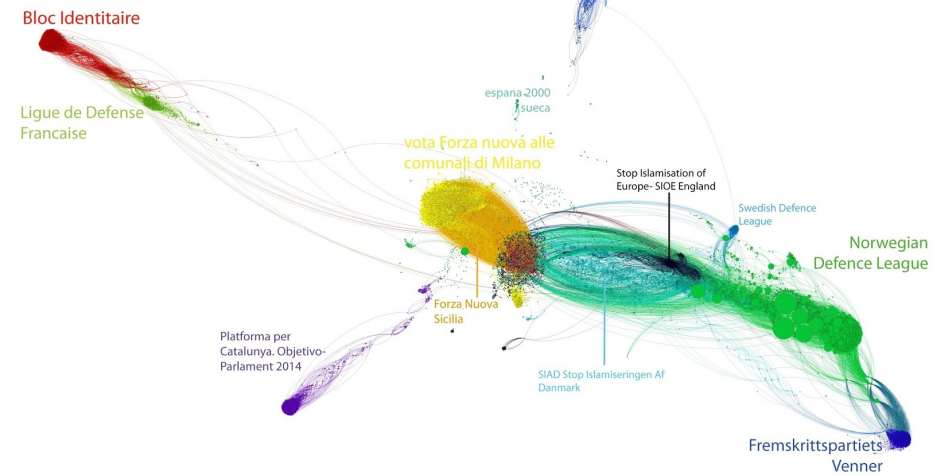
An Online Mapping 2013 - Digital Methods Initiative

Right-Wing Ecosystem:

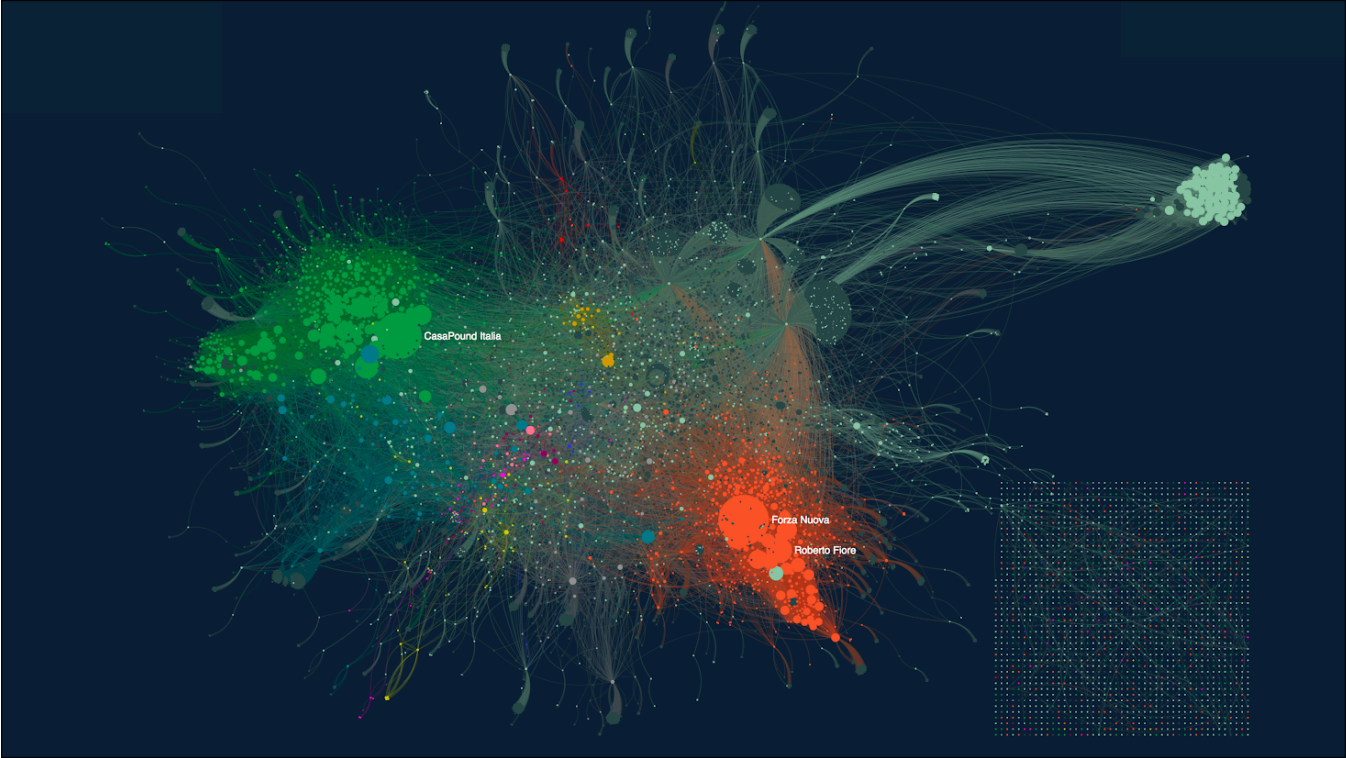
The Netherlands



Counter-jihadism on Facebook: Mapping Connections between Organizations in Europe

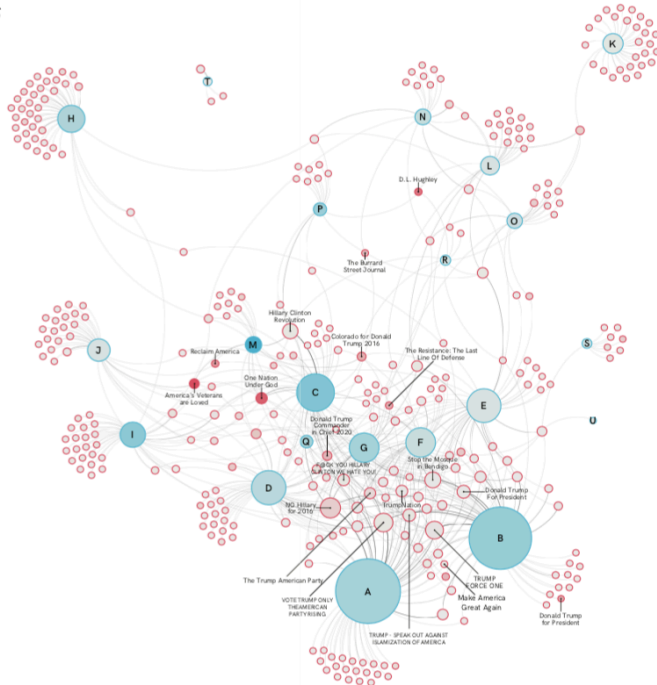
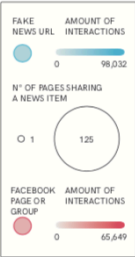


digitalmethods.net/CounterJihadism/ProjectGroup7



DO FACEBOOK PUBLICS
HAVE PREFERRED
STORY THEMES?

Network of public Facebook pages and groups connected by the fake news stories which they share. Notable is the core of the network which consists of a series of pages and groups associated with Trump supporters which are animated by anti-Hillary stories.



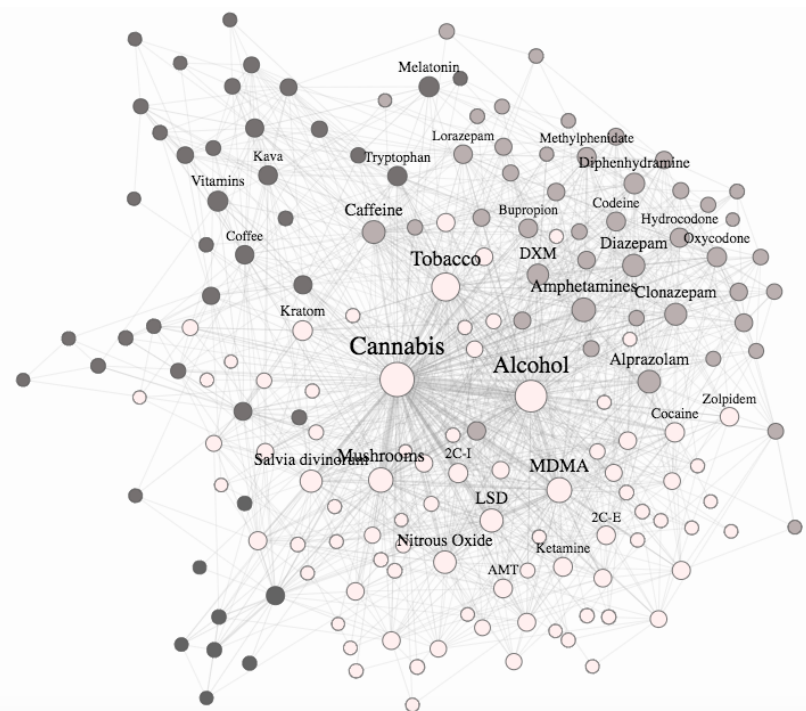
Fake News Headlines

- A. FBI Agent Suspended in Hillary Email Leaks Found Dead in Apparent Murder-Suicide
- B. Hillary Clinton in 2013: "I Would Like To See People Like Donald Trump Run For Office. They're Honest And Can't Be Bought"
- C. ISIS Leader Calls For American Muslim Voters To Support Hillary Clinton
- D. Donald Trump President: Secret Out: "I Was Paid \$3,500 To Promote Trump's Hair"
- E. Obama Signs Executive Order Declaring Investigation Into Election Results. Results Planned For Dec. 19th
- F. WHCAI Hillary Caught On Hot Mic Teaching Superior With NACAL SLURS!
- G. Van Full Of Biggie Shows Up To Vote Clinton At 28 Polling Place. Will Think Voter Fraud Is A Myth?
- H. BACK AGAINST THE MACHINE To Revoke And Release Anti Donald Trump Album
- I. Obama Signs Executive Order Banning The Pledge Of Allegiance In Schools Nationwide
- J. BREAKING Romanian Hacker With Access To Clinton Emails Found Dead In Jail Cell
- K. Actor Bill Murray Announces 2016 Presidential Run
- L. Pope Francis Shocks World, Endorses Hillary Clinton For President, Releases Statement
- M. Pope Francis Shocks World, Endorses Donald Trump For President, Releases Statement
- N. Trump Claims America Should Never Have Given Canada Its Independence
- O. Miss France: "Sarah Palin Is My Role Model For Beautiful, Smart American Women!" - News
- P. RUFAUS CLAIMS TRUMP TOUCHED HIM INAPPROPRIATELY IN THE 1990S
- Q. President Obama Confirms He Will Refuse To Leave Office If Trump Is Elected
- R. Graham Says Christians Must Support Trump or Face Death Camps
- S. African Billionaire Will Give \$1 Million To Anyone Who Wants To Leave America If Donald Trump Is Elected President
- T. Trump Offering Free One-Way Tickets To Africa Camp. Thanks For Those Who Want To Leave America
- U. Obama passed law for grandpa with to get all their grandchildren every weekend

In “The politics of social media manipulation: A view from the Netherlands”

[illegible]

Co-consumption of substances based on Erowid.org reports

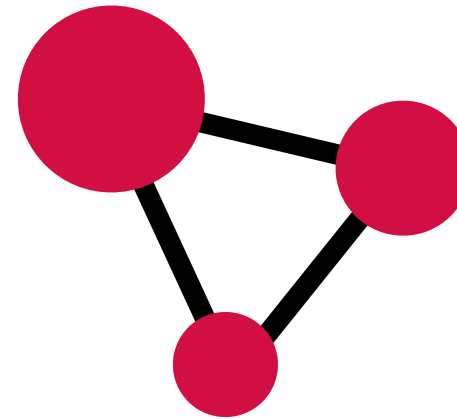


chemicalyouth.org/visualising-erowid/

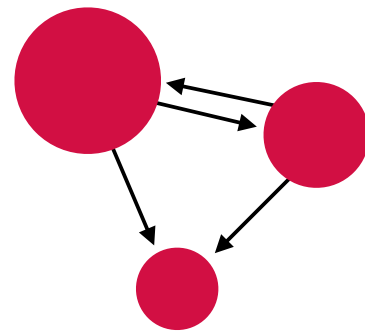
NETWORKS?

