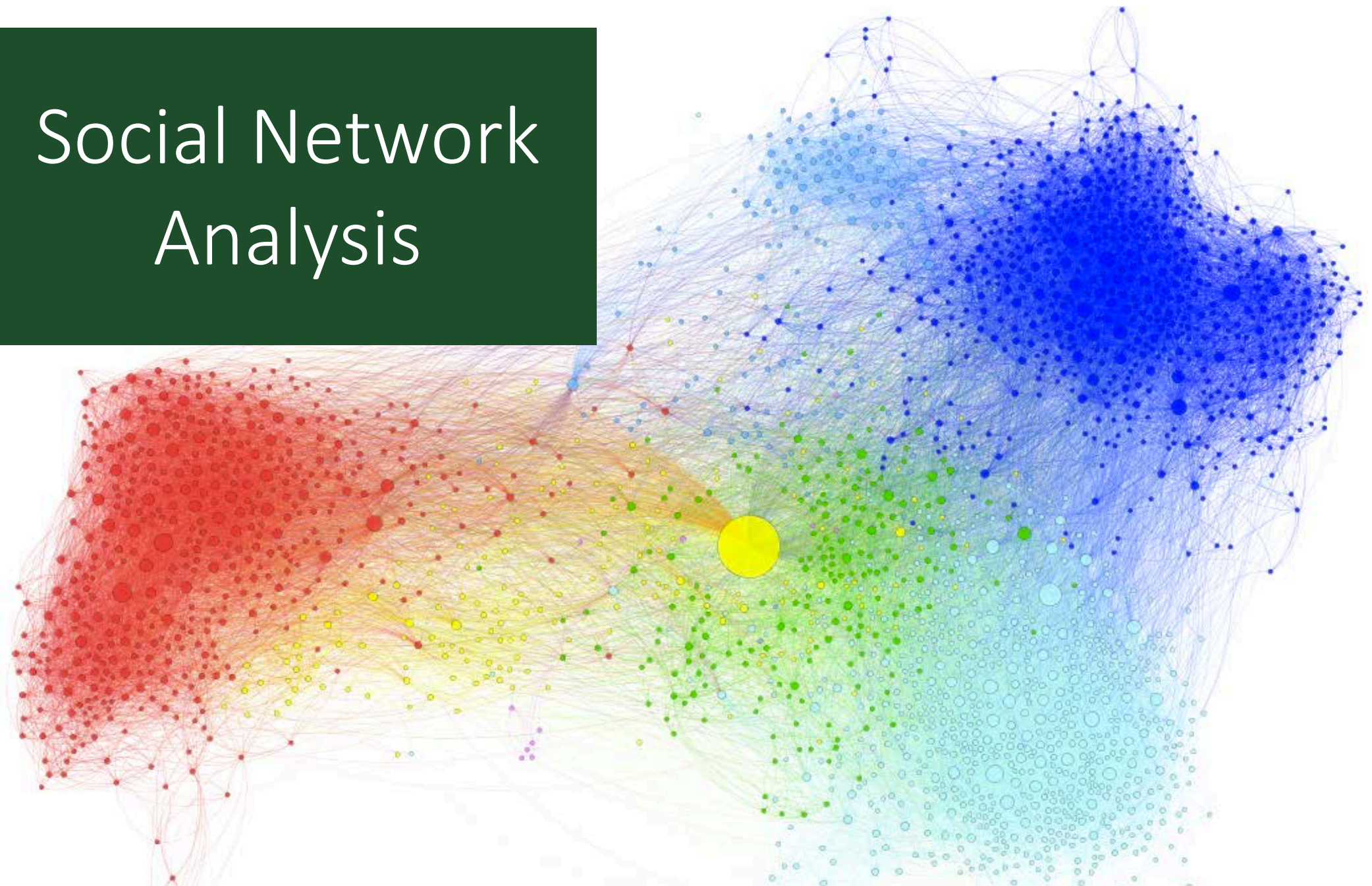


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COLORADO STATE UNIVERSITY

Social Network Analysis



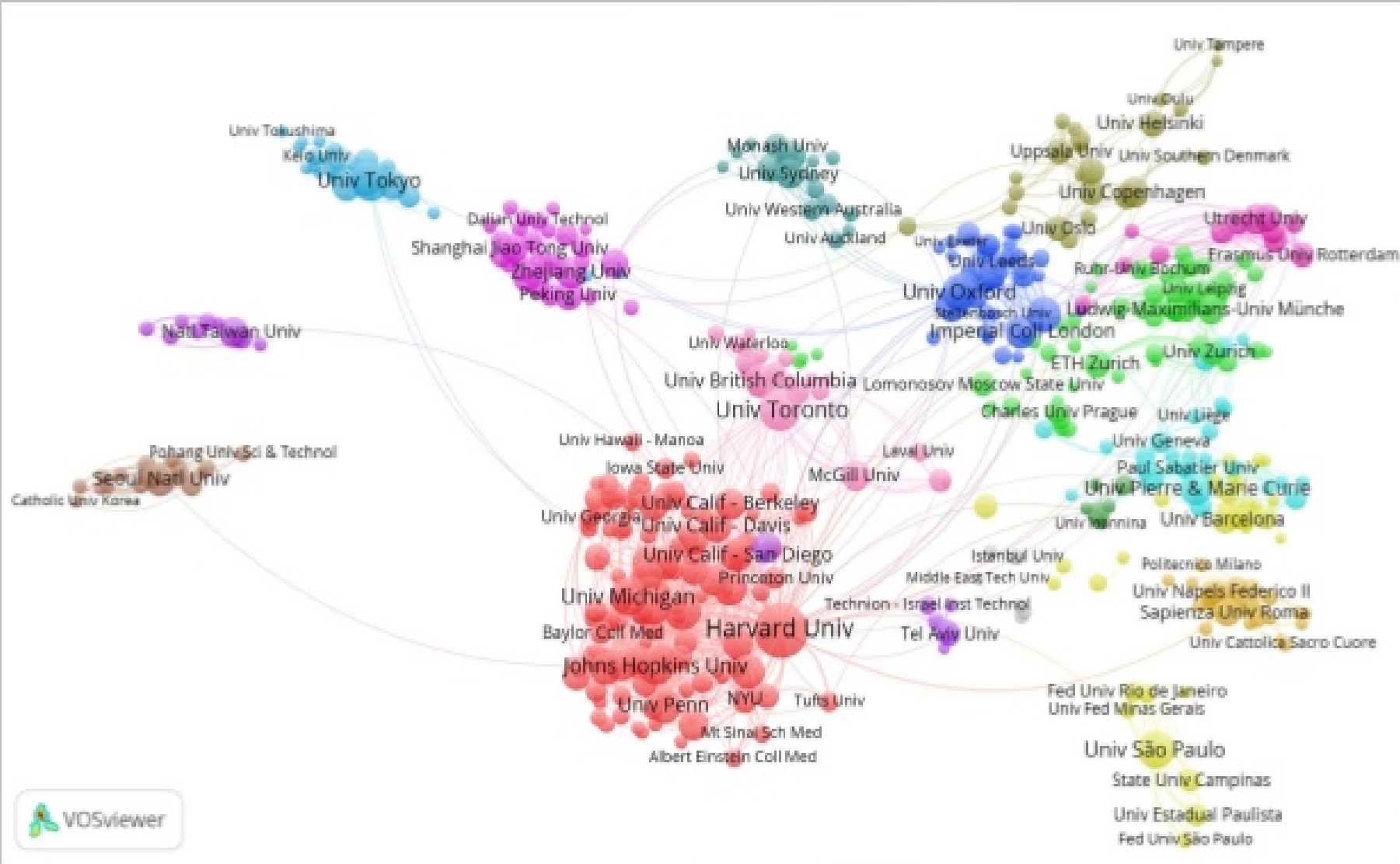
Workshop Agenda

- ③ Introduction
- ③ Data Collection and Visualization in Gephi
- ③ Analyzing Social Network Visualizations
OR
- ③ Data Collection and Visualization in Palladio



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Map of university co-authorship network



Point to point ▾

Source places

Source City Clean ▾

Destination places

Destination City Clean ▾

Source Coordinates

Source City Clean - Lat&Long ▾

Destination Coordinates

Destination City Clean - Lat&Long ▾

Dimension points

Show links

Search (beta)

Galileo's Correspondence Network



Date

Dates in yyyy-mm-dd ▾

Group by

Language ▾

Mode

Stack ▾



What are social networks?

According to Elijah Meeks, there are three pillars to DH research:

1. Text Analysis
2. Spatial Analysis
3. Network Analysis



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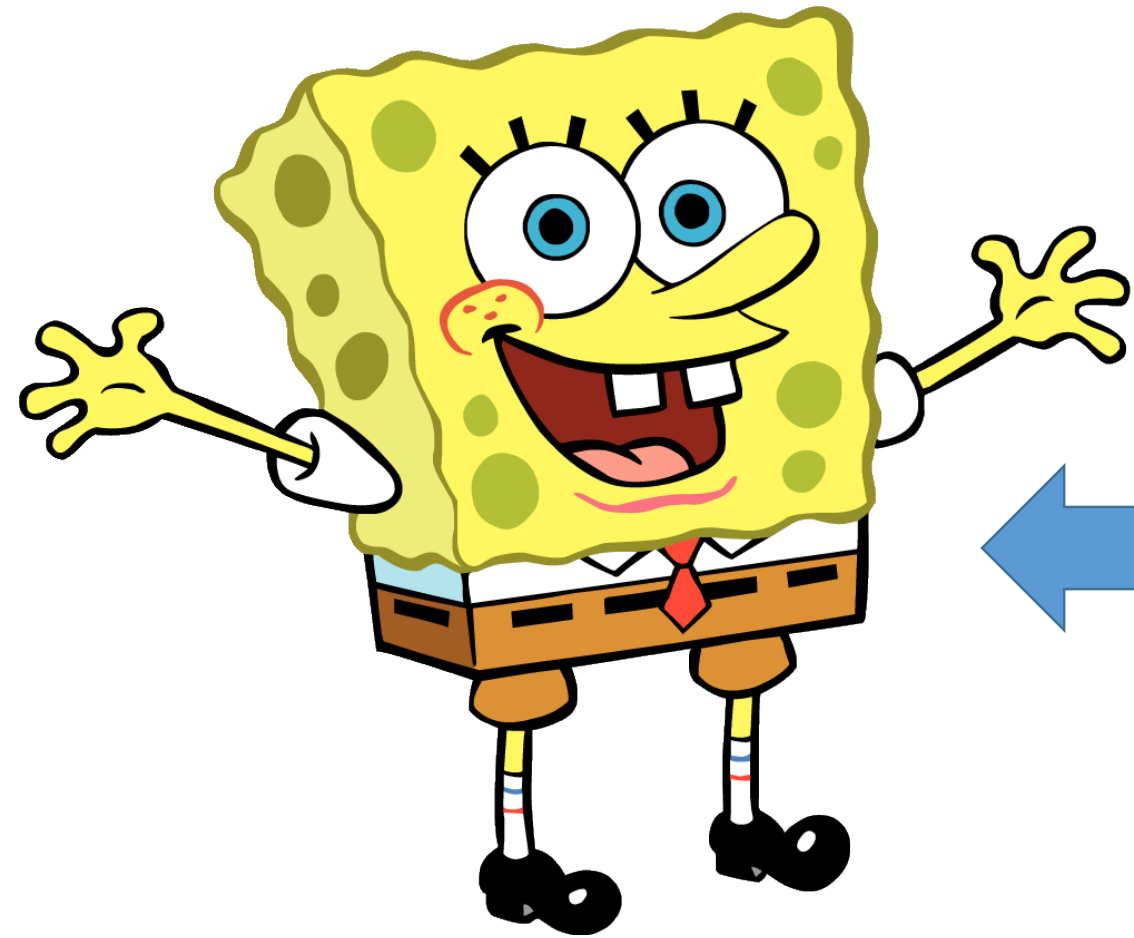
What are social networks?

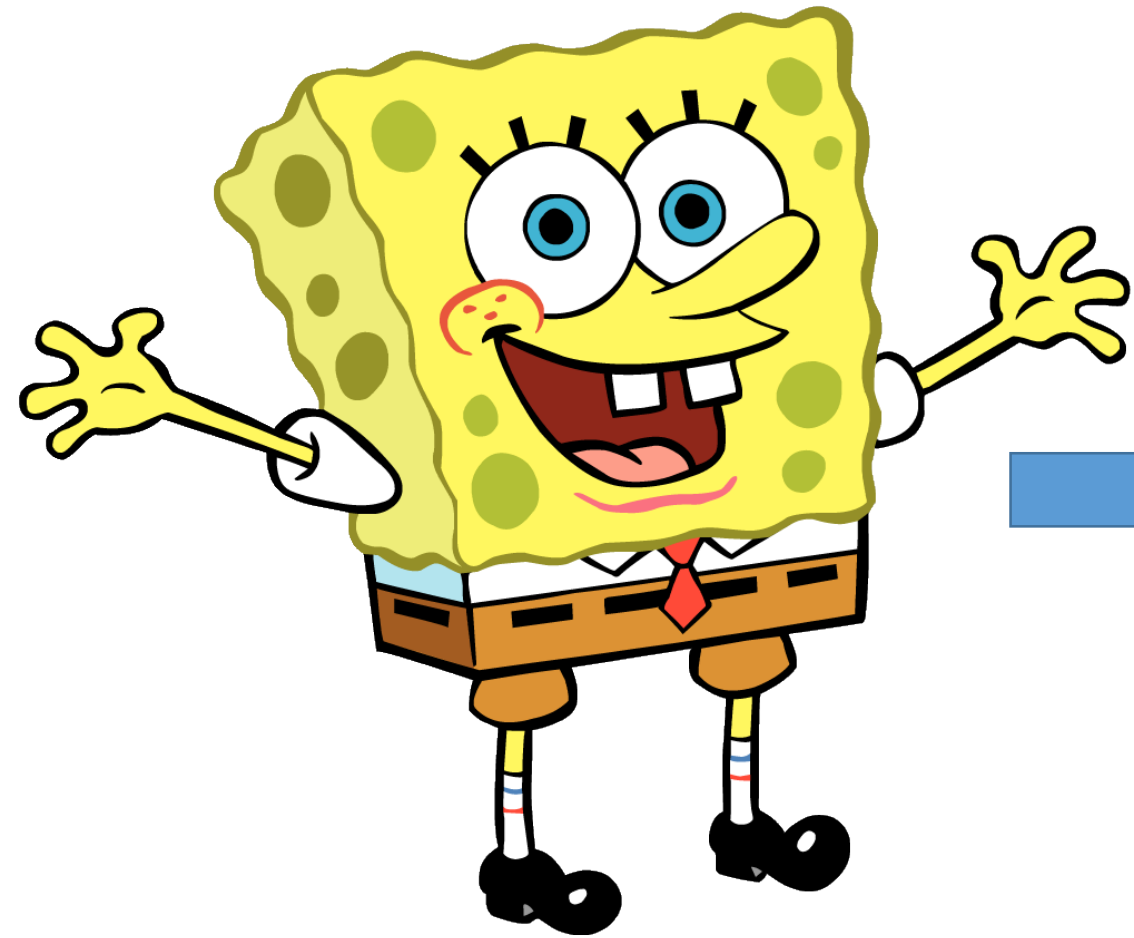
Network Analysis is useful for the “modeling and analysis of relationships between a wide variety of objects.”