The essential elements of a network:

- Nodes
- Edges

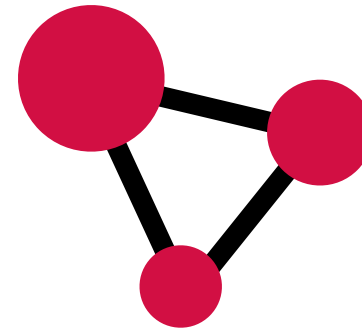


Directed



Instagram
(when I follow you, but
you don't follow back)

Undirected



Facebook
(when I accept your
friend request, we become
both friends)

GEPHI - HOW DOES IT WORK



Forgetful and picky

GEPHI - HOW DOES IT WORK

Gephi does not have CTRL + Z.

Gephi is very picky about input files.

Forgetful and picky

NODES TABLE

Id	Label	Attribute	Attribute	Attribute
Node Id_1	Node 1	1	A	aaa
node Id_2	Node 2	2	B	bbb
node Id_3	Node 3	3	C	ccc

NODES TABLE

Id	Label	Attribute	Attribute	Attribute
Node Id_1	Chiara	1	A	Rome
node Id_2	Luca	2	B	Milan
node Id_3	Paul	3	C	Paris

NODES TABLE

Source	Target	Weight	Type
Node Id_1	Node Id_2	1	Undirected
Node Id_2	Node Id_3	1	Undirected
Node Id_3	Node Id_4	1	Undirected

NODES TABLE

Source	Target	Weight	Type
Luca	Paul	1	Undirected
Luca	Chiara	1	Undirected
Chiara	Paul	1	Undirected

NODES - EDGES

As a minimum requirement, you only need the edges table

In this case Gephi will create the nodes table for you

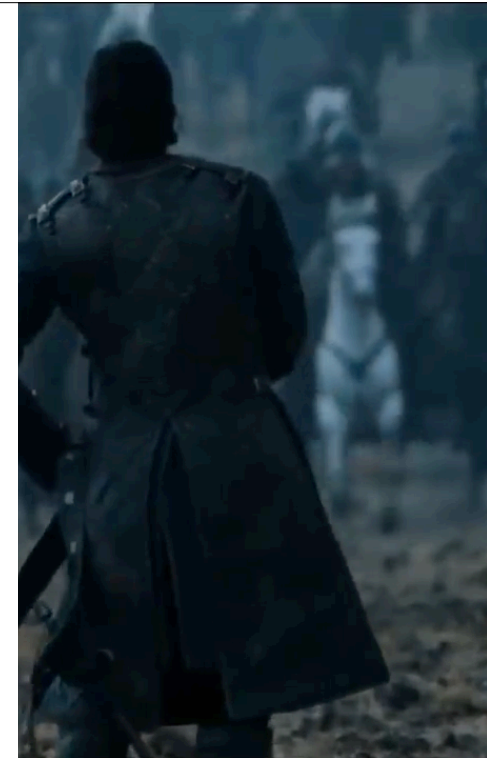
DON'T MISS ANYTHING

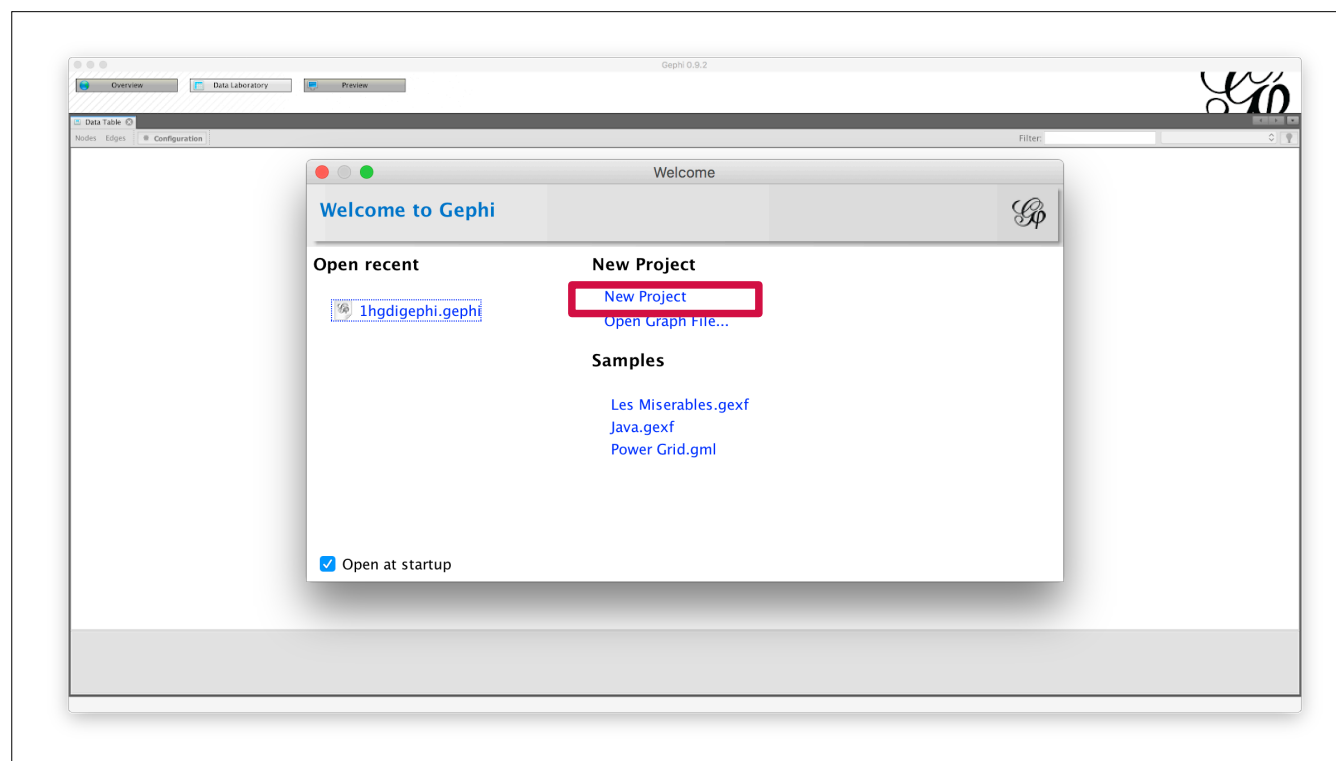


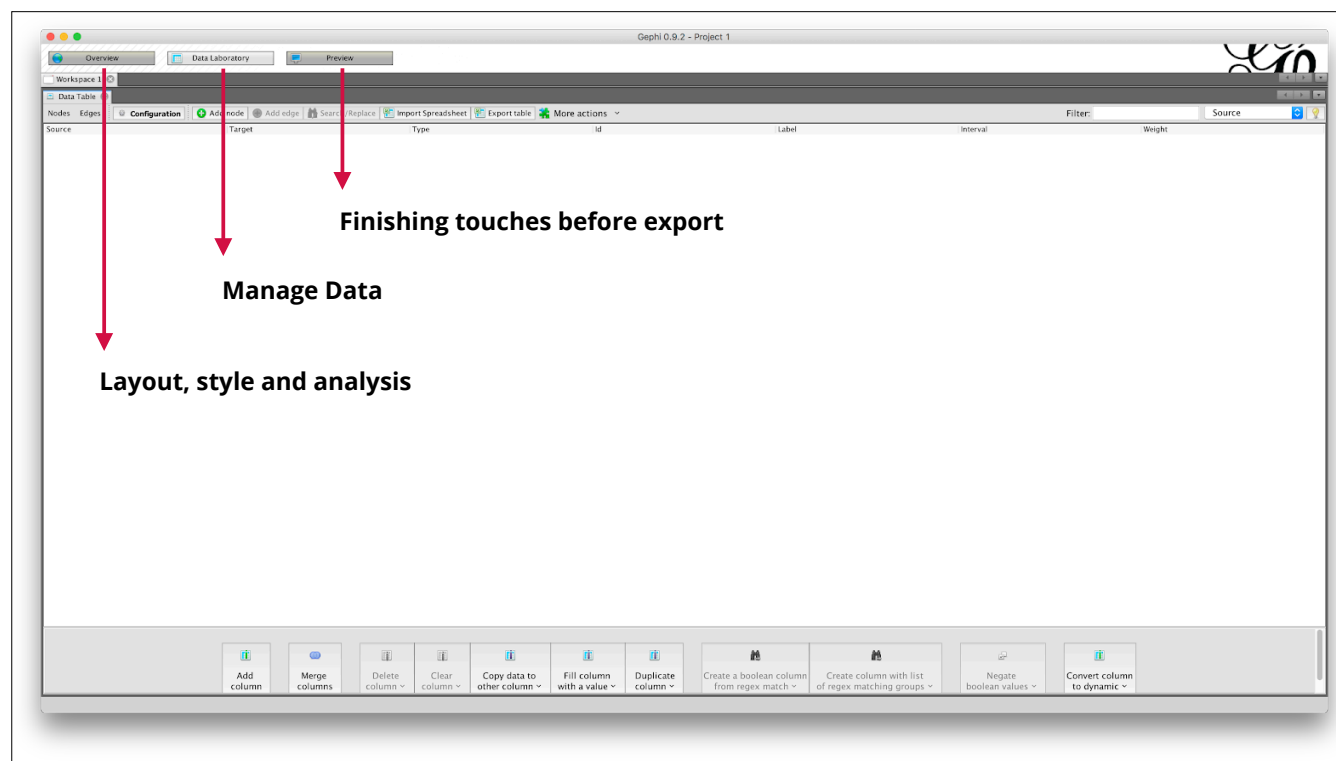
OUTPUT

A network of **co-occurrences** of Game of Thrones characters*

*By co-occurrence we mean whenever a character appears close to another in the books.

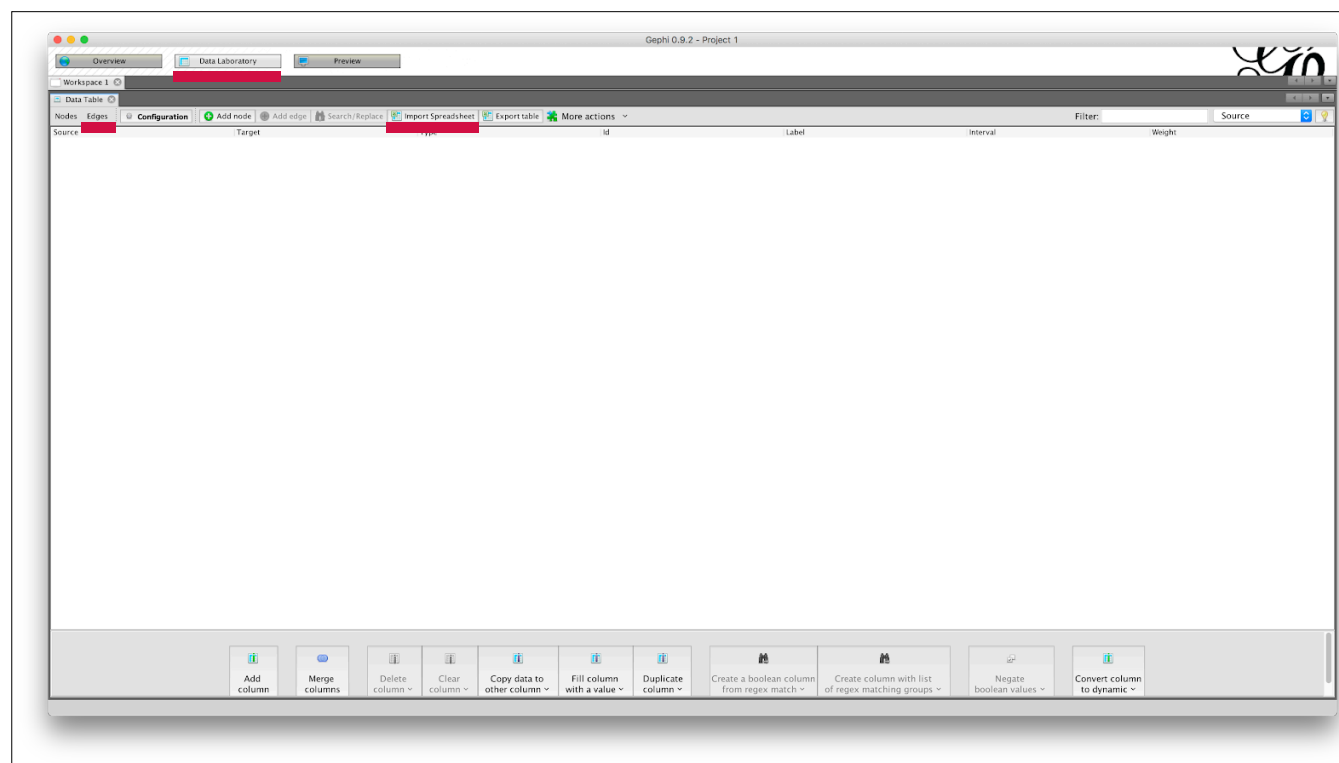


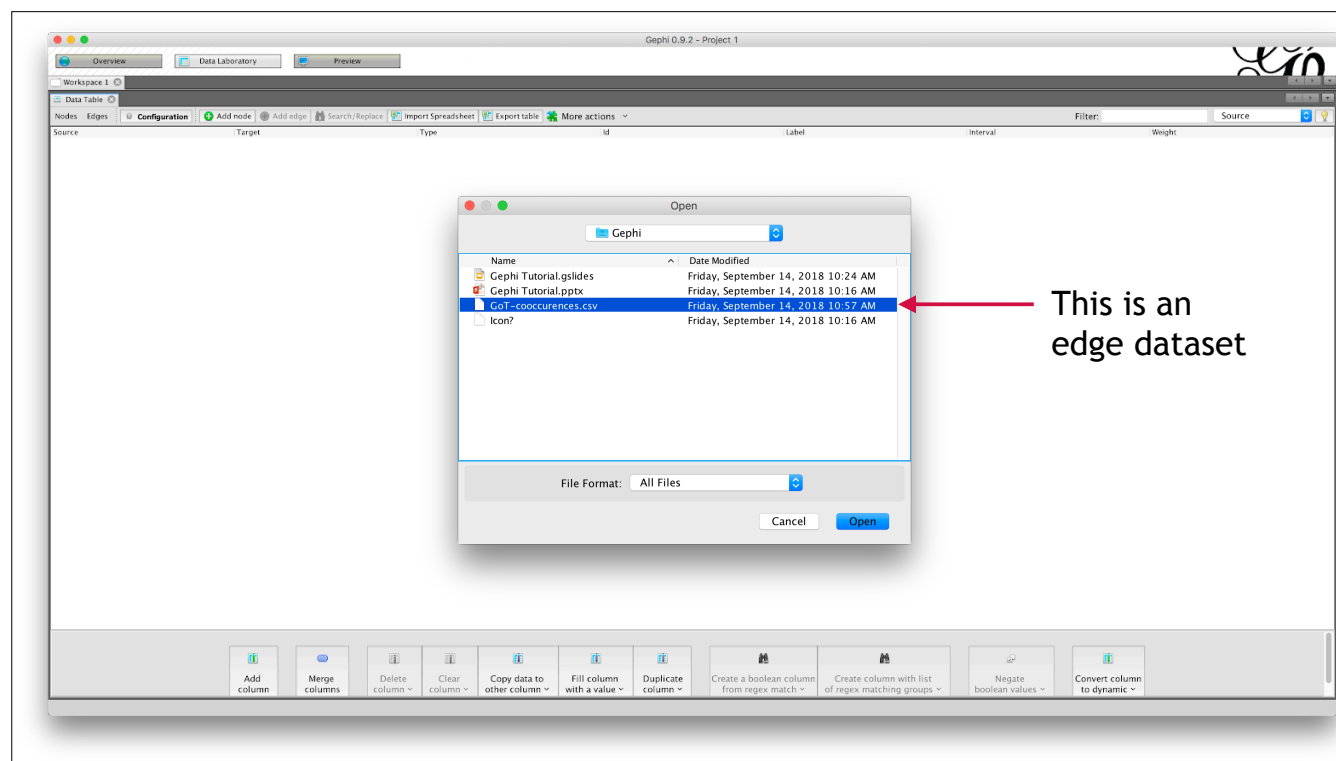


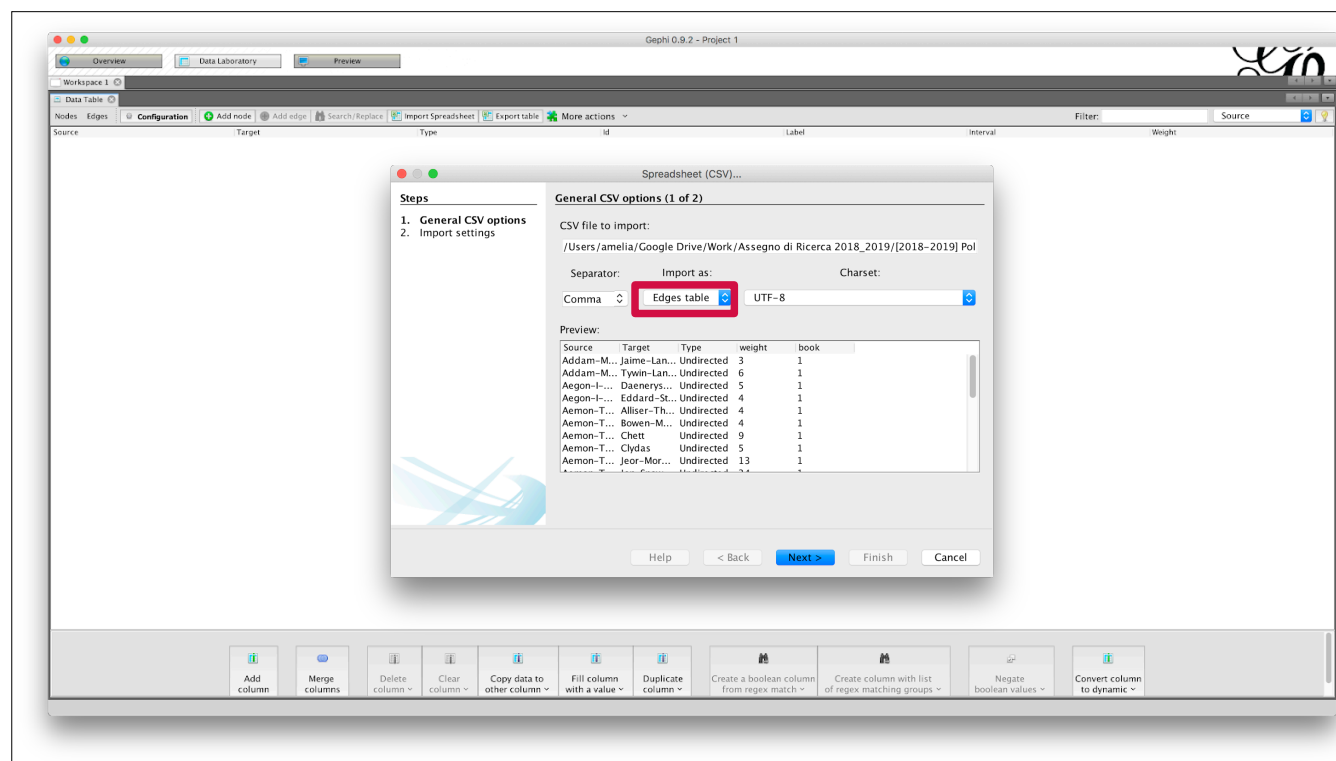


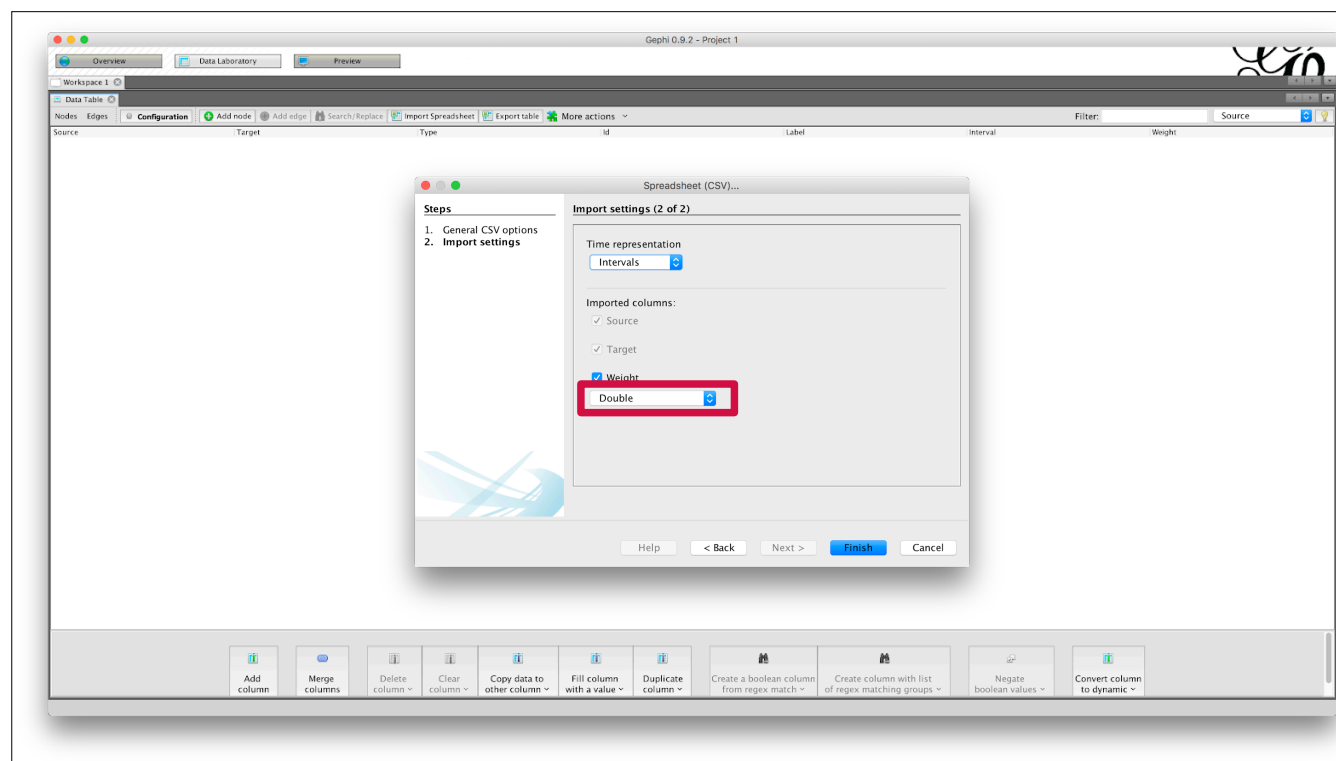
HOW TO IMPORT DATA INTO GEPHI

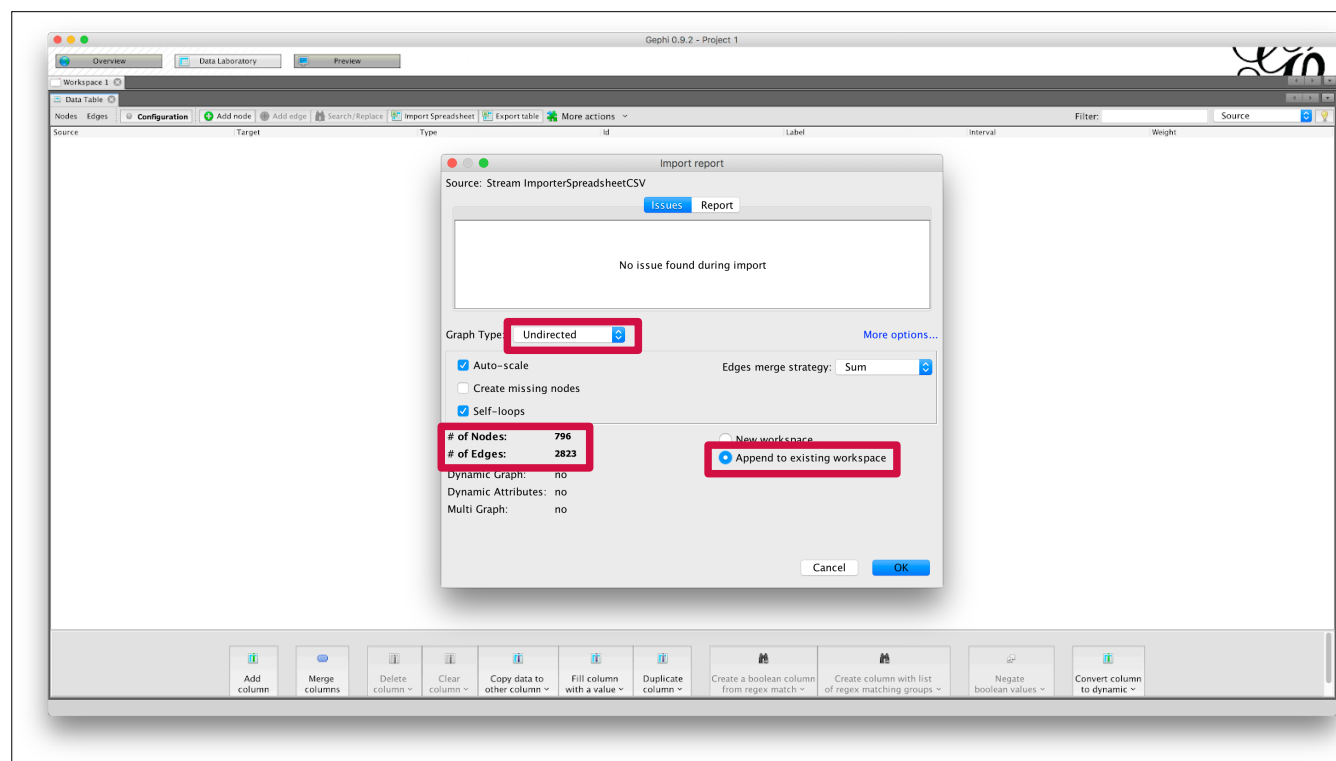












Overview Data Laboratory Preview

Workspace 1

Data Table

Nodes Edges Configuration Add edge Search/Replace Report Spreadsheet Export table More actions

Filter: Weight Source

Source	Target	Type	M	Label	Interval	Weight
Yannick-Maibrand	Yannick-Maibrand	Undirected	0			13.0
Addam-Mulbrand	Tywin-Lannister	Undirected	1			6.0
Angen-I-Targaryen	Daenerys-Targaryen	Undirected	2			13.0
Aegon-I-Targaryen	Eddard-Stark	Undirected	3			4.0
Aemon-Targaryen-(Maester-Aemon)	Alliser-Thorne	Undirected	4			7.0
Aemon-Targaryen-(Maester-Aemon)	Bowen-Marsh	Undirected	5			4.0
Aemon-Targaryen-(Maester-Aemon)	Cheff	Undirected	6			9.0
Aemon-Targaryen-(Maester-Aemon)	Clydas	Undirected	7			33.0
Aemon-Targaryen-(Maester-Aemon)	Jeor-Mormont	Undirected	8			25.0
Aemon-Targaryen-(Maester-Aemon)	Jon-Snow	Undirected	9			110.0
Aemon-Targaryen-(Maester-Aemon)	Samwell-Tarly	Undirected	10			99.0
Aerys-8-Targaryen	Brandon-Stark	Undirected	11			4.0
Aerys-8-Targaryen	Eddard-Stark	Undirected	12			15.0
Aerys-8-Targaryen	Gerold-Hightower	Undirected	13			3.0
Aerys-8-Targaryen	Jaime-Lannister	Undirected	14			37.0
Aerys-8-Targaryen	Jon-Arryn	Undirected	15			3.0
Aerys-8-Targaryen	Robert-Baratheon	Undirected	16			35.0
Aerys-8-Targaryen	Daenerys-Targaryen	Undirected	17			30.0
Aggo	Drago	Undirected	18			6.0
Aggo	Jhogo	Undirected	19			26.0
Aggo	Jorah-Mormont	Undirected	20			9.0
Aggo	Quaro	Undirected	21			3.0
Aggo	Rahharo	Undirected	22			23.0