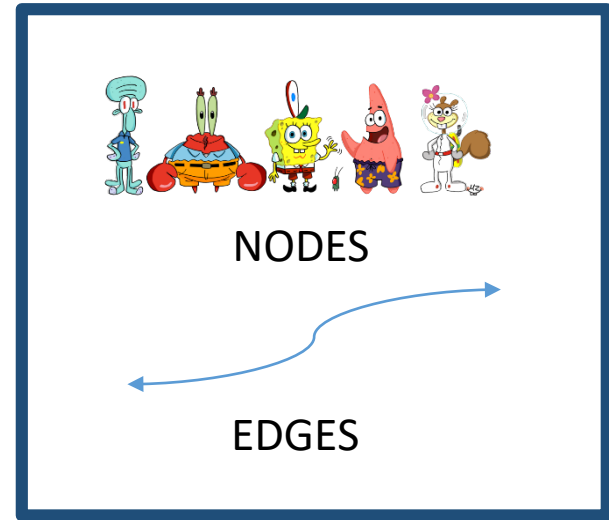
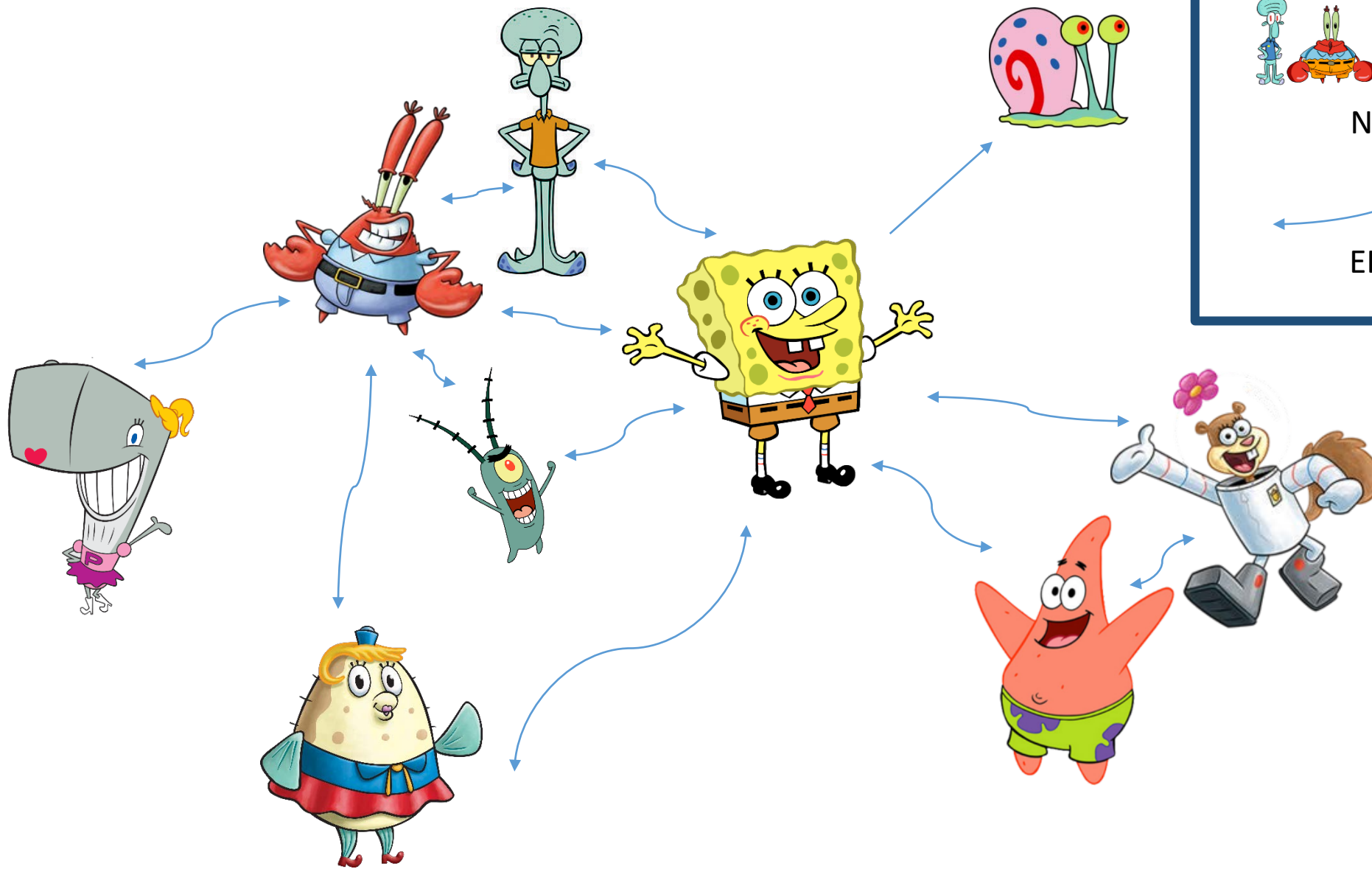
- ⊗ Shows interdependency
- ⊗ Shows that connections matter



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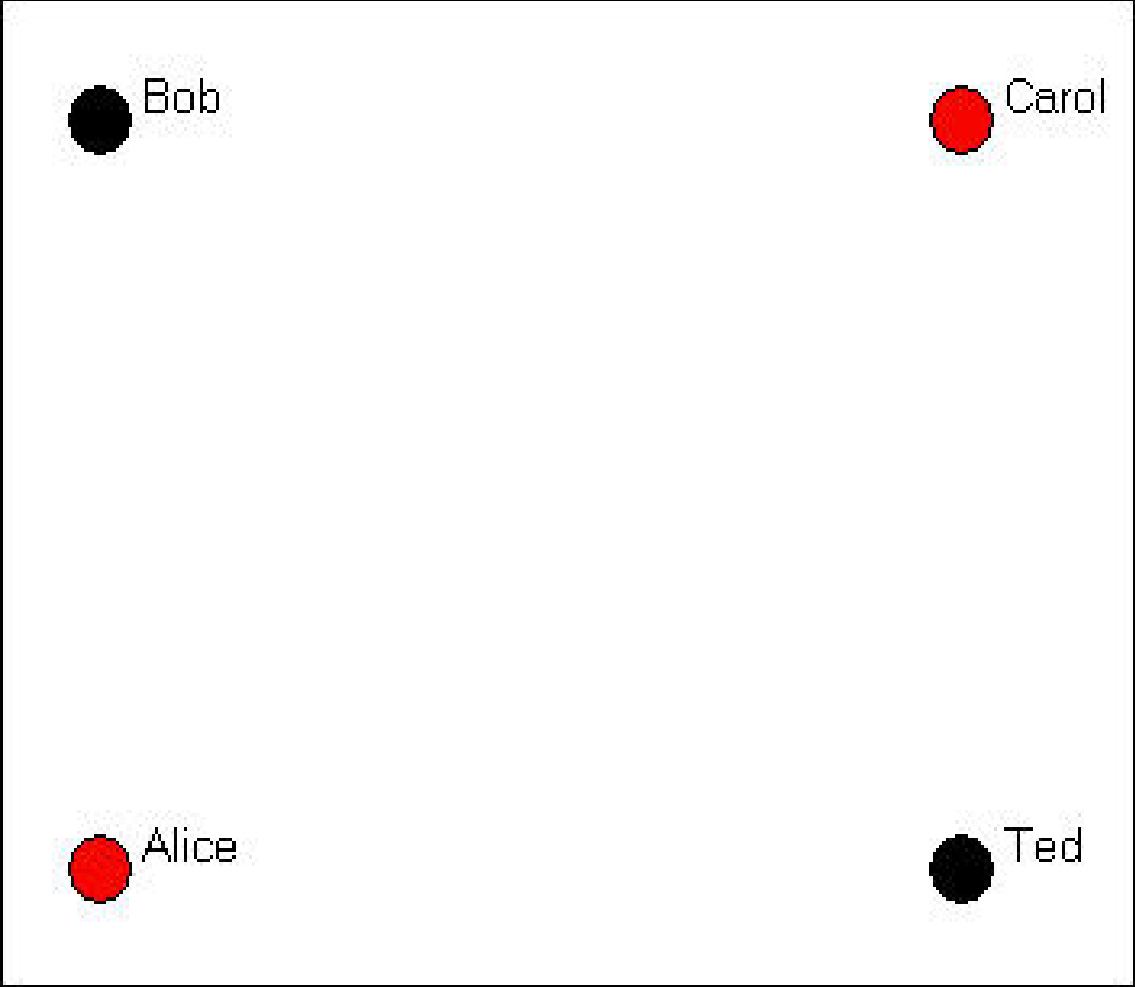