Albrett	Halder	Undirected	23			3.0
Albrett	Jon-Snow	Undirected	24			5.0
Albrett	Rast	Undirected	25			3.0
Alliser-Thorne	Bowen-Marsh	Undirected	16			3.0
Alliser-Thorne	Greenn	Undirected	27			4.0
Alliser-Thorne	Halder	Undirected	28			13.0
Alliser-Thorne	Jeor-Mormont	Undirected	29			61.0
Alliser-Thorne	Jon-Snow	Undirected	30			4.0
Alliser-Thorne	Pypar	Undirected	31			5.0
Alliser-Thorne	Rast	Undirected	32			12.0
Alliser-Thorne	Samwell-Tarly	Undirected	33			15.0
Alliser-Thorne	Tywin-Lannister	Undirected	34			35
Allyn	Eddard-Stark	Undirected	35			11.0
Allyn	Harwin	Undirected	36			6.0
Allyn	Jory-Cassel	Undirected	37			8.0
Allyn	Robert-Baratheon	Undirected	38			4.0
Allyn	Tomard	Undirected	39			3.0
Arthur-Dayne	Gerold-Hightower	Undirected	40			9.0

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 matching column Create column with list of regex matching groups Negate boolean values Convert column to dynamic

Gephi 0.9.2 - Project 1

Overview Data Laboratory Preview

Workspace 1

Data Table

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

Filter: Id

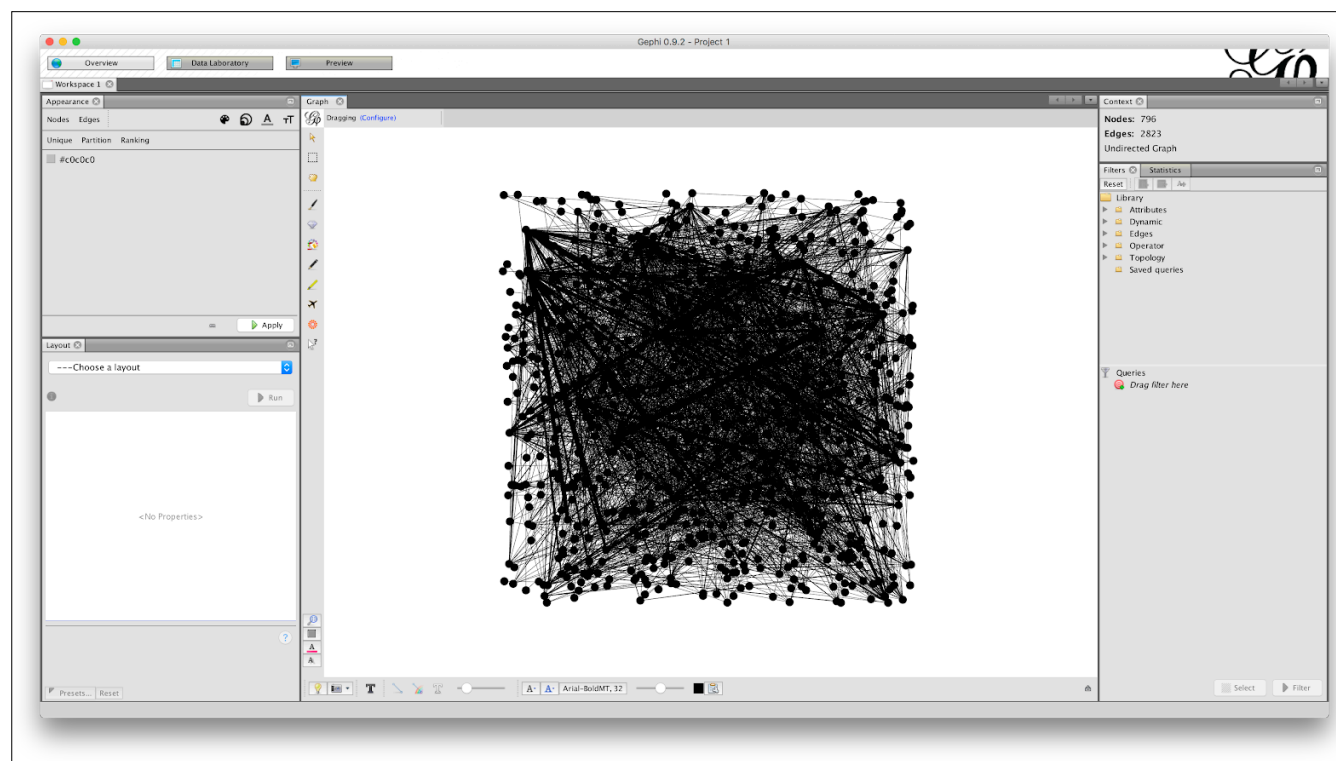
Label	Interval
M	
Addam-Magbrand	
Jaime-Lannister	
Tywin-Lannister	
Aegon-I-Targaryen	
Dusmerys-Targaryen	
Eddard-Stark	
Aemon-Targaryen-(Maester Pemon)	
Alliser-Thorne	
Bowen-Marsh	
Cheist	
Cydias	
Jean-Mormont	
Jon-Snow	
Samwell-Tarly	
Aerys-II-Targaryen	
Brandon-Stark	
Ceroll-Hightower	
Jon-Arryn	
Robert-Baratheon	
Argo	
Drogo	
Jhogo	
Jorah-Mormont	
Quaro	
Rakharo	
Albrett	
Halder	
Rast	
Grenn	
Pypar	
Tyrian-Lannister	
Alyn	
Harwin	
Jory-Cassel	
Tomard	
Arthur-Dayne	
Arya-Stark	
Bonjen-Stark	
Brain-Stark	
Catelyn-Stark	
Cersei-Lannister	

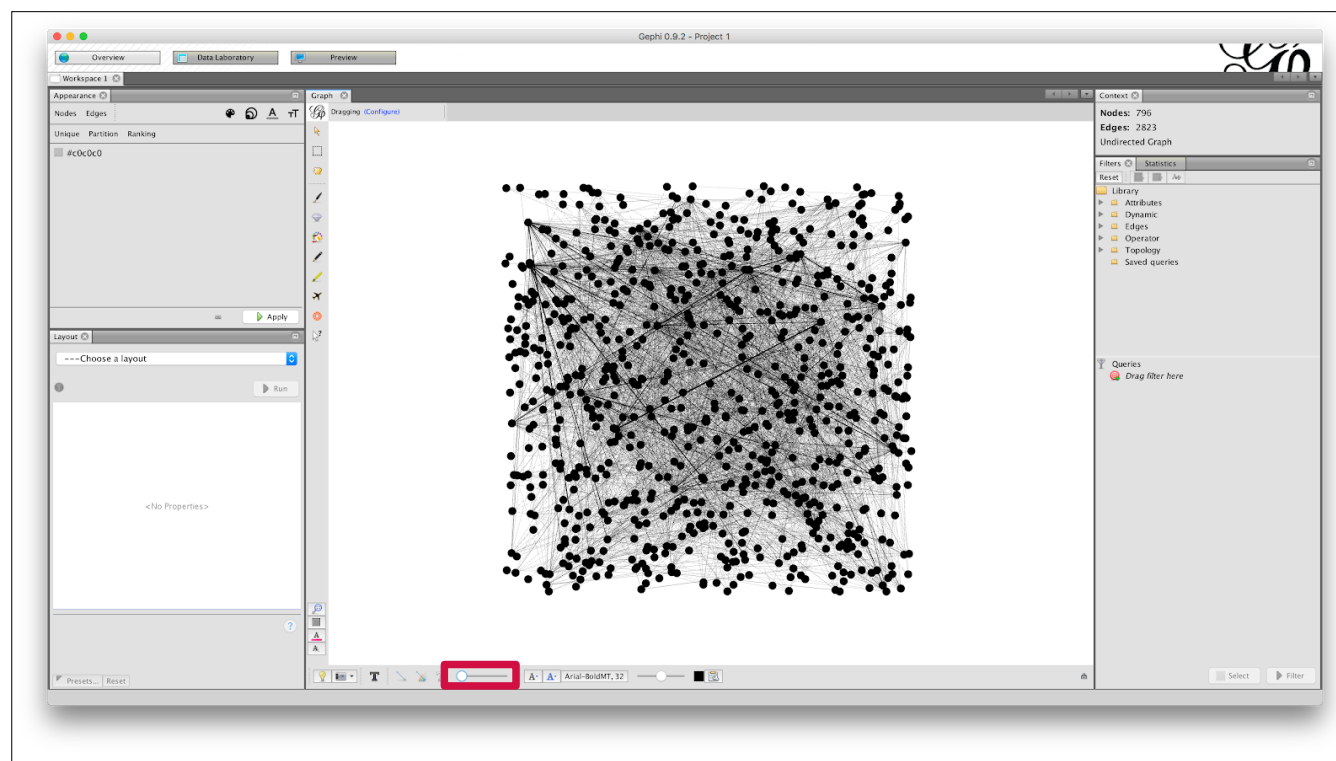
Nodes are automatically created if no dataset about them is found