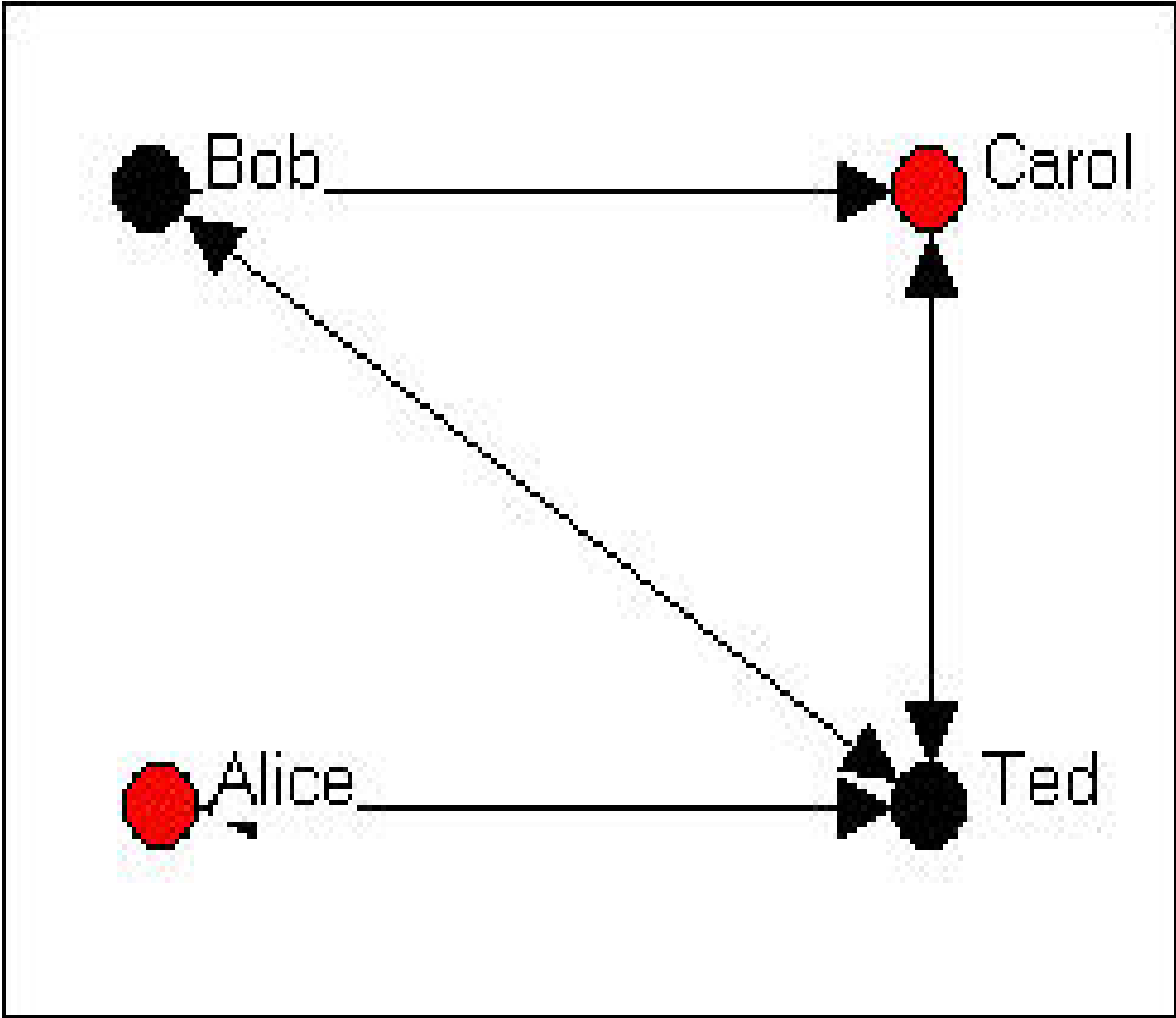
SNA Terms



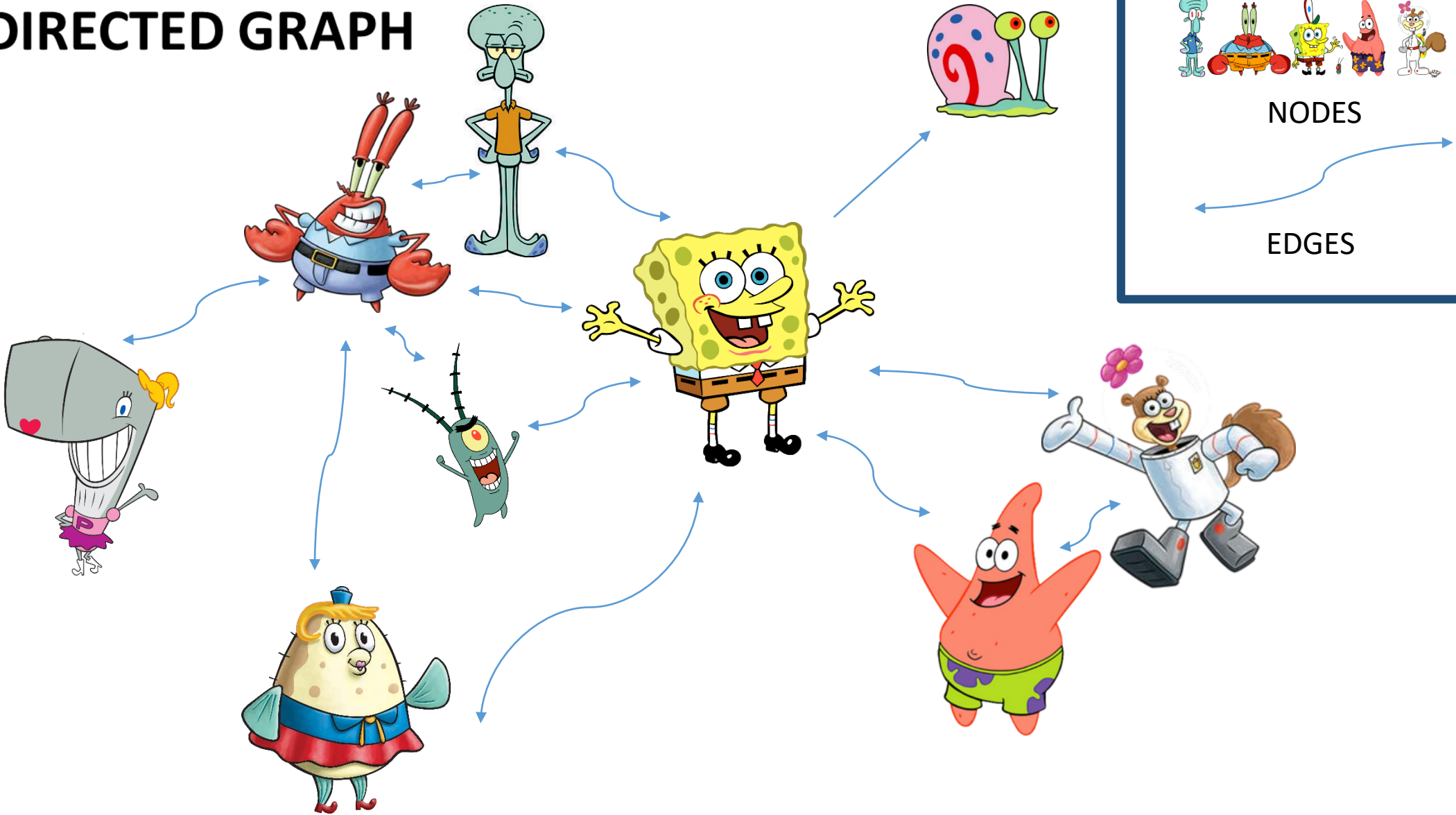
NODES AND ATTRIBUTES




DIRECTED GRAPH



DIRECTED GRAPH



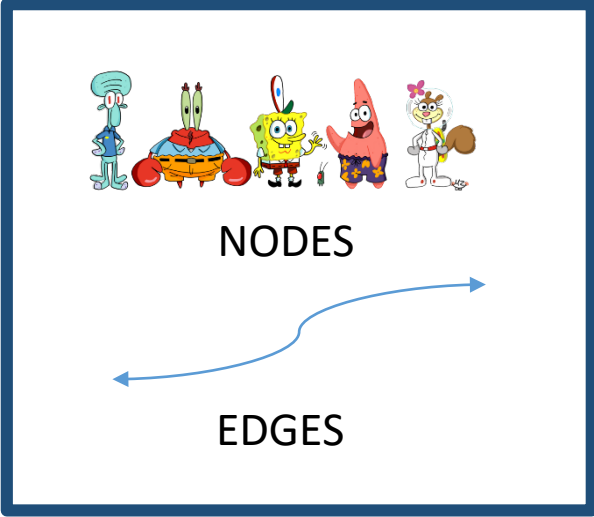
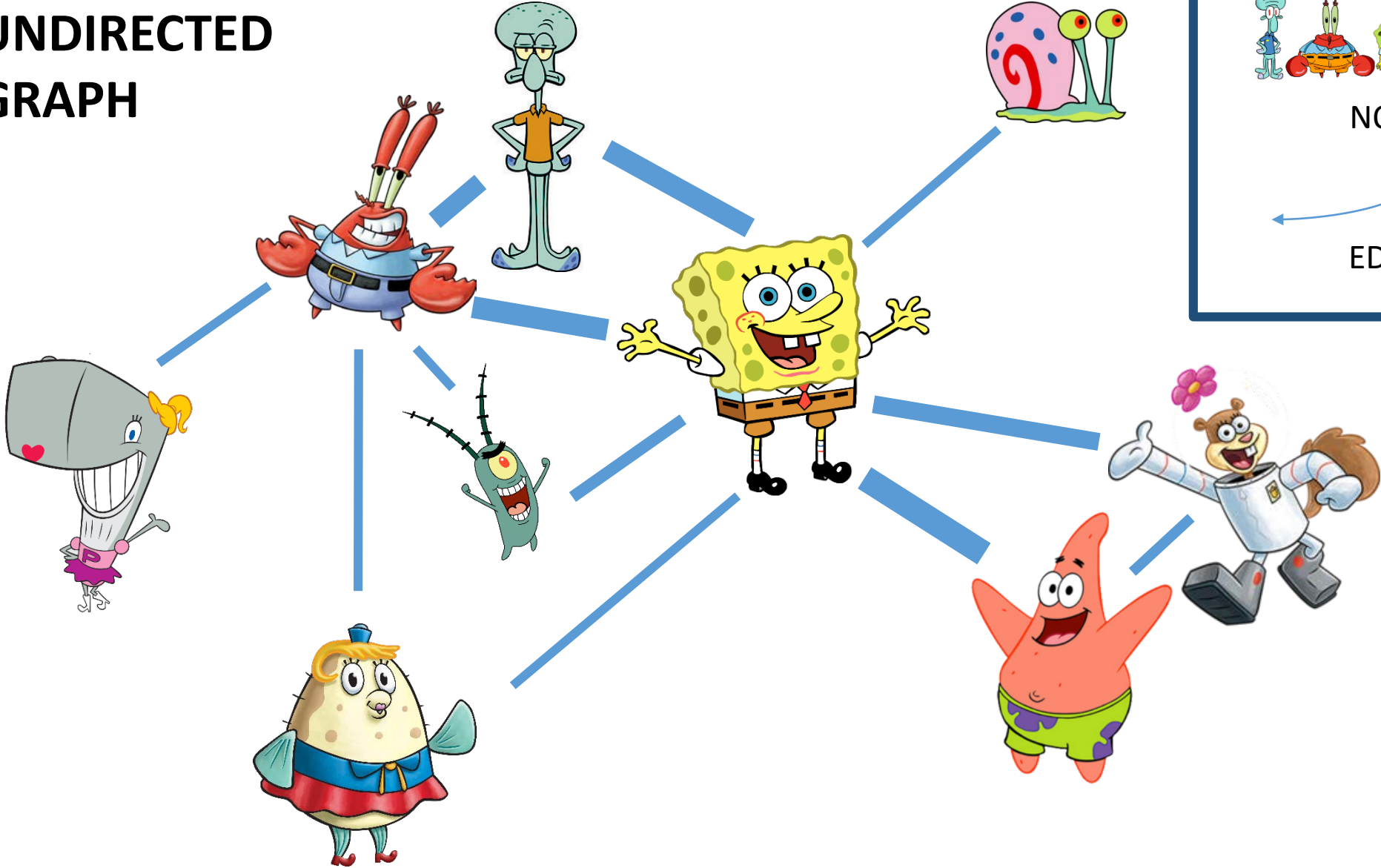