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 Convert column to dynamic

LAYOUT AND STYLE







LAYOUTS

Spatialization

Force Atlas 2

Fruchterman Reingold

Circular Layout

OpenOrd

Yifan Hi

Enhancements

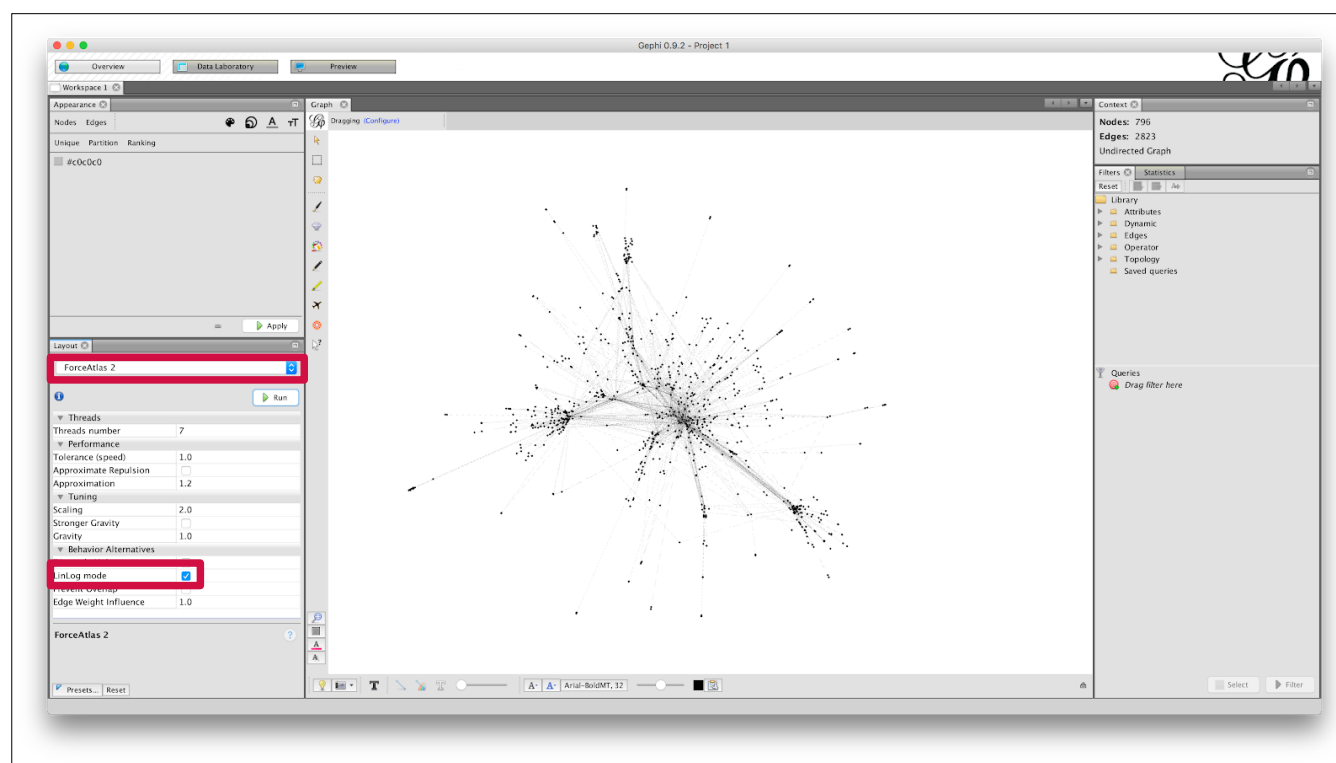
Expansion

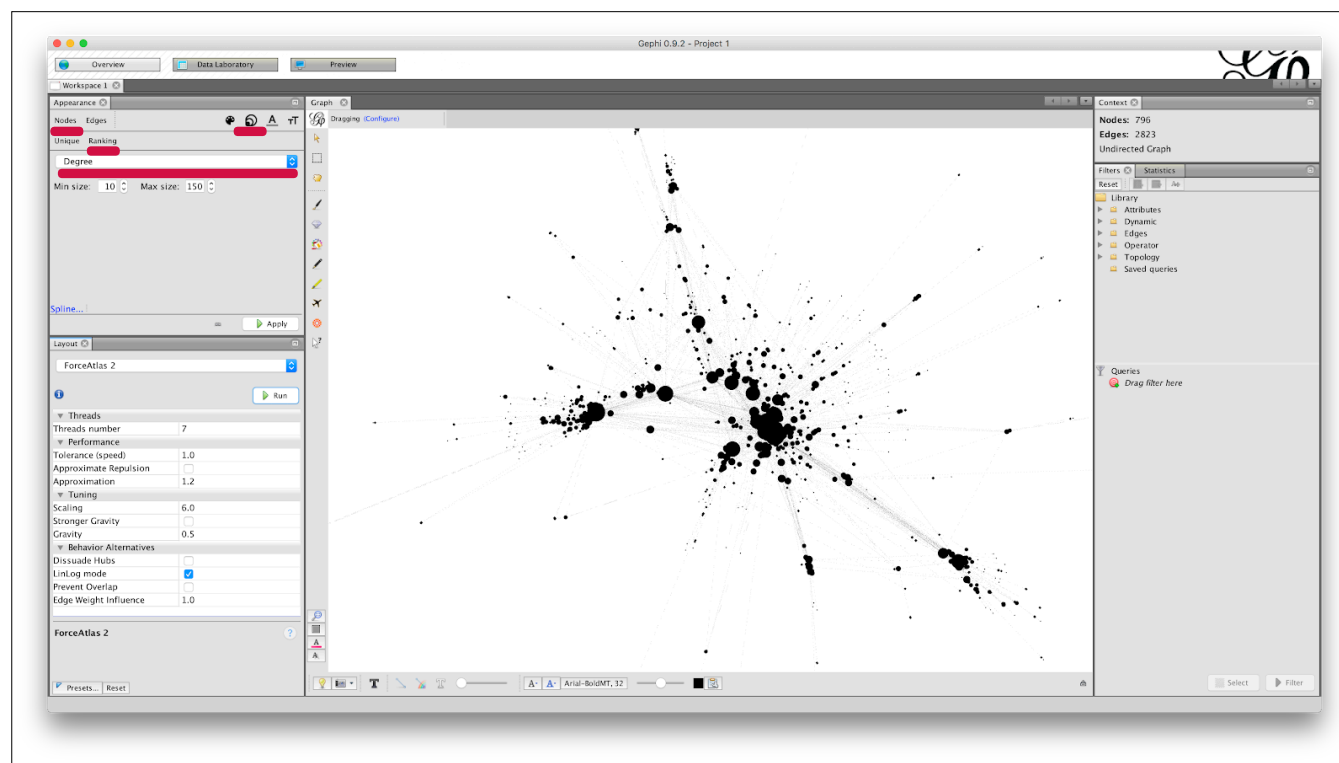
Rotate

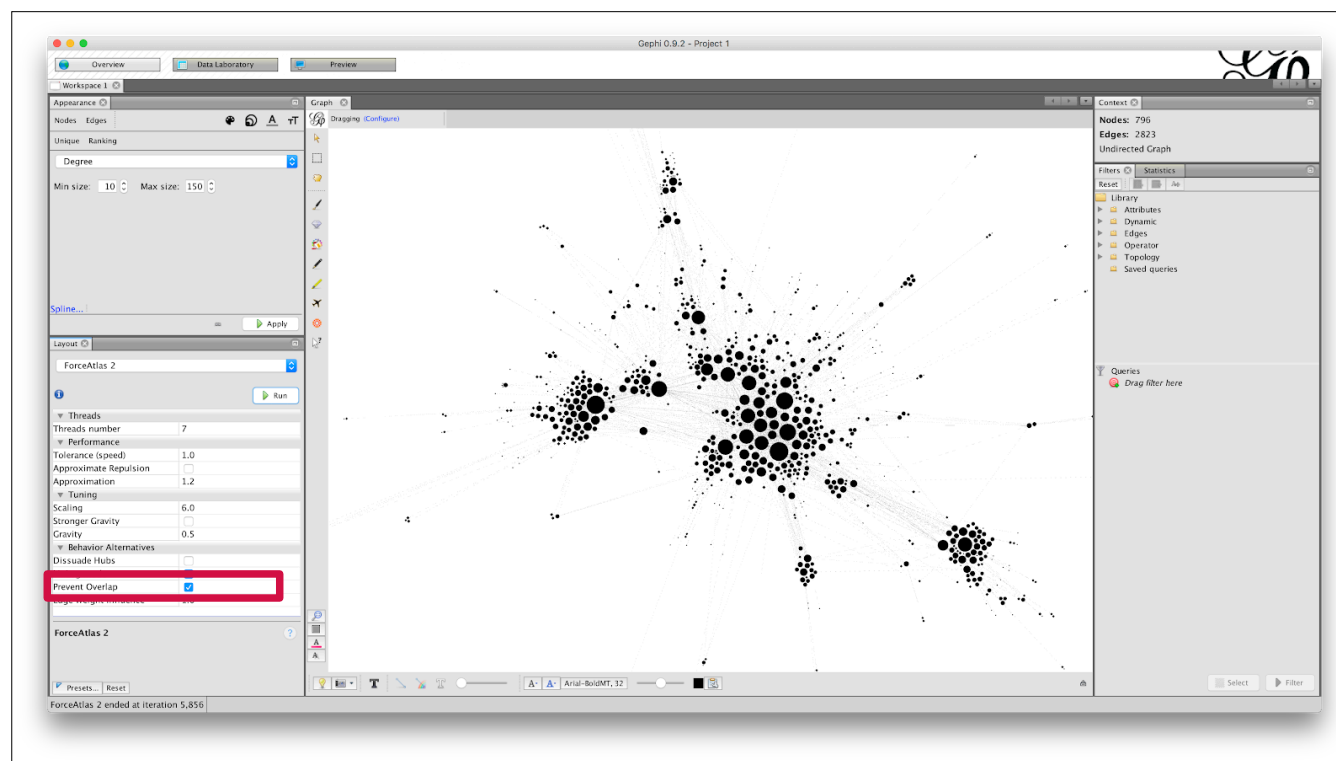
Contraction

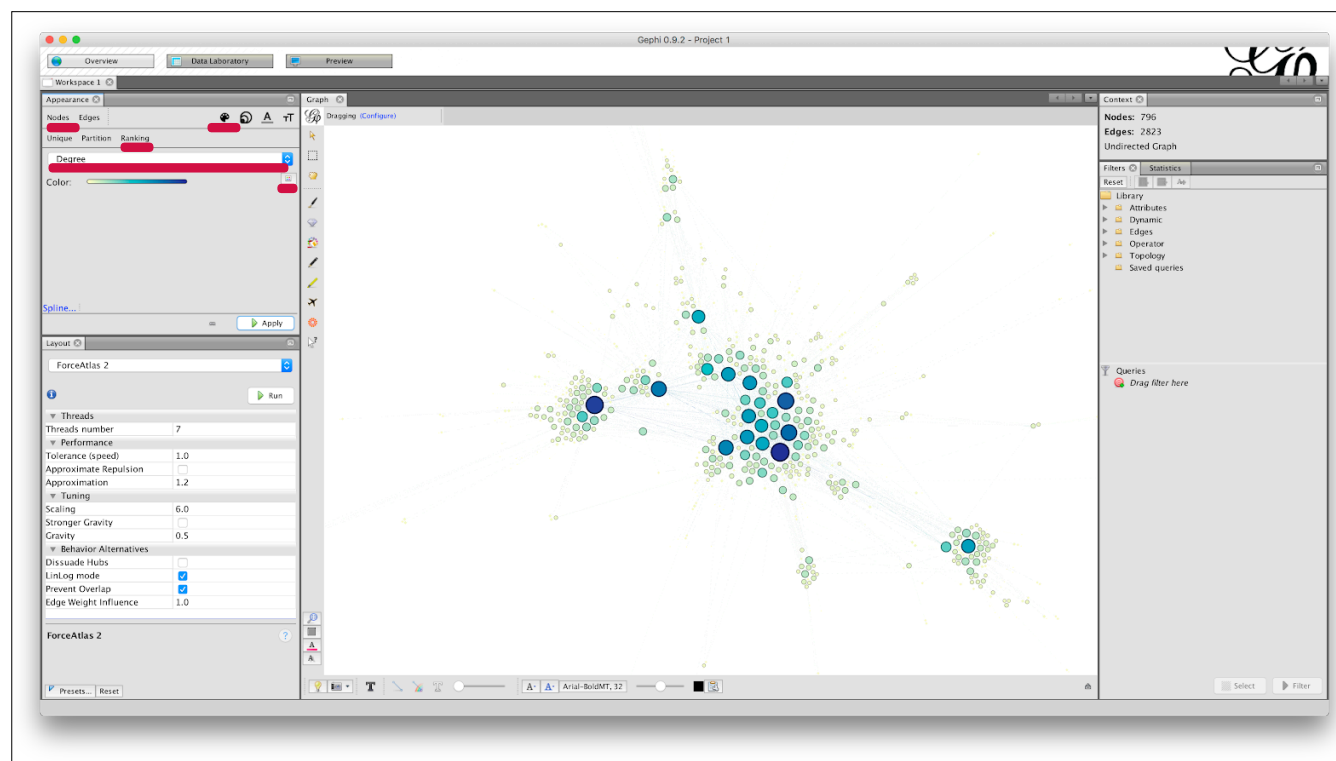
Noverlap

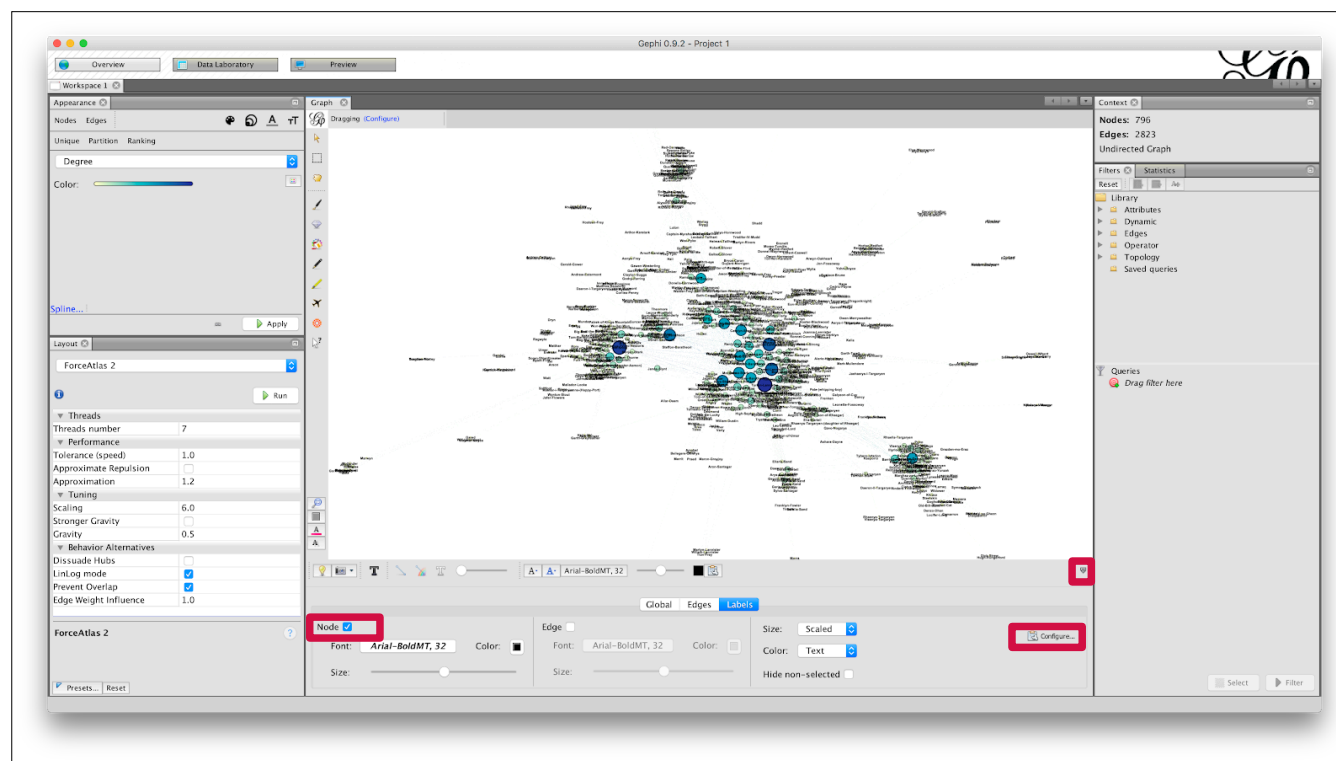
Label Adjust

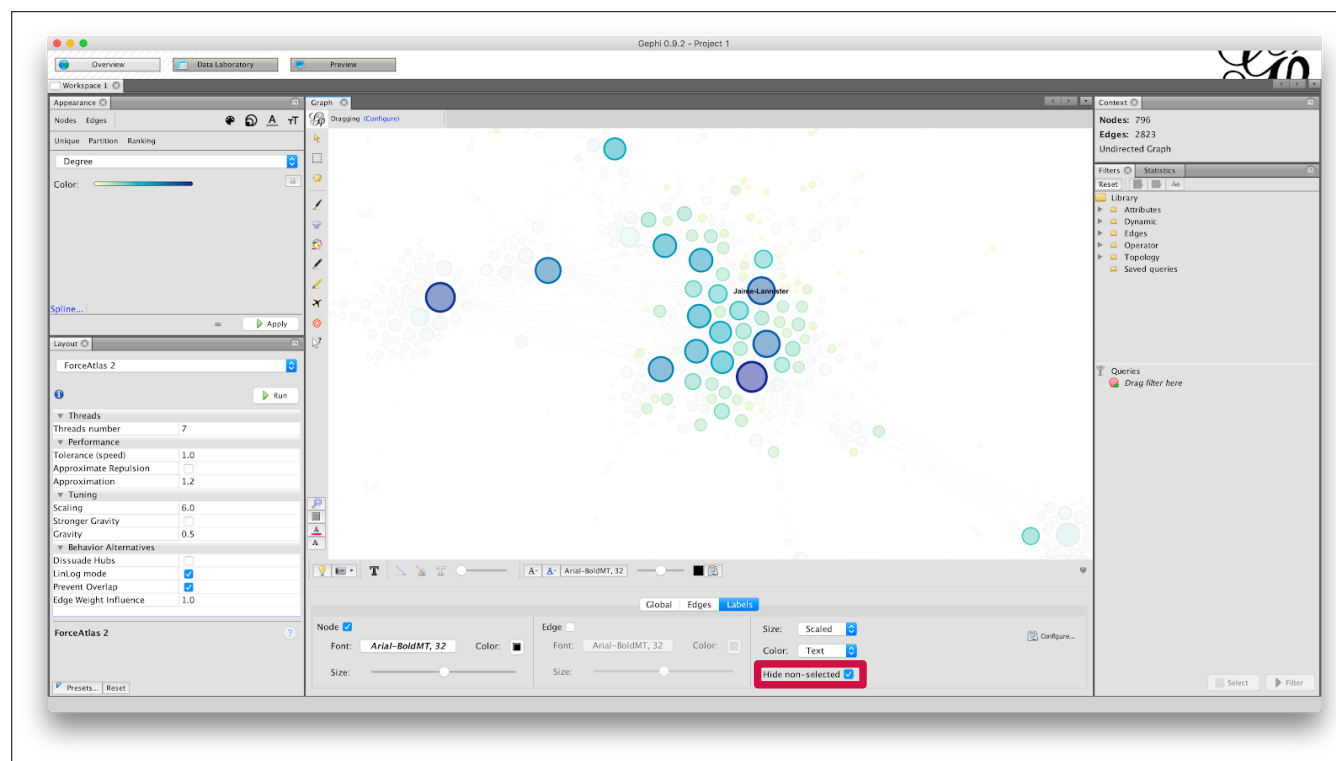












EXPORTING YOUR NETWORK



Gephi 0.9.2 - Project 1

Overview | Data Laboratory | Preview

Workspace 1

Data Table | Nodes | Edges | Configuration | Add node | Add edge | Search/Replace | Import Spreadsheet | Export table | More actions

Filter: Id

	Label	Interval
M		
Addam-MaiBrand		
Jaim-Lannister		
Tywin-Lannister		