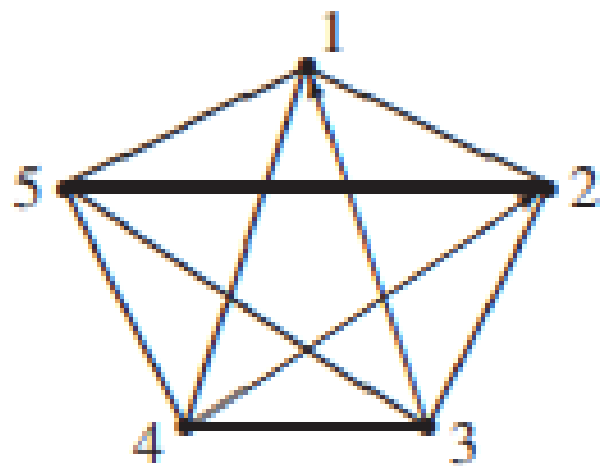
NODES

←

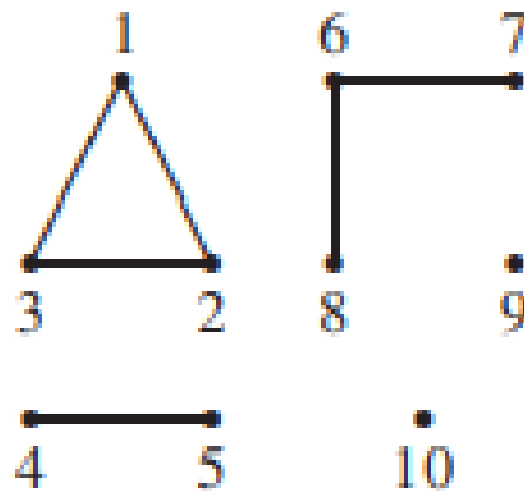
EDGES

UNDIRECTED GRAPH

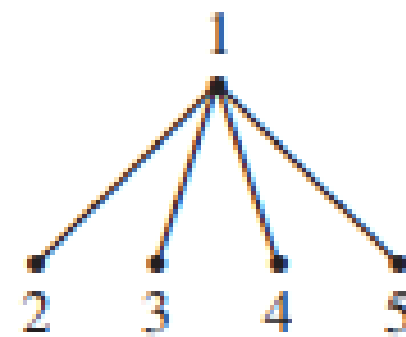




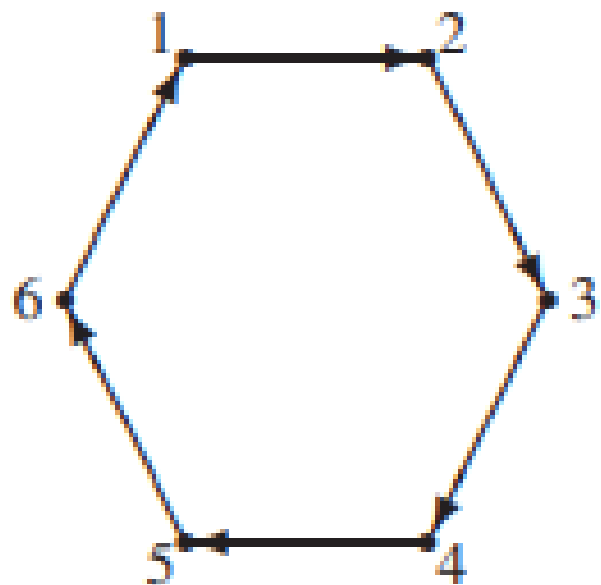
First network



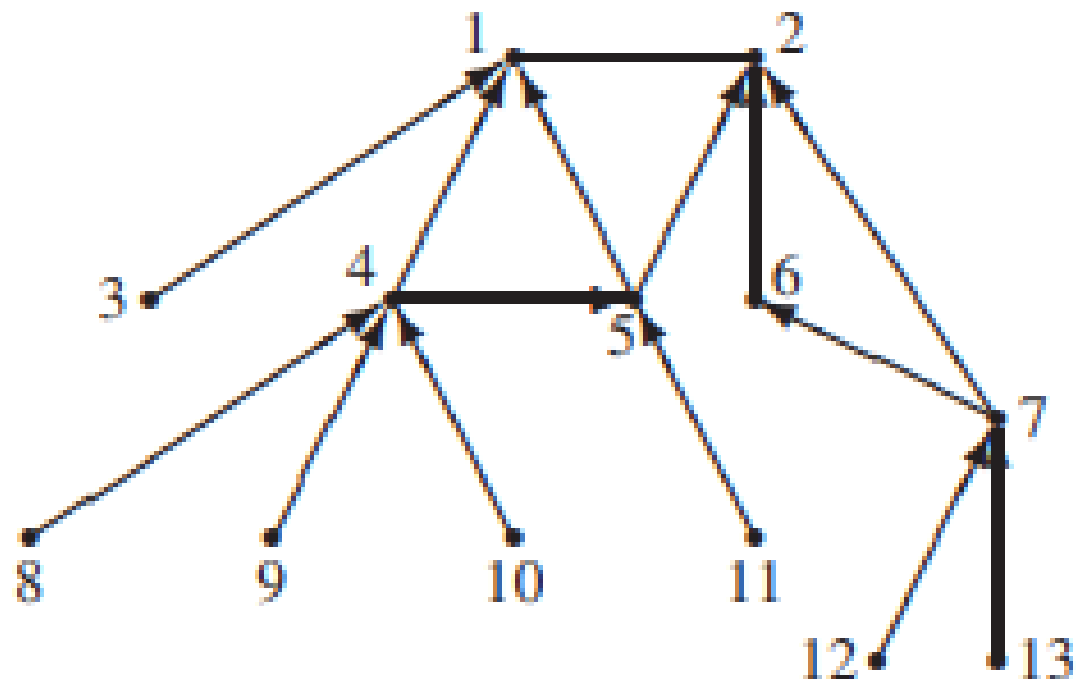
Second network



Third network



Fourth network

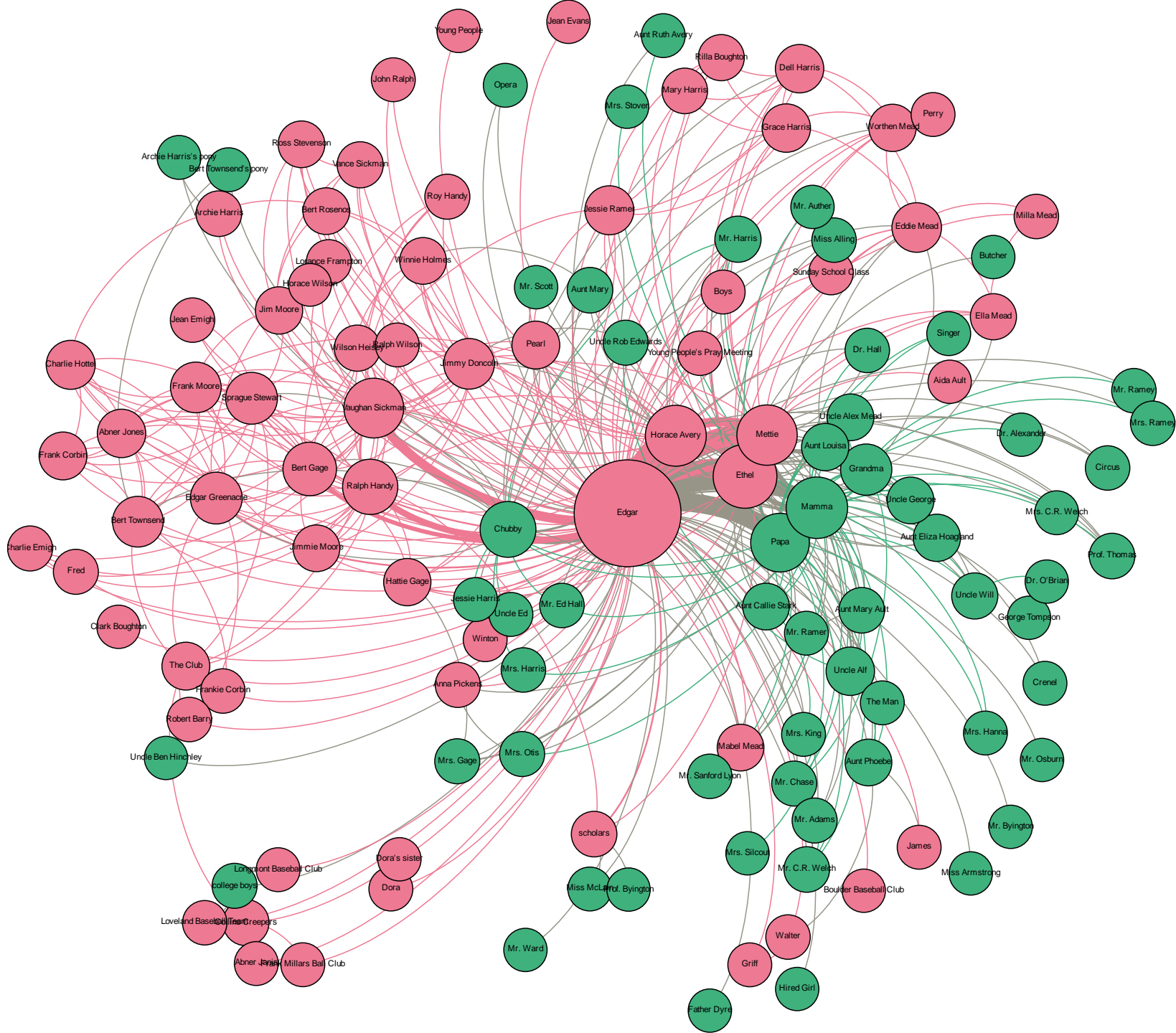


Fifth network

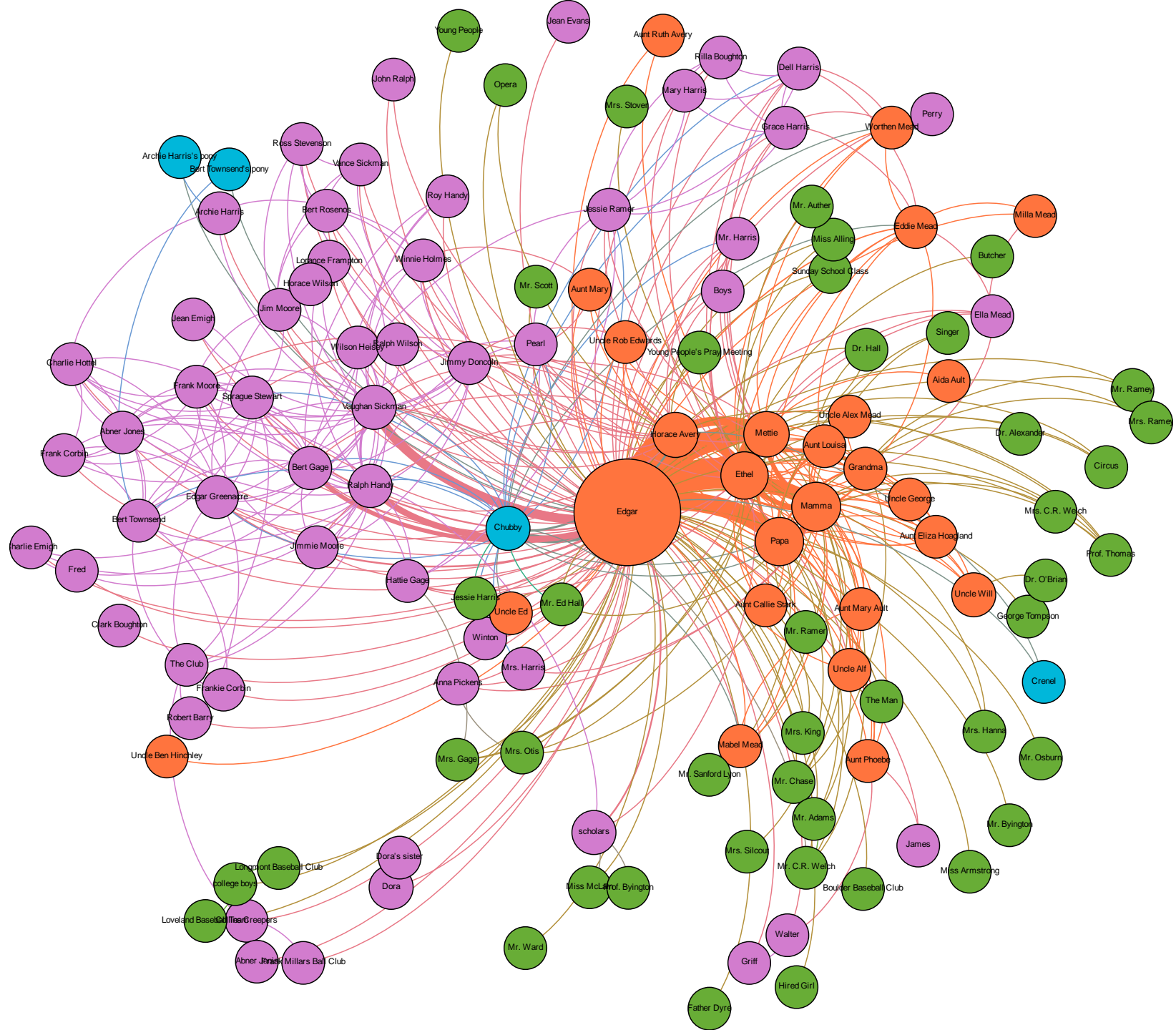


Examples

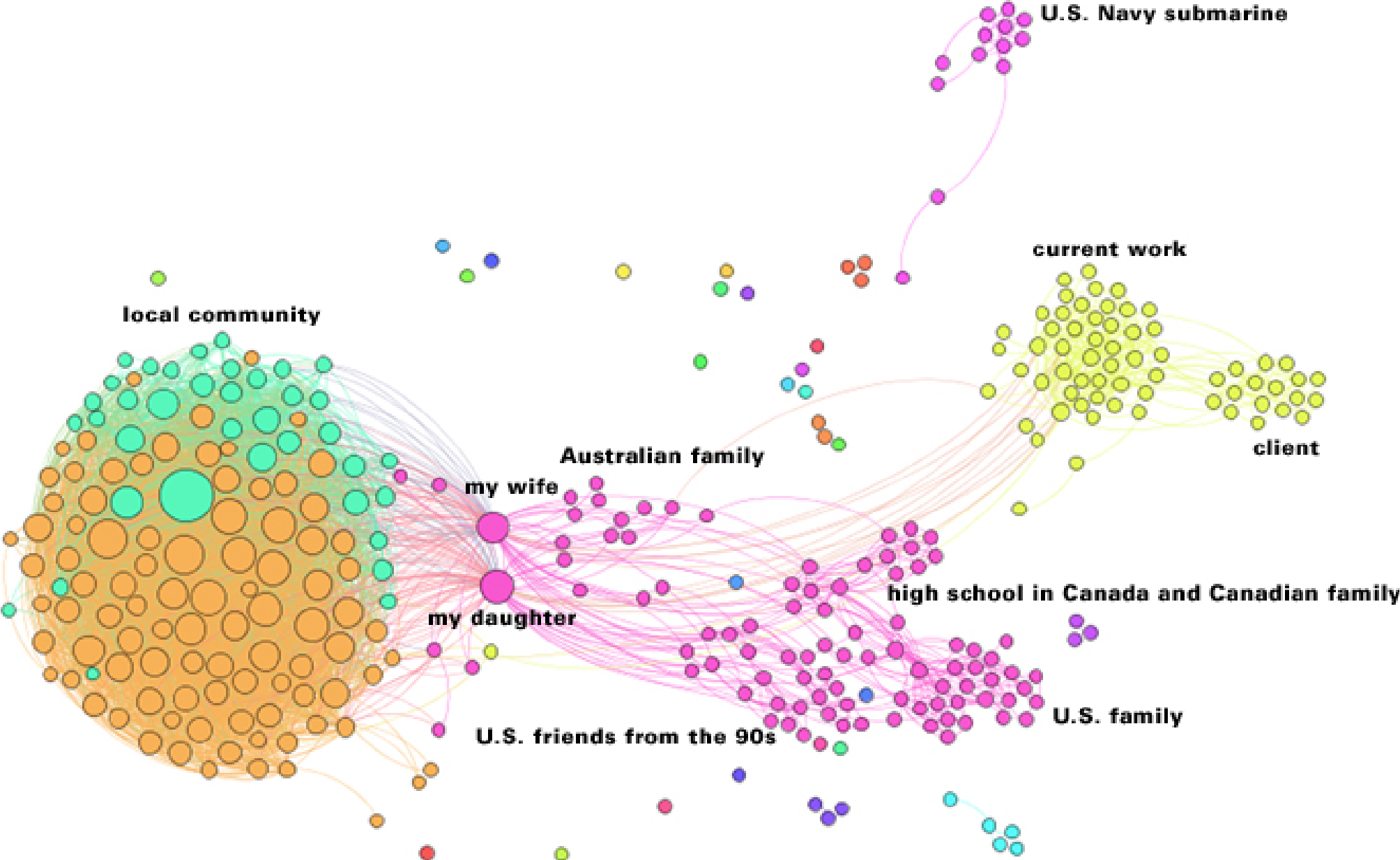
Edgar Avery's Diary
(Degree Centrality)
Attribute: Gender