Aegon-1-Targaryen		
Danerys-Targaryen		
Eddard-Stark		
Aemon-Targaryen-(Maester-Aemon)		
Alben-Thorne		
Bowen-Marsh		
Chett		
Cydias		
Jeor-Mormont		
Jon-Snow		
Samwell-Tarly		
Aerys-8-Targaryen		
Brandon-Stark		
Ceroll-Hightower		
Jon-Arryn		
Robert-Baratheon		
Appo		
Drogo		
Jhogo		
Jorah-Mormont		
Quaro		
Rakharo		
Alberr		
Halder		
Rast		
Grenn		
Pypar		
Tyrian-Lannister		
Alay		
Harwin		
Jory-Cassel		
Tomard		
Arthur-Dayne		
Arya-Stark		
Benjen-Stark		
Bran-Stark		
Catelyn-Stark		
Cersei-Lannister		

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 | Convert column to dynamic

Gephi 0.9.2 - Project 1

Workspace 1

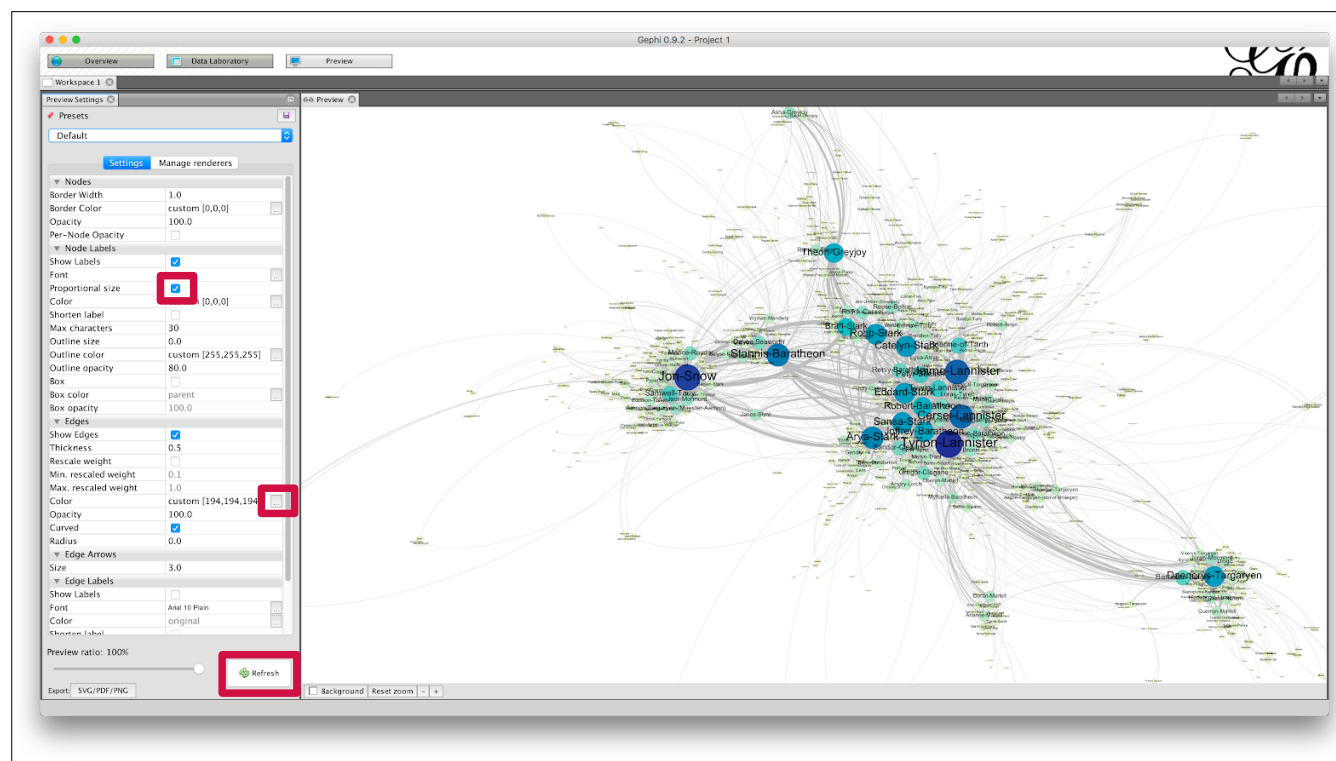
Data Table

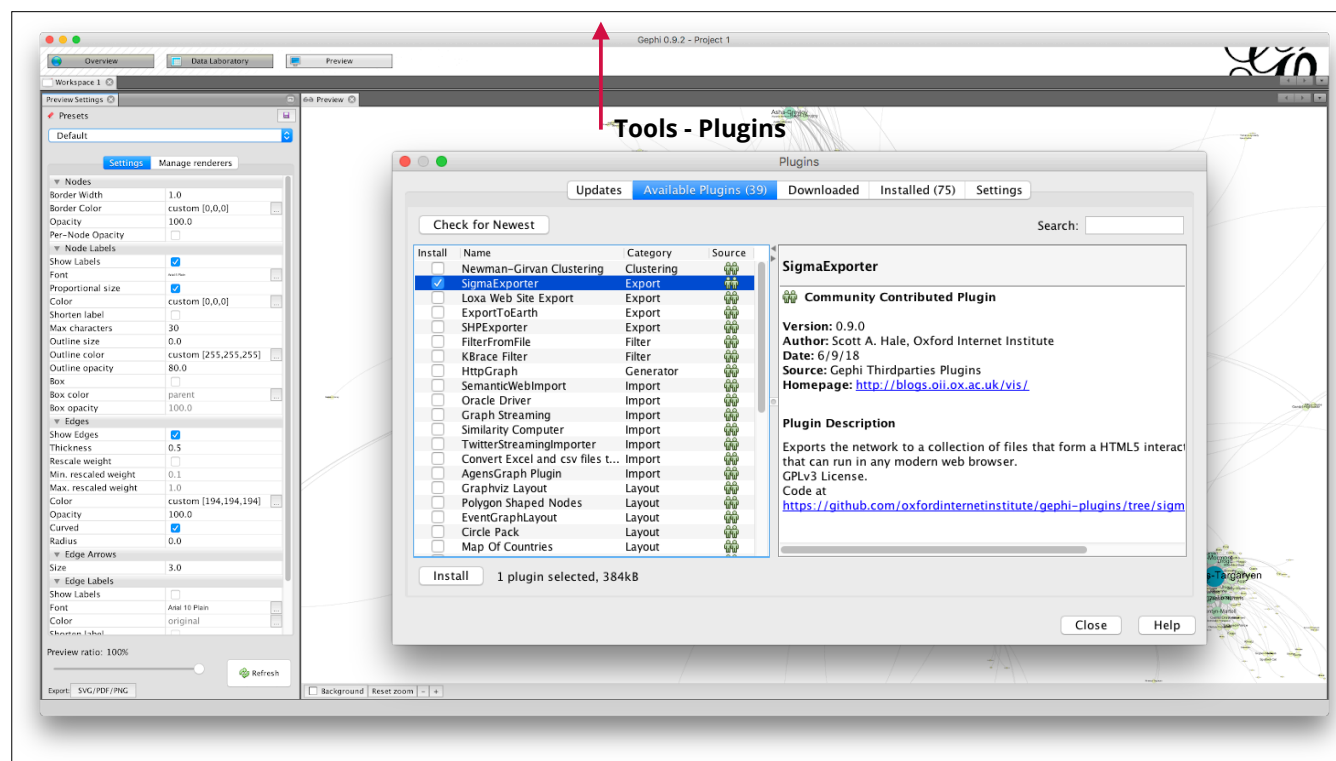
Nodes Edges Configuration Add node Add edge Search/Replace Import Spreadsheet Export table More actions Filter: Id