Edgar Avery's Diary
(Betweenness Centrality)
Attribute: Relationship



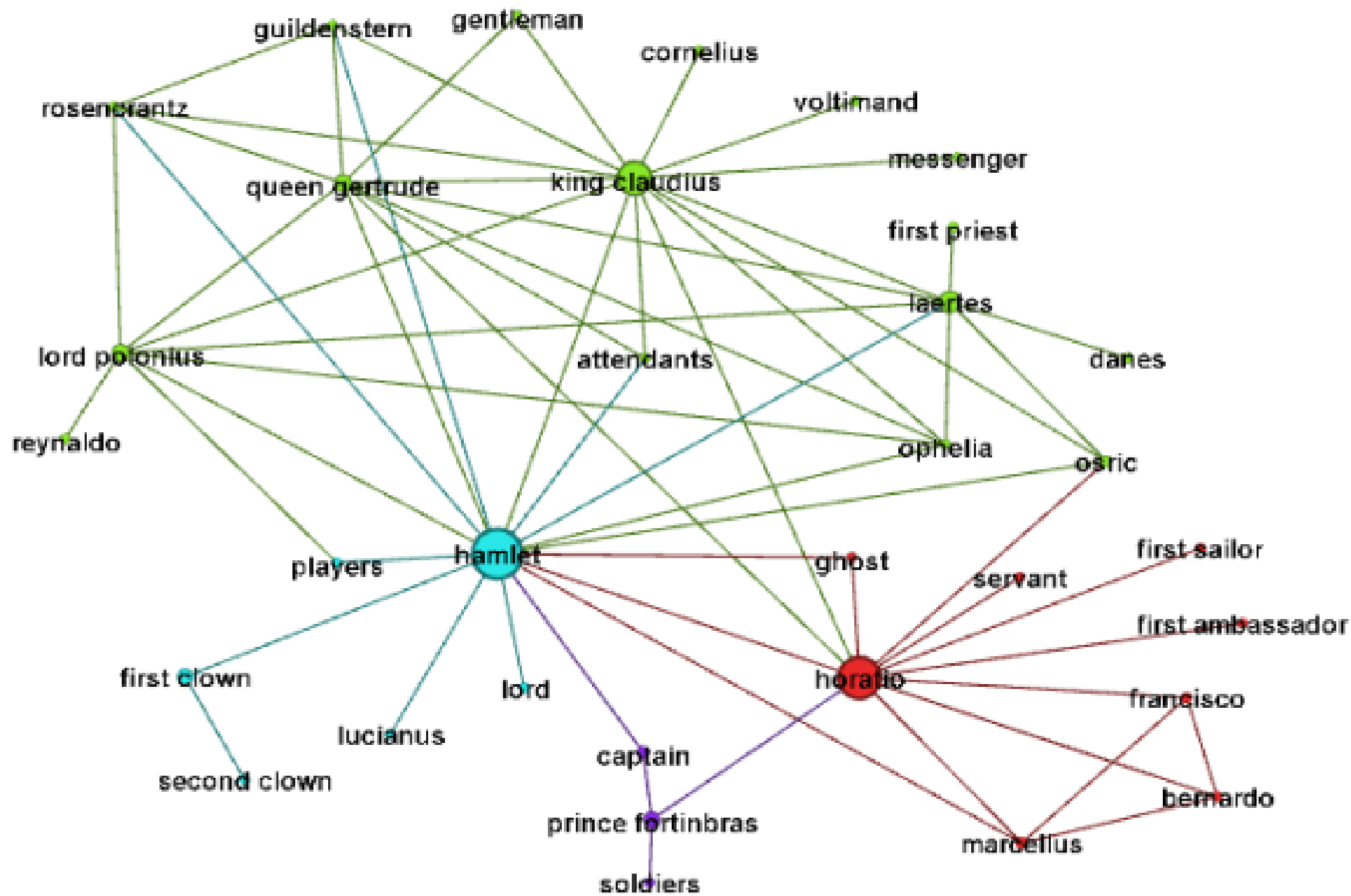
Chad's Facebook network October 2012

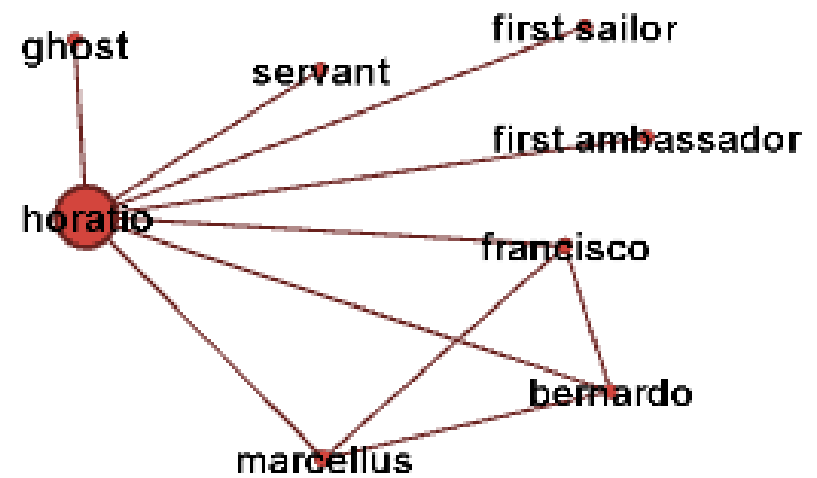
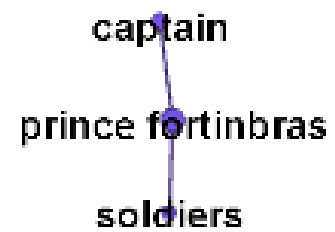
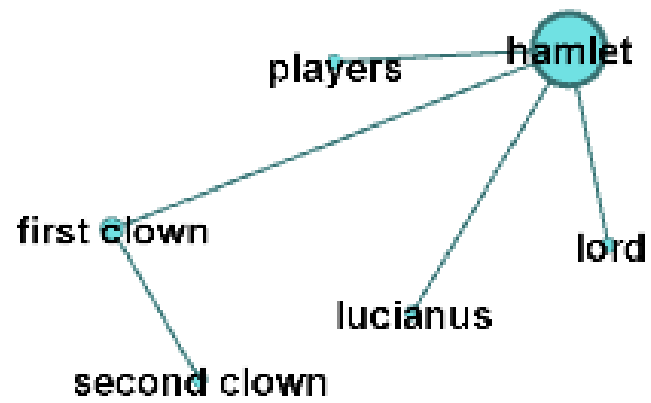
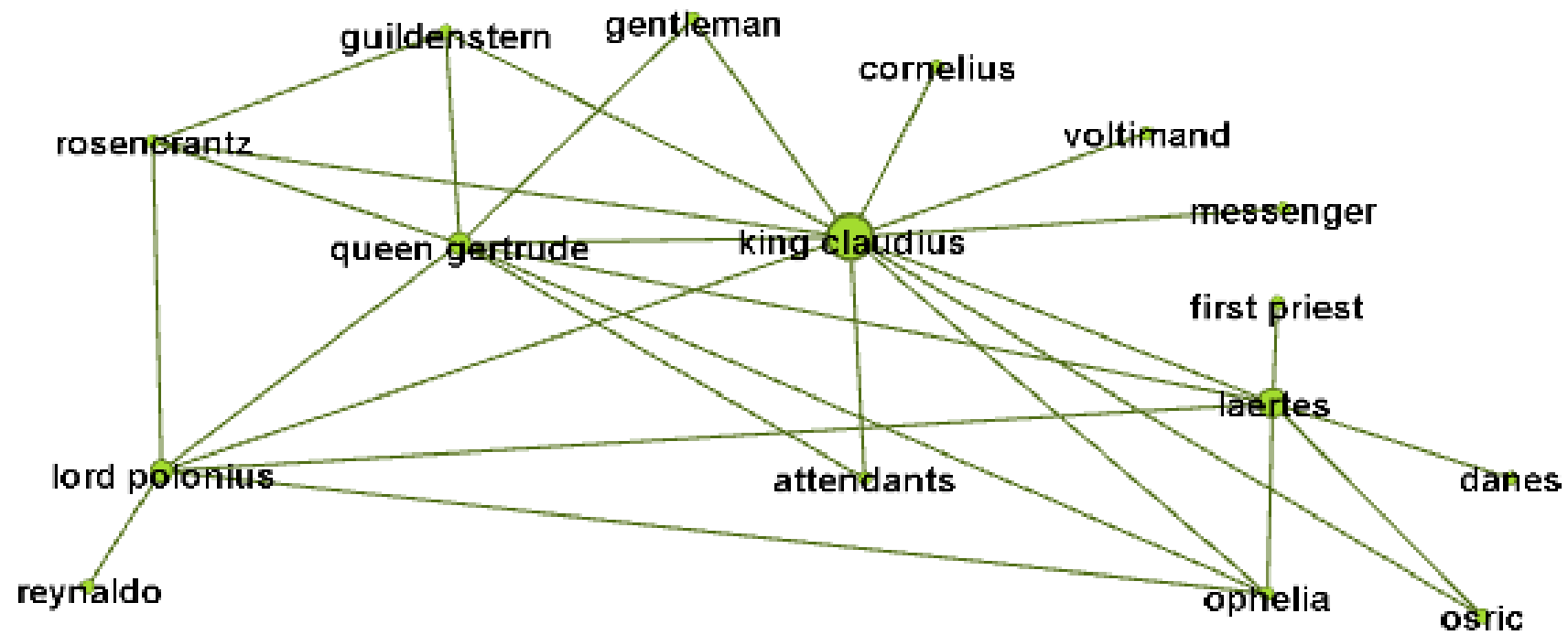


A portrait of William Shakespeare, the English playwright, actor, and poet. He is depicted from the chest up, wearing a dark, ornate Elizabethan-style garment with a large, white, ruffled collar. He has a mustache and a goatee. Modern, black-rimmed glasses are superimposed over his eyes. The background is a dark, textured, brownish-gold color.

**I KILLED MOST OF
MY CHARACTERS**

**BEFORE GAME OF
THRONES**





Kindred Britain

KINDRED BRITAIN

PEOPLE

CONNECTIONS

STORIES

🔍 ⚙️ ?

Kindred Britain is a network of nearly 30,000 individuals — many of them iconic figures in British culture — connected through family relationships of blood, marriage, or affiliation. It is a vision of the nation's history as a giant family affair.

START →

LEARN MORE →

EXPLORING THE SITE

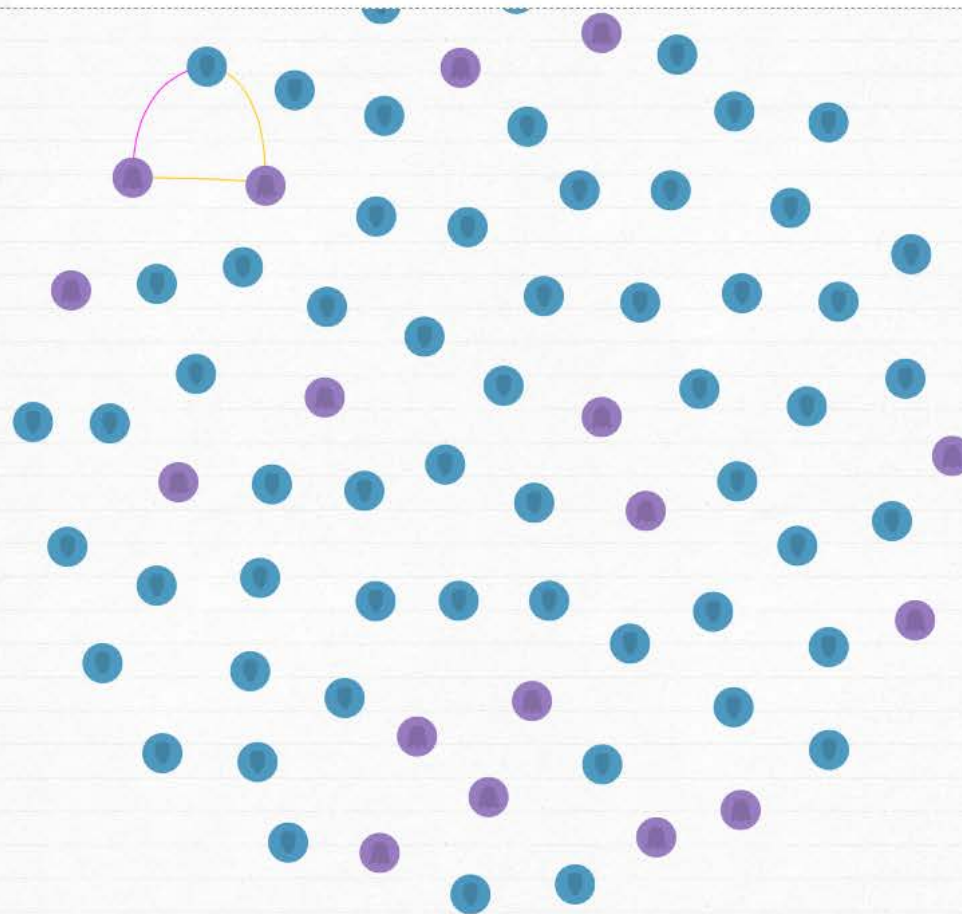
Drag circles onto each other to connect people.



Click a circle to see that person's profile.