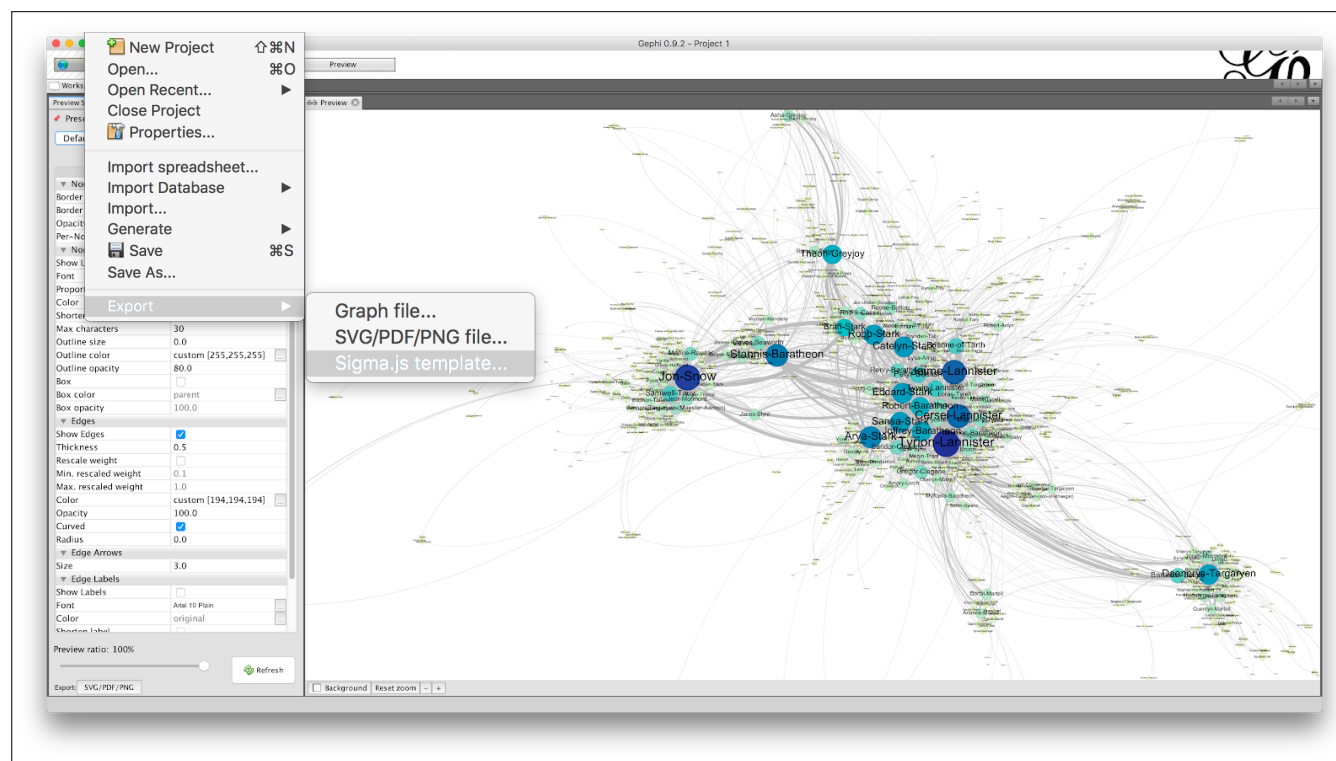
Id	Label
Addam-Marlbrand	Addam-Marlbrand
Jaime-Lannister	Jaime-Lannister
Tywin-Lannister	Tywin-Lannister
Aegon-8-Targaryen	Aegon-8-Targaryen
Duennerys-Targaryen	Duennerys-Targaryen
Eddard-Stark	Eddard-Stark
Aemon-Targaryen-(Maester-Aemon)	Aemon-Targaryen-(Maester-Aemon)
Albiter-Thorne	Albiter-Thorne
Bowen-Marsh	Bowen-Marsh
Chett	Chett
Cydias	Cydias
Jon-Mormont	Jon-Mormont
Jon-Snow	Jon-Snow
Samwell-Tarly	Samwell-Tarly
Aerys-8-Targaryen	Aerys-8-Targaryen
Brandon-Stark	Brandon-Stark
Cerod-Hightower	Cerod-Hightower
Jon-Arryn	Jon-Arryn
Robert-Baratheon	Robert-Baratheon
Aggo	Aggo
Drogo	Drogo
Jhogo	Jhogo
Jorah-Mormont	Jorah-Mormont
Quaro	Quaro
Rakharo	Rakharo
Albrett	Albrett
Halder	Halder
Rast	Rast
Grenn	Grenn
Pypar	Pypar
Tywin-Lannister	Tywin-Lannister
Alm	Alm
Harwin	Harwin
Jory-Cassel	Jory-Cassel
Tomard	Tomard
Arthur-Dayne	Arthur-Dayne
Arya-Stark	Arya-Stark
Benjen-Stark	Benjen-Stark
Bran-Stark	Bran-Stark
Catelyn-Stark	Catelyn-Stark
Cersei-Lannister	Cersei-Lannister

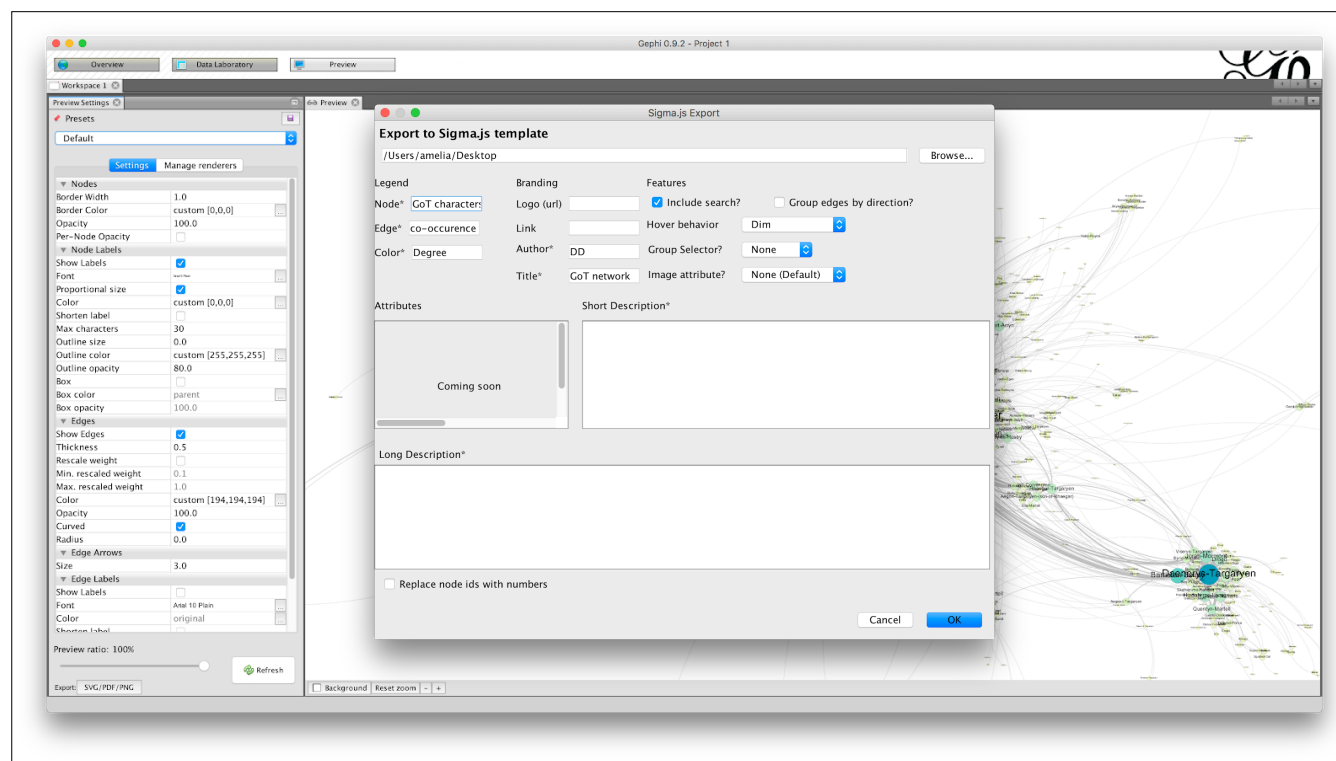
The Preview tab needs the label column filled to show the labels in the final export.

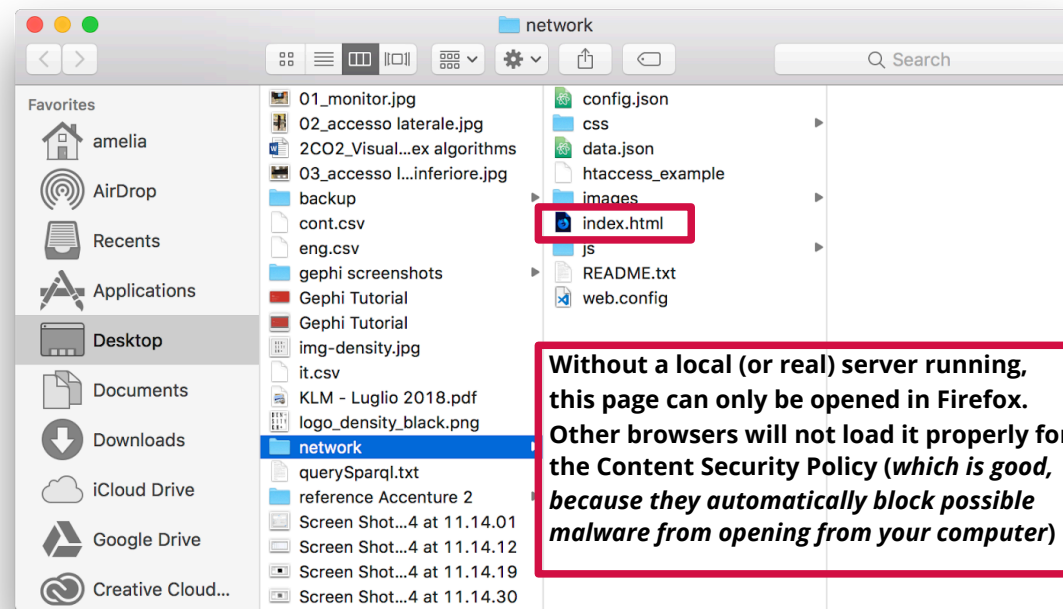
Add column Merge columns Delete column Clear column Copy data to other column Fill column with a value Duplicate column Create a boolean column from regex match Create column with list of regex matching groups Negate boolean values Convert column to dynamic











YOU TRANSFORM SOCIETY BY DESIGN





DIGITAL SOCIETY SCHOOL

WHERE CHANGE TAKES SHAPE