Some Luminaries in Kindred Britain



NETWORK ⚙️

Gender



Color

- CENTRALITY
- ODNB
- BIRTHDATE
- TRAGEDY
- INBREEDING
- DEPTH
- GENDER

Layout

- TREE
- PLOT
- FORCE
- PROFESSIONS

Relationship Types

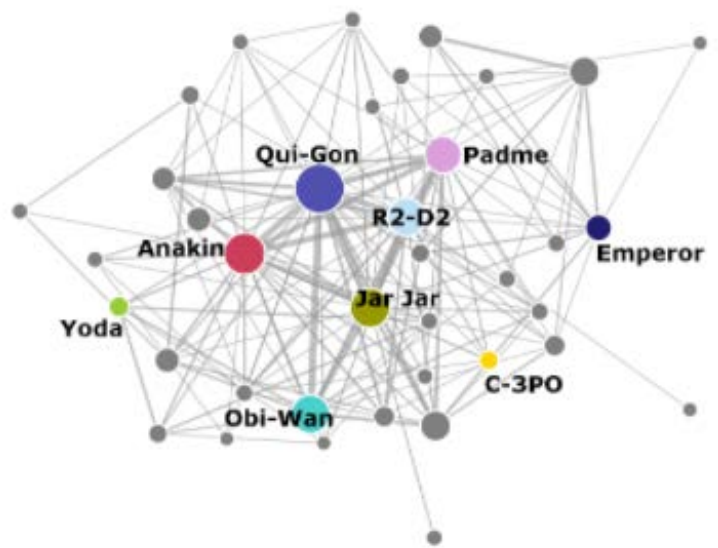
- Marriage
- Lineage
- Sibling

TIMELINE

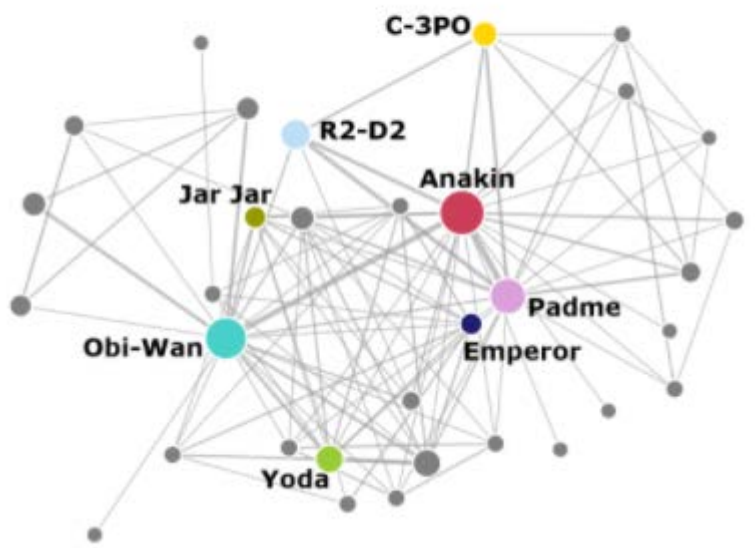


STAR
WARS

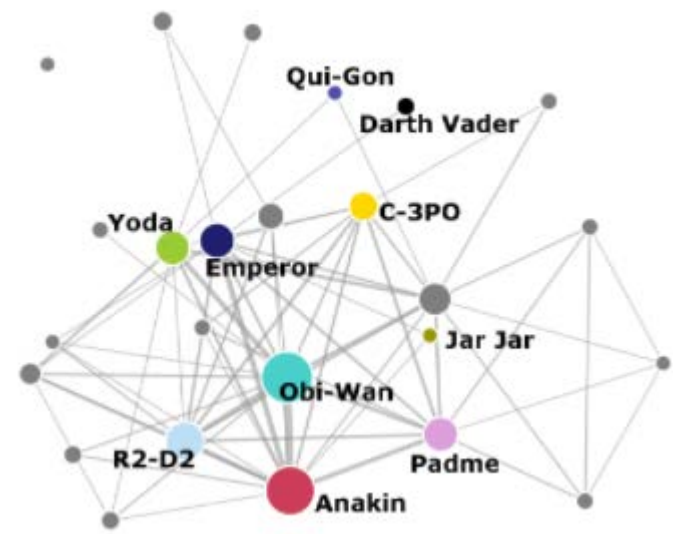
Episode I: The Phantom Menace



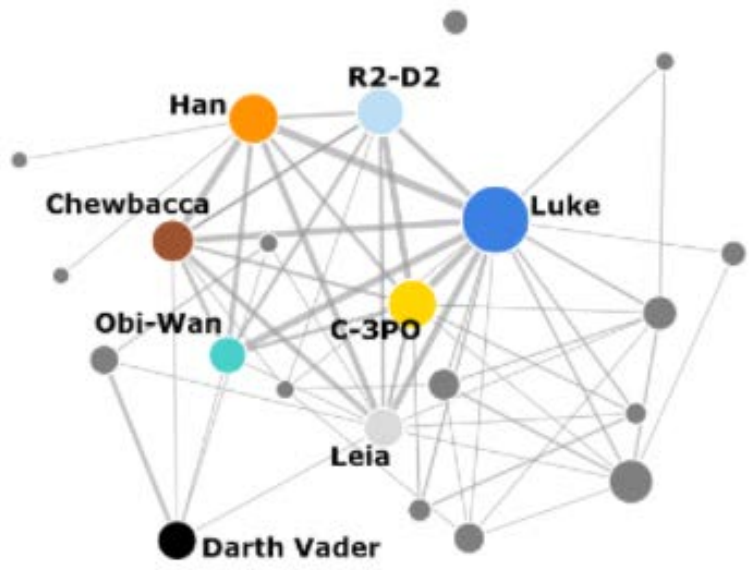
Episode II: Attack of the Clones



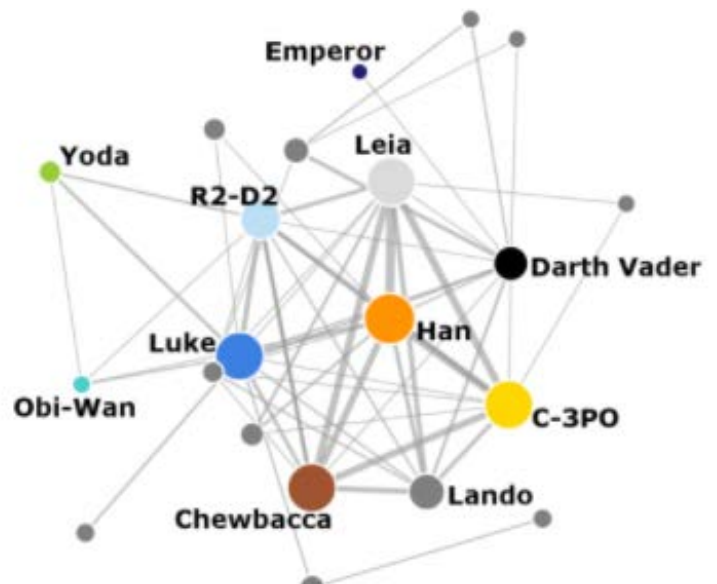
Episode III: Revenge of the Sith



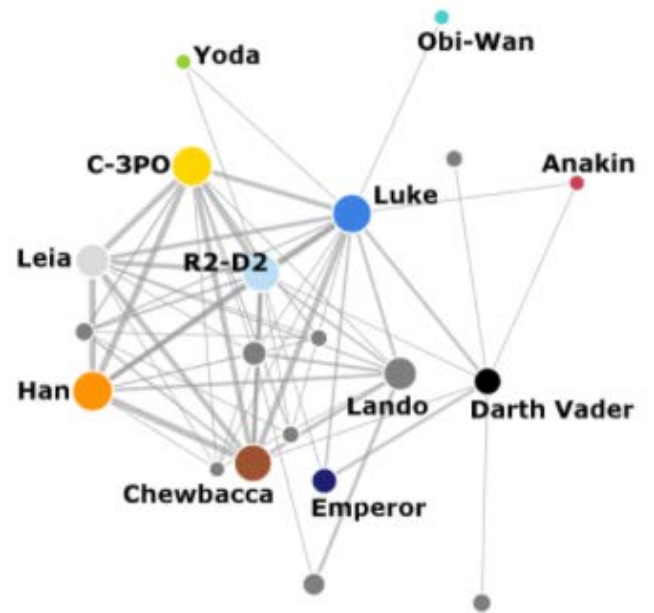
Episode IV: A New Hope



Episode V: The Empire Strikes Back



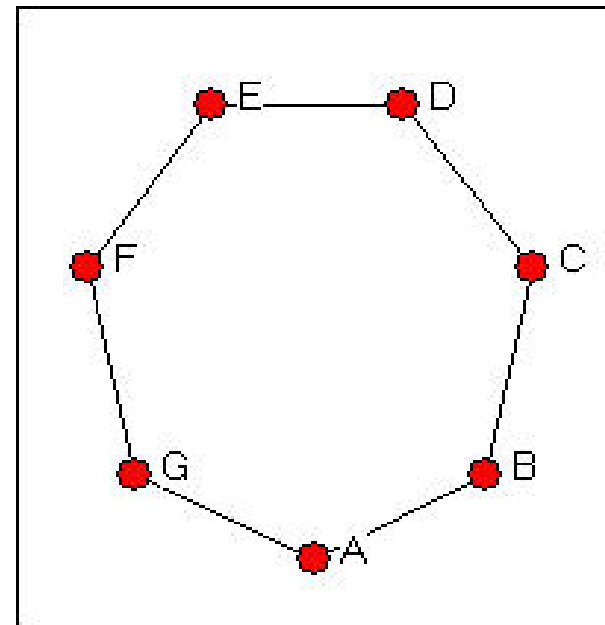
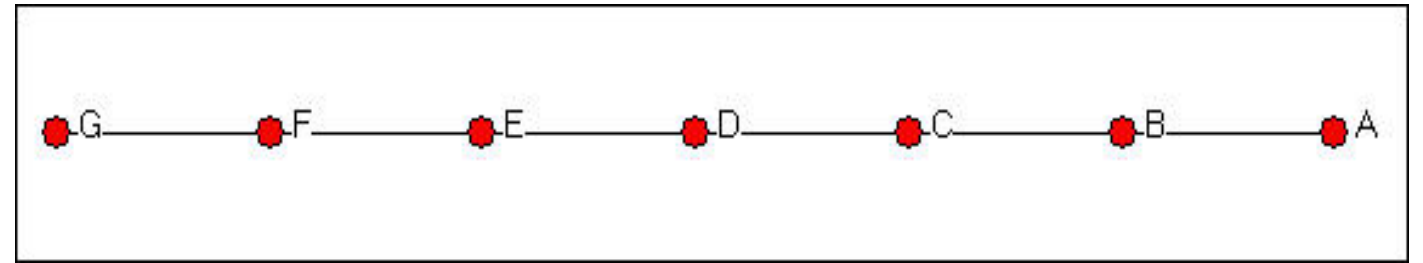
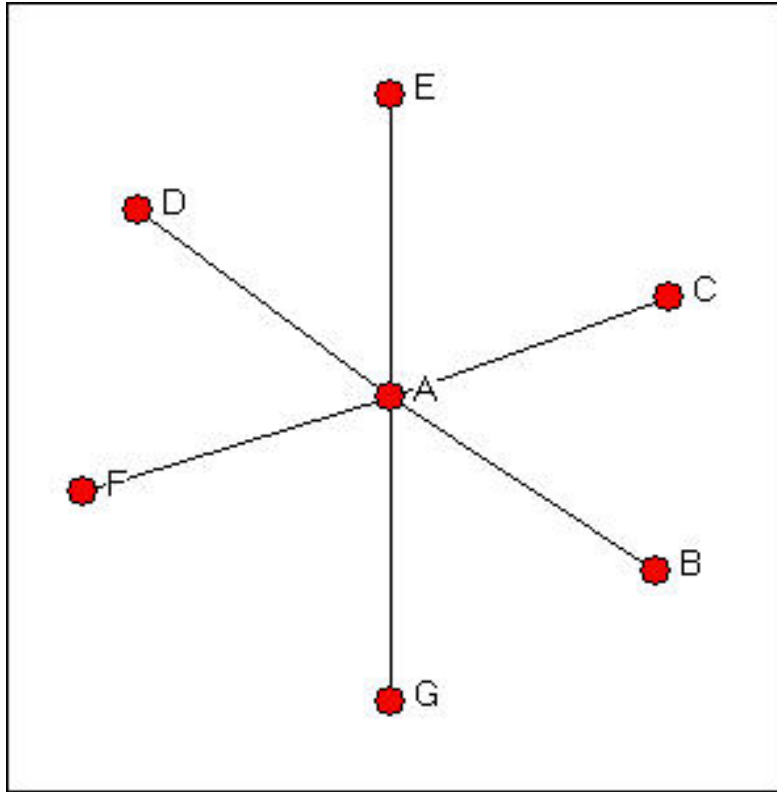
Episode VI: Return of the Jedi



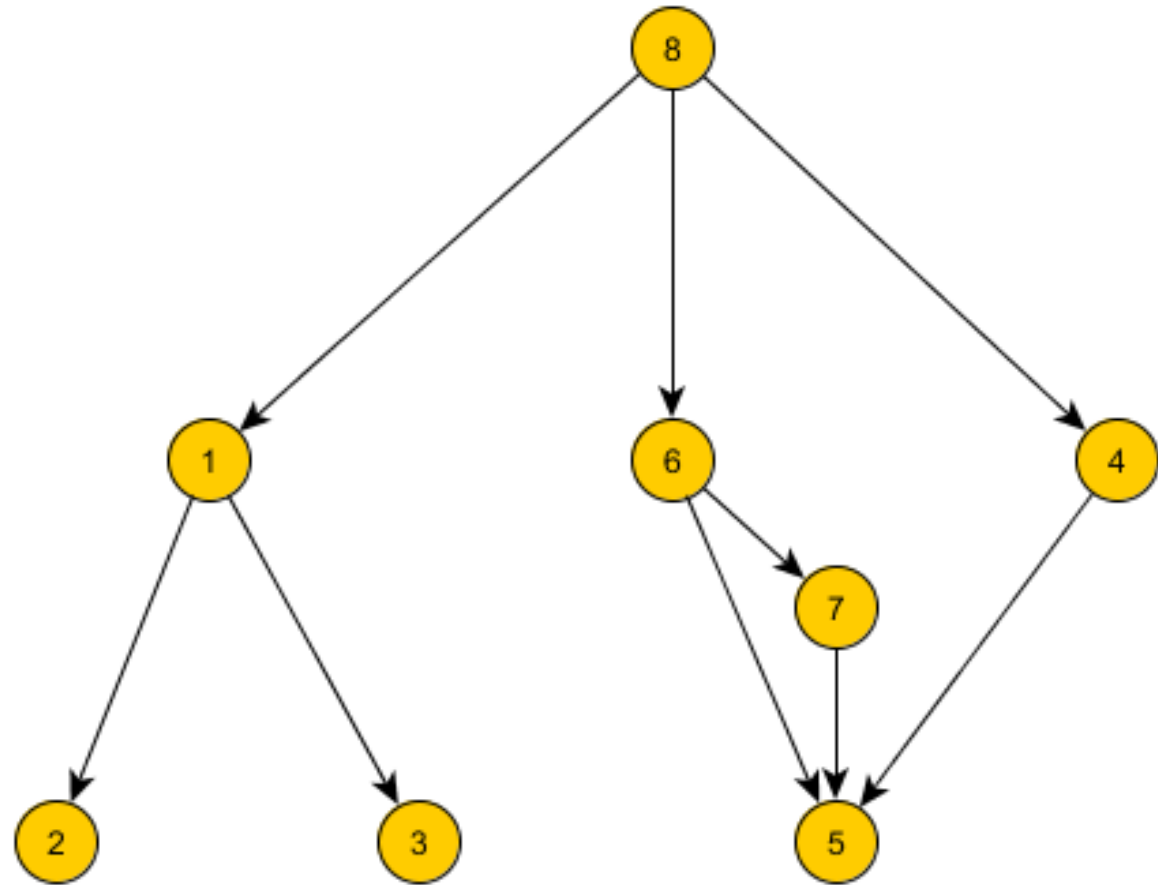
Interpretation



DEGREES OF POWER

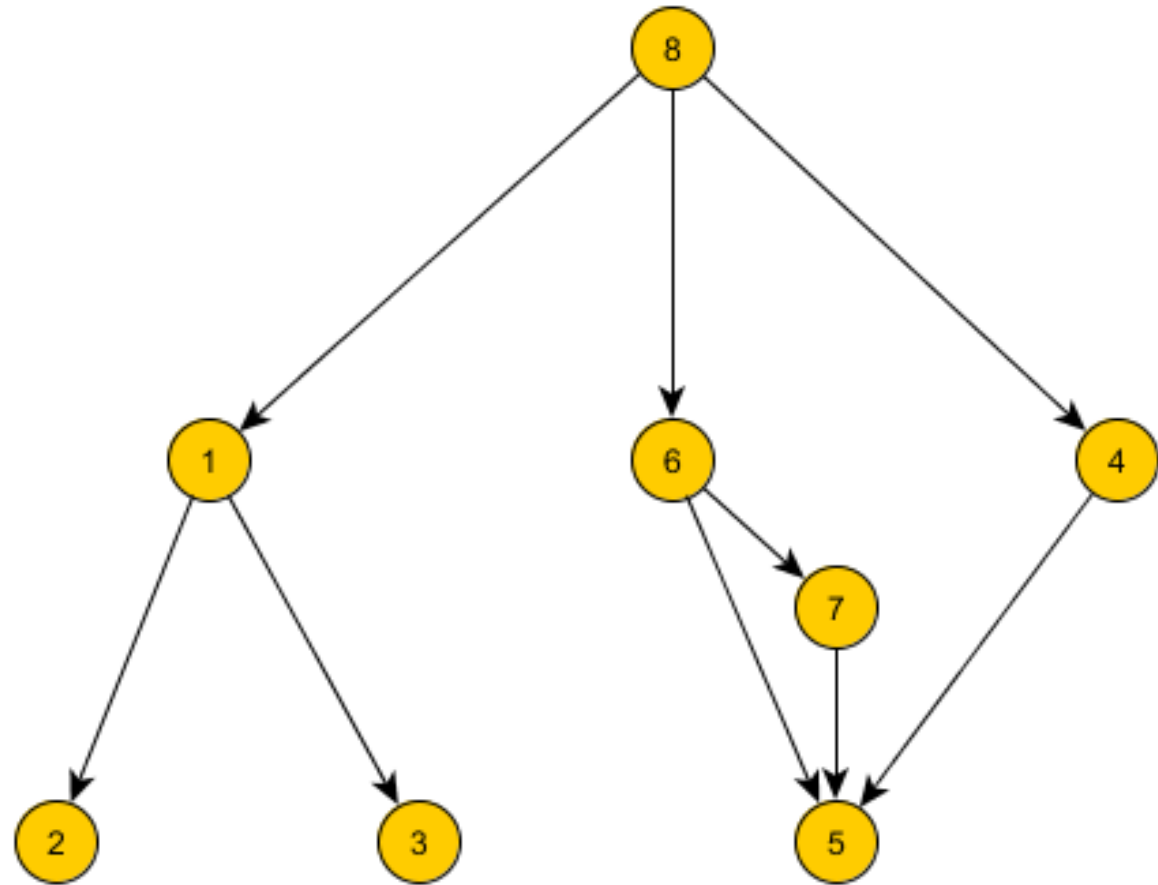


Degree: the number of connections a node has in a network



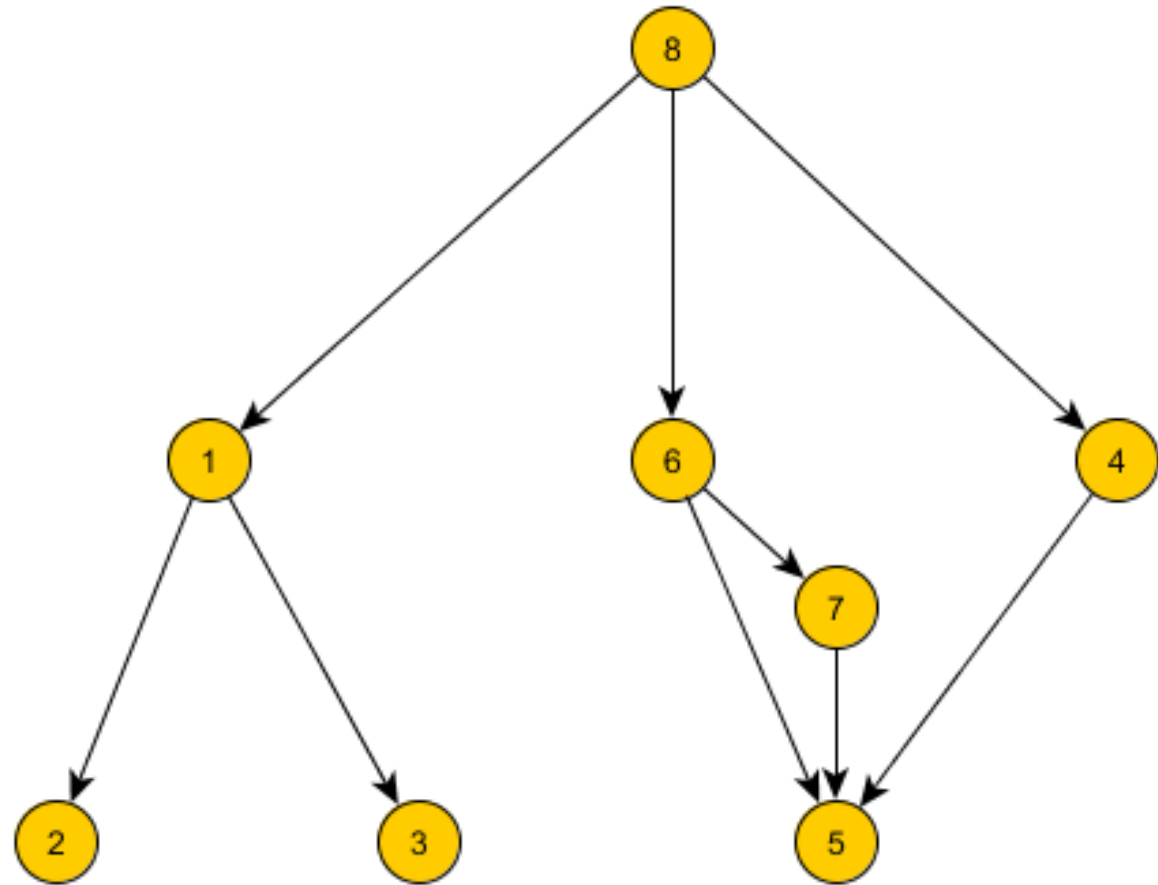
1. Which nodes have the highest degree?
2. Are they the most powerful and influential?

Closeness: path lengths to other nodes



1. Which nodes have the high closeness?

Betweenness:
shortest path
between other
members in the
network

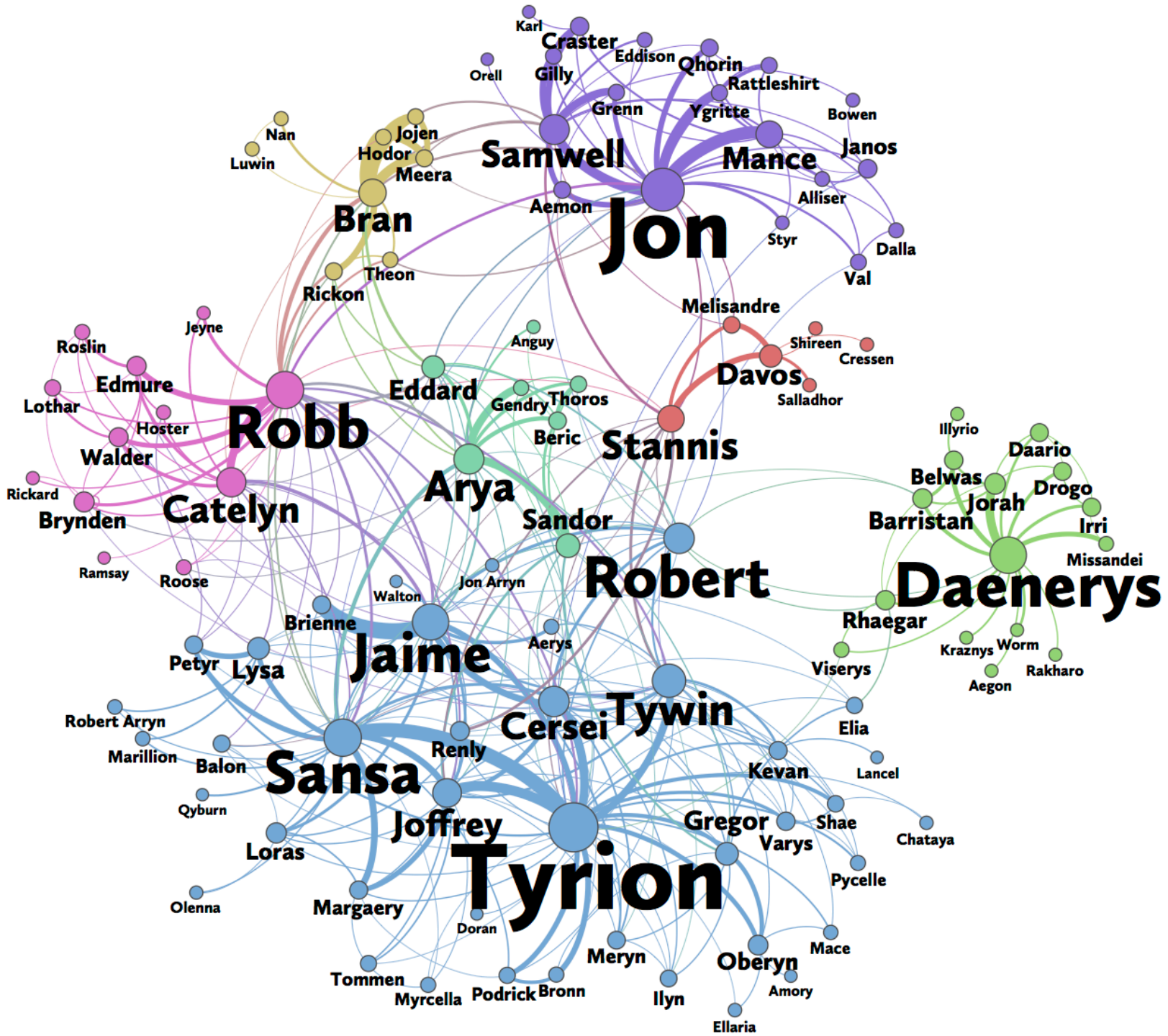


1. Which nodes have the high betweenness?

BRACE YOURSELVES



GRAPHS ARE COMING



Degree: the number of connections a node has in a network

character	degree
Tyrion	36
Jon	26
Sansa	26
Robb	25
Jaime	24
Tywin	22
Cersei	20
Arya	19
Joffrey	18
Robert	18

Degree Centrality

character	weightedDegree
Tyrion	551
Jon	442
Sansa	383
Jaime	372
Bran	344
Robb	342
Samwell	282
Arya	269
Joffrey	255
Daenerys	232

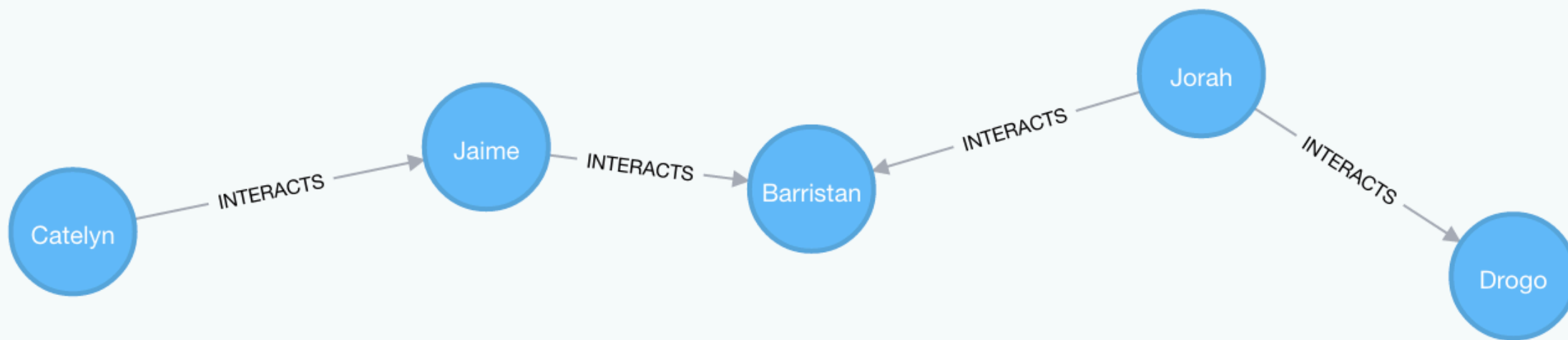
Weighted Degree Centrality

name	score
Jon	1279.7533534055322
Robert	1165.6025171231624
Tyrion	1101.3849724234349
Daenerys	874.8372110508583
Robb	706.5572832464792
Sansa	705.1985623519137
Stannis	571.5247305125714
Jaime	556.1852522889822
Arya	443.01358430043337
Tywin	364.7212195528086

Betweenness:
shortest path
between other
members in the
network

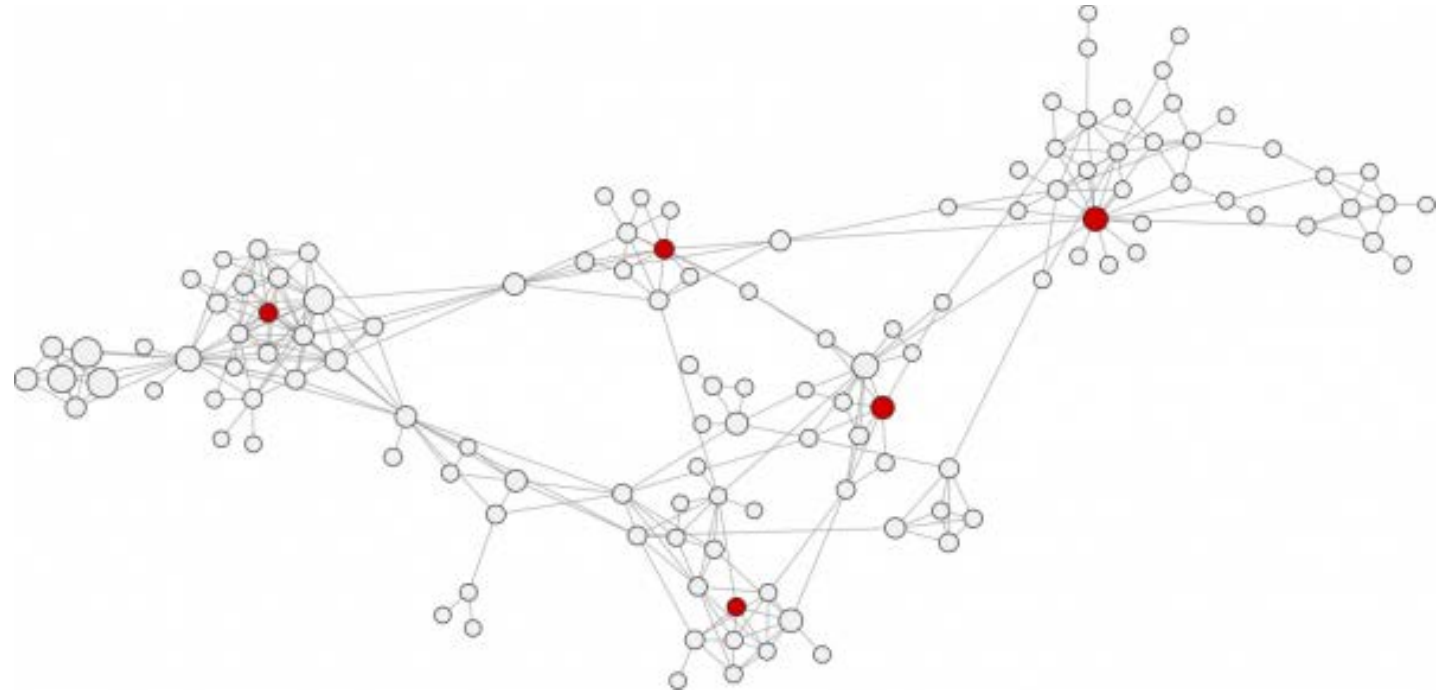


Closeness: path lengths to other nodes



Closeness: path lengths to other nodes

name	score
Tyrion	0.004830917874396135
Sansa	0.004807692307692308
Robert	0.0047169811320754715
Robb	0.004608294930875576
Arya	0.0045871559633027525
Jaime	0.004524886877828055
Stannis	0.004524886877828055
Jon	0.004524886877828055
Tywin	0.004424778761061947
Eddard	0.004347826086956522



Questions?



Palladio

PALLADIO COMPONENTS

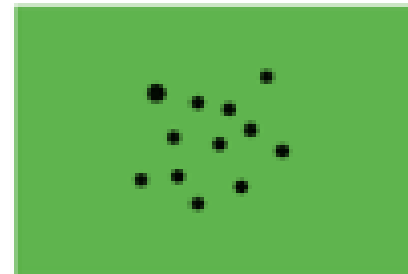
MAP



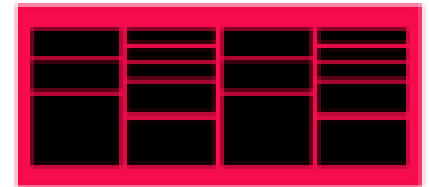
TIMELINE/CHART



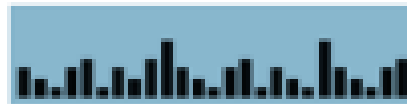
NETWORK



MULTIDIMENSIONAL BROWSER
(SHUFFLE)



TIMELINE BRUSH



MULTIDIMENSIONAL BROWSER
(SHUFFLE)



Palladio

Digital Historian [Miriam Posner](#) calls Palladio “a sort of Swiss Army knife for...data. It’s one package that includes a number of tools, each of which allows you to get a different angle on the same data.”

When to use Palladio



- You have structured data
- You're interested in time, space, and relationships
- Your data has many attributes

When *not* to use Palladio



- You have unstructured data
- If you just want to count things
- You want to present an interactive visualization
- You want to create complex, fine-tuned maps and network graphs
- You hate bugs

Palladio



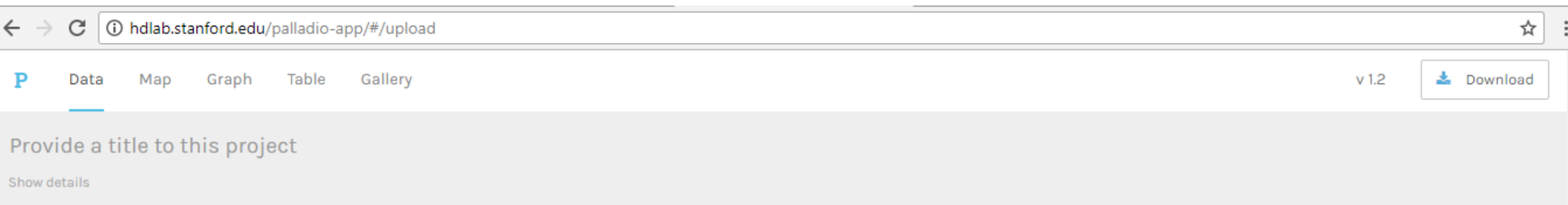
Avoid those bugs

- Work slowly
- Do not refresh the page (unless you want to start over)
- Click on the Palladio logo to bring you to the Palladio homepage (won't erase your work)

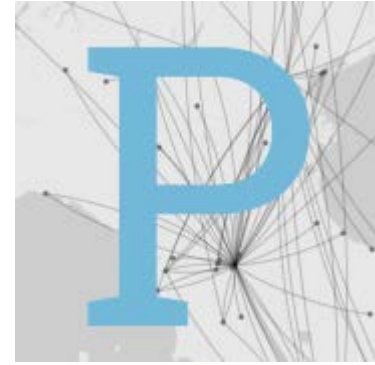
Palladio Workspace: Data



- File type: csv file
- Date format: year-month-day (2018-04-17)
- Location format: latitude and longitude, separated by a comma (-40.57, 105.09)



Preparing Data



	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	PURL	Image URL	Date	Archive Date	Description	Description	Image No	Slide Cont	City and S	Geocoord	Personal I	Corporate	Other Nar	Genre 1	Genre 2	Topical Su	Topical Su	Topical Su	Topical Su	Topical Su	Topical
2	http://pu	http://we	1952-01-0	Jan. 4, 195	Agua Prie	Agua Prieta, Mexico	Image		Agua Prie	31.3308199, -109.5569161				Architectu	Column6	Domes	Towers	Casinos	Buildings	Walls	Wome
3	http://pu	http://we	1952-01-0	Jan. 4, 195	Residence	Residence with century plants.			Agua Prie	31.3308199, -109.5569162				Architectural photog		Houses	Windows	Agaves	Trees	Shrubs	Walls
4	http://pu	http://we	1952-01-0	Jan. 4, 195	Calle 2 - A	Calle 2. Agua Prieta - Mex.			Agua Prie	31.3308199, -109.5569163				Cityscape photograp		People	Dogs	Automobi	Fences	Streets	Cities
5	http://pu	http://we	1952-01-0	Jan. 4, 195	Shops at c	Bar and barber shop at corner c			Agua Prie	31.3308199, -109.556	O.K. Bar (O.K. Barbe		Architectu	Cityscape	Streets	Cities & tc	Automobi	Bars	Barbershc	Signs
6	http://pu	http://we	1952-01-0	Jan. 4, 195	West side	Along west side of Avenida Par			Agua Prie	31.3308199, -109.556	Pepsi-Cola Company		Ethnograp	Cityscape	Bars	Tailor sho	Mercantil	Signs (Not	Advertise	Men	
7	http://pu	http://we	1952-01-2	Jan. 22, 19	Street sce	Calle 4 Agua Prieta, Sonora			Agua Prie	31.3308199, -109.5569166				Snapshots		Streets	City & tow	Adobe bu	Trees	Doors & d	Wind
8	http://pu	http://we	1952-01-2	Jan. 22, 19	Street sce	Calle 4 Agua Prieta, Sonora			Agua Prie	31.3308199, -109.5569167				Architectural photog		Trees	Doors & d	Windows	Buildings	Electric lir	Sidew
9	http://pu	http://we	1952-01-2	Jan. 22, 19	3 Children	in Agua Prieta Sonora Mexico			Agua Prie	31.3308199, -109.5569168				Portraits		Children	Adobe bu	Walls	Boys	Girls	Dress
10	http://pu	http://we	1952-01-2	Jan. 22, 19	3 Children	in Agua Prieta Sonora			Agua Prie	31.3308199, -109.5569169				Portraits		Children	Adobe bu	Girls	Boys	Holding h	Dress
11	http://pu	http://we	1952-01-2	Jan. 22, 19	An adobe	An adobe court Agua Prieta Sor			Agua Prie	31.3308199, -109.5569170				Architectu	Ethnograp	Women	Fences	Trees	Clotheslin	Adobe bu	Chim
12	http://pu	http://we	1952-01-1	Jan. 20, 19	Cactus & c	Cactus with Ajo Mtns. in backgr			Ajo, Arizo	32.3933515, -112.902722929703				Landscape photogra		Cactus	Deserts	Mountain	Shrubs		
13	http://pu	http://we	1952-01-1	Jan. 20, 19	Another S	Tall cactus with strange peak o			Ajo, Arizo	32.3933515, -112.902722929703				Landscape photogra		Cactus	Shrubs	Trees	Mountain	Deserts	
14	http://pu	http://we	1952-01-1	Jan. 20, 19	In Organ P	Unbranched Sahuaros-tall-in O			Ajo, Arizo	32.3933515, -112.902722929703				Identification photo		Cactus	Automobi	Shrubs	Trees	Deserts	
15	http://pu	http://we	1952-01-1	Jan. 20, 19	Tall Sahau	Very tall Sahuaros in Organ Pip			Ajo, Arizo	32.3933515, -112.902722929703				Identification photo		Cactus	Trees	Shrubs	Automobi	Deserts	
16	http://pu	http://we	1952-01-1	Jan. 20, 19	Organ Pip	Organ Pipe Cactus Nat'l Monun			Ajo, Arizo	32.3933515, -112.902722929703				Identification photo		Cactus	Trees	Shrubs	Deserts		
17	http://pu	http://we	1938-09-2	Sep. 23, 1	E-24: Stre	E- 24 =		magenta	Alberton,	47.0015869, -114.4734549		Hotel Alb		Cityscape photograp		Clouds	Trees	Hills	Signs (Not	Utility pol	Hotel
18	http://pu	http://we	1941-04-1	Apr. 14, 1	Fruit Tree	Albion, Illinois			Albion, Ill	38.3775484, -88.0561465						Fruit tree:	Shrubs	Barns	Croplands		

Our Dataset



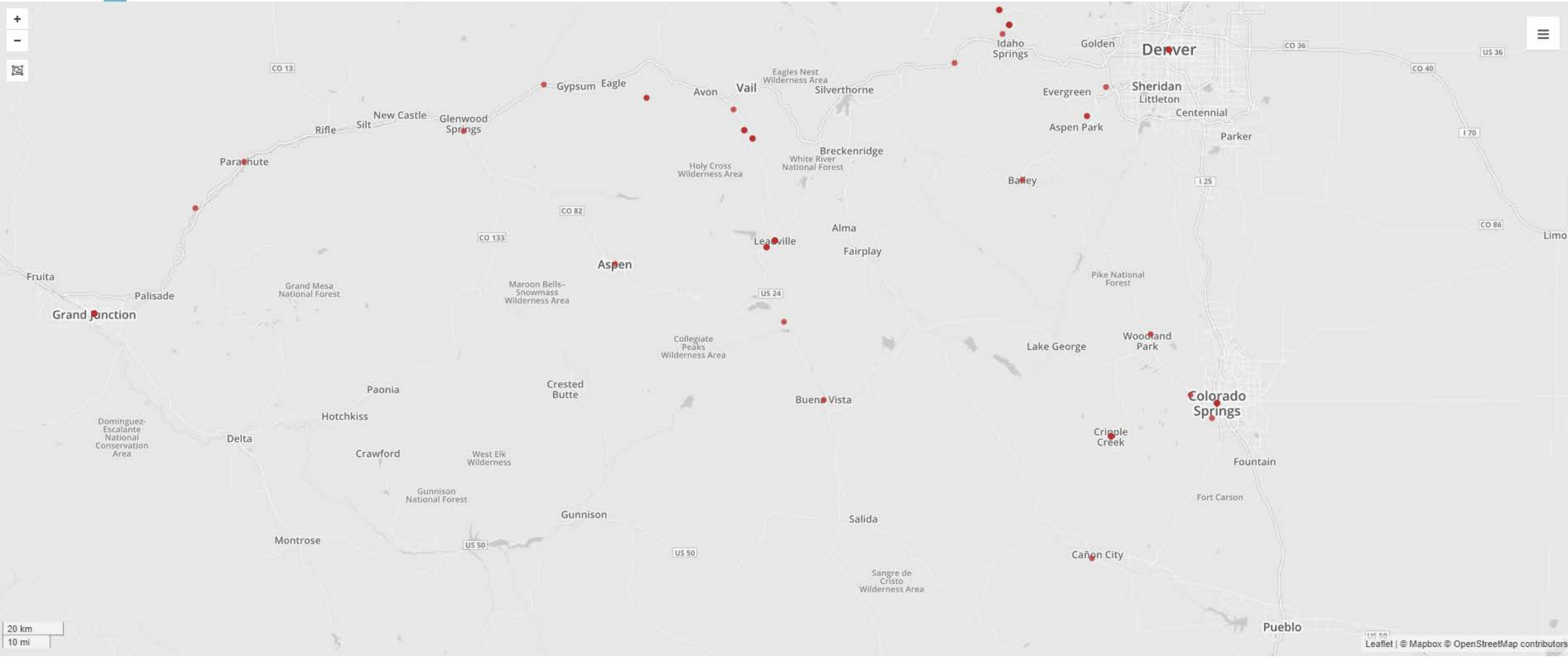
- [Charles Weever Cushman collection](#) (Indiana University)
 - Limited to photographs taken between 1938 and 1955
 - Added geocoordinates



Maps



- Map data in layers
- Example: locations of Cushman's photographs mapped over a layer of interstate road networks



20 km
10 mi

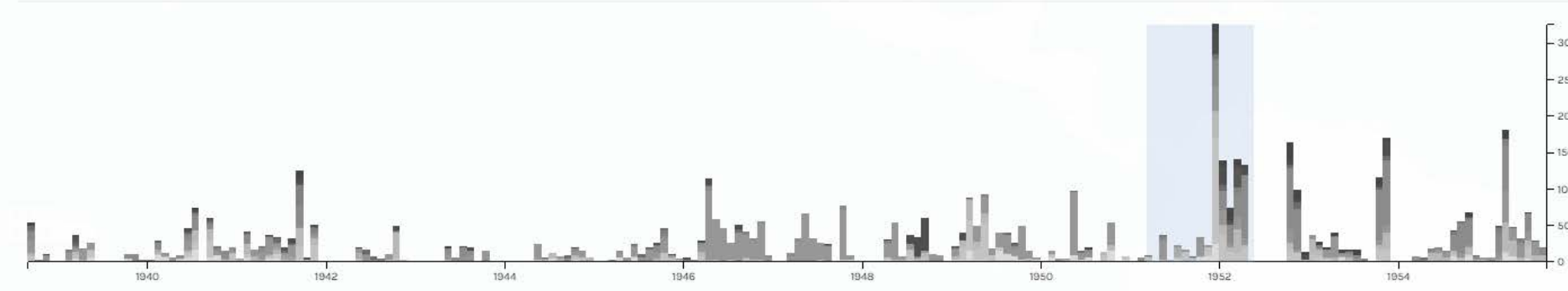
Timeline



- A visualization of the distribution of your data over time



Facet Timeline Timespan Date from 1951-03-08 to 1952-05-19



Timeline

Description: Date

Dates: Date

Height: Number of Untitled

Group by: Genre 1

[Clear](#)

Gallery



- Allows you to view images



Victoria, British Columbia
Portraits
C-1: C in Mr. B's Gardens.



Victoria, British Columbia
Identification photographs
C-39: Flowers in garden of c-38



Victoria, British Columbia
Portraits
C-6: C at Red Pillar B



Victoria, British Columbia
Architectural photographs
C-2: Empress Hotel



Santa Rosa, California
Landscape photographs
A-11: Burbank Garden Scenes



Santa Rosa, California
Landscape photographs
A-12: Burbank Garden Scenes



Santa Rosa, California
Identification photographs
A-13: Plumed knight in Bur. Gar. Santa Rosa



Santa Rosa, California
Identification photographs
* A-14 = A rose in Bur. Garden



Santa Rosa, California
Landscape photographs
A-10: Burbank Garden Scenes



San Francisco, California
Views
A-9= G G bridge, Bay & SF from Marin



San Francisco, California
Cityscape photographs
A-8=Red Ford & scene as in A7



Santa Rosa, California
Landscape photographs
A-16 = Cal. country side along US 101



San Francisco, California
Architectural photographs
A-5 = G.G. bridge from south end.



Willits, California
Identification photographs
A-18 = Tall Redwood=[near Willits,



Willits, California
Identification photographs
A-17= Tall Redwood=Woodrow Wilson



Willits, California
Landscape photographs
A-19=Cal. Landscape near Willits Mendocino county



Willits, California
Snapshots
A-21=Hay truck breaks down on US 101



Portland, Oregon
Identification photographs
B-11= Jean in flower garden



Portland, Oregon
Portraits
B-18= C looks at daisies



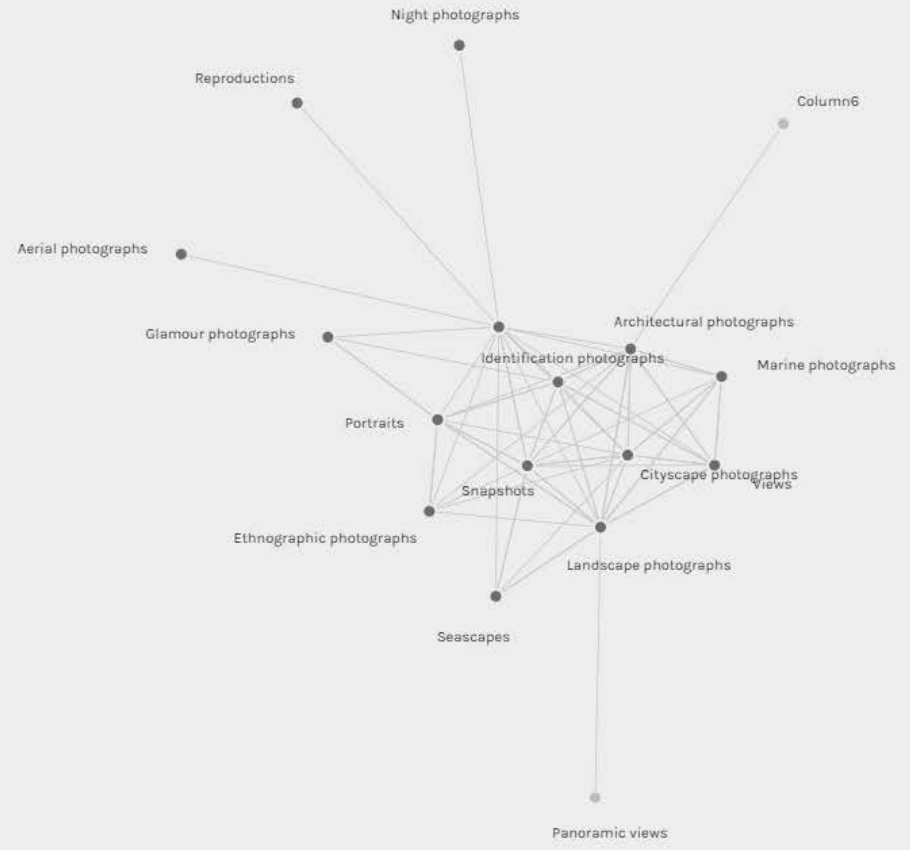
North Bonneville, Washington
Identification photographs
> B-23 = C and car at Bonneville



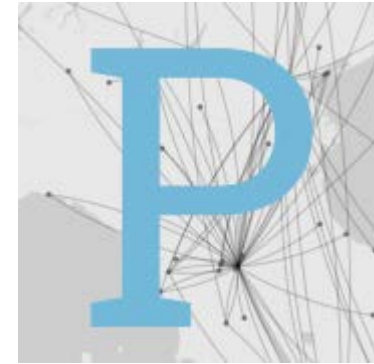
Graph



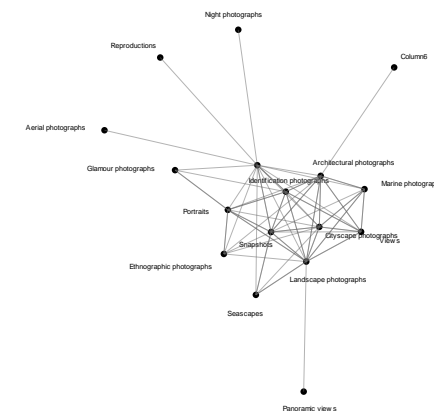
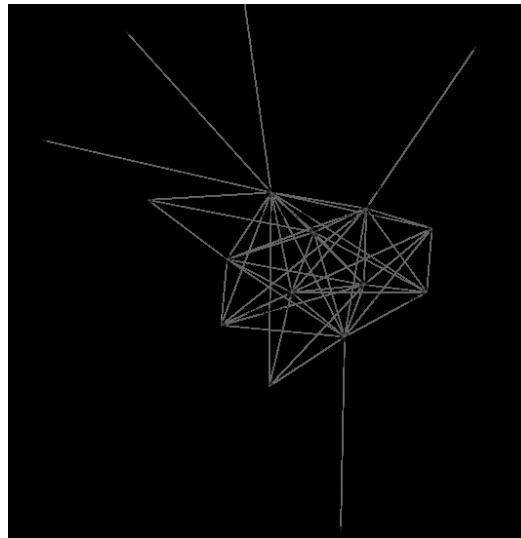
- Shows relationships among entities
- Choose two entities to explore
- Example: genre 1 and genre 2 to see which genres tend to occur in Cushman's photographs



Save Your Work



- You can only export static images (.svg)
- Click download to save a .json file with your data configuration



Questions?



CONTACT US

www.iriss.colostate.edu

Jaime.Jordan@colostate.edu



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COLORADO STATE UNIVERSITY