HuViz Documentation

Contents

Welcome to HuViz

What is HuViz?

Humanities Visualizer (HuViz) is a browser-based tool for visualing linked data.

HuViz allows researchers to explore RDF datasets and ontologies in the form of an interactive graph. The user can discover connections between entities -- such as: people, places and organizations -- either by clicking and dragging nodes directly into the Graph or by executing commands in the Commands Tab.

The test datasets for the HuViz prototype are generated from the Orlando Project textbase. However, the tool is theoretically compatible with any RDF-styled data. In the future, we anticipiate expanding the capabilities of HuViz to allow researchers to process and refine their own datasets and author links from within the tool itself.

Two Ways to Execute Commands

Using the Graph

The quickest and most intuitive way to manipulate the dataset is directly in the graph.

Almost all actions can be performed on the nodes either through a single click or a "drag and drop."

Note: The exception is Label and Hide, which can only be performed in the Command Tab.

Using the Commands Tab

Using the Commands Tab

Working directly in the Graph using the "drag and drop" technique involves fewer steps. However, working from the Commands Tab has multiple benefits.

- Certain commands, like Label and Hide, cannot be executed manually. The Commands Tab gives users access to the full range of tools.
- Users also have more control over how those tools are implemented. For example, when Working manually, only a single node or node cluster can be manipulated at a given time. In the Commands Tab, users have the option to filter nodes by type.

Current Command

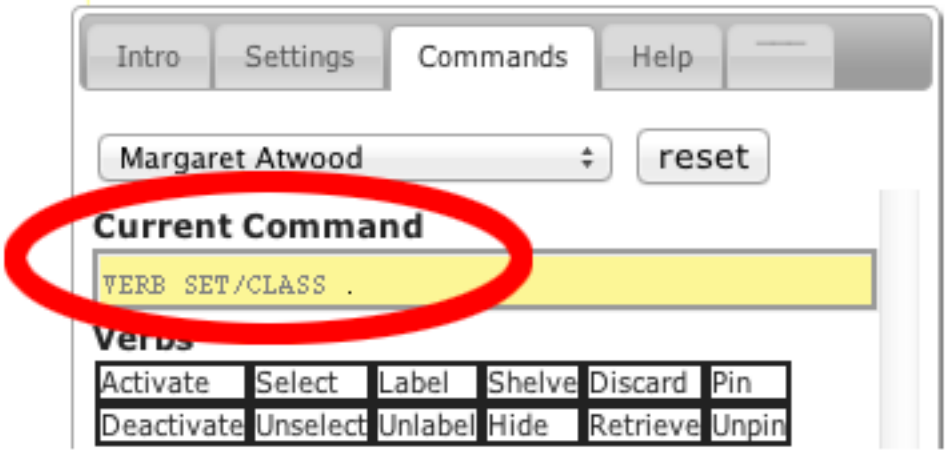
The Current Command box acts as a prompt to notify the user which elements need to be selected to execute a command.

The elements of a command are represented by the formula: **Verb + Set/Class**. This formula is displayed in the Current Command box, located near the top of the Commands Tab. The Current Command box automatically updates when the user selects these elements from the Verb + Set/Class boxes.

If an element has not been Selected, it will display the greyed out formula Verb + Set/Class to indicate these elments are empty and prompt the user to choose them.

The Verb element and Set/Class element can be entered in *any order* - it does not matter which element is picked first - but *both* need to be present for the action to take place.

"Label" + Set/Class indicates that the Verb label has been selected. Set/Class is blank indicating that the user needs to choose this elements to execute the



command.

HuViz Glossary

Activate

Pulls node into central graph.

Class

Classifies nodes according to type, such as: Organization, Person and SpatialThing.

Current Command

Verb and Set/Class types in current operation are displayed here.

Discard

Removes nodes from the central Graph or Shelf and sends to Discard Bin, represented as a red dot at the bottom-right of the Stage.

Edge

A connective link between two nodes, signifying a relationship.

Edges of the Selected Nodes

Classifies the relationship between two nodes; expressed as the Predicate + Object section of the triple. For example, hasLivedConenctiontoOrganization.

Graph

Contains Active (graphed) nodes; located inside the circular Shelf.

Hide

Temporarily removes nodes from the dataset.

Hub

The central node in a network. The Hub node represents the subject in a Subject-Predicate-Object RDF triple. Hub nodes are automatically dragged into the graph when an object is Activated.

Label

Displays the node name.

Node

A unit, such as a person, place or spatialThing, which is connected to other units. Subjects and Objects in RDF triples are visually represented as nodes.

Pin

Fixes nodes in place.

Predicate

A statement signifying the relationship between a subject and object .

Reset

Erases commands, restoring graph to default.

Resource Description Framework (RDF)

A set of rules established by the World Wide Web Consortium (W3C) used for governing the semantic web. Data is linked together through statements known as "triples" that describe information in terms of subject-predicate-object relationships.

Script

Records the sequence of commands which were performed to produce the current state of the display.

Select

Selects node to execute a command when used in combination with a Verb.

Snippet

Contextualizes the relationship between two nodes by giving users access to relevant information from the source text.

Stage

Visual representation of the dataset, containing the three main areas: central Graph, Shelf and Discard Bin.

Toolbox

Contains the Help, Settings, Commands and Script tabs.

Shelve

Removes nodes from the central Graph or Discard Bin and returns to Shelf.

Shelf

Where deActivated (ungraphed) nodes are housed, represented as a green circle surrounding the central Graph.

Set

Classifies nodes according to current state, such as: Activated, Discarded, Graphed.

Triple

Formal statement describing a relationship in terms of a subject-predicate-object.

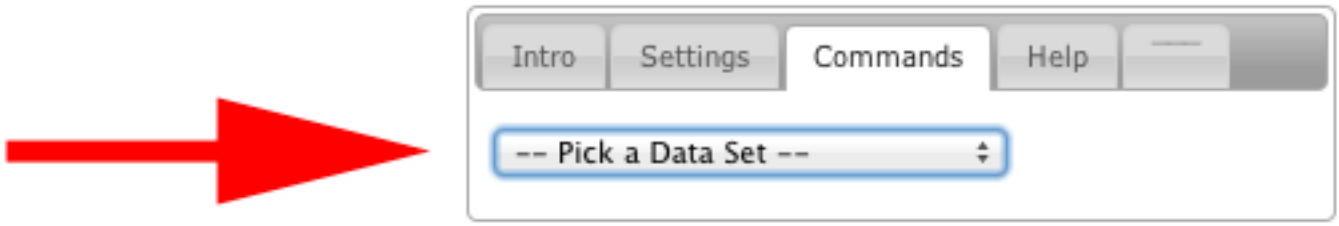
Getting Started

Load a Dataset

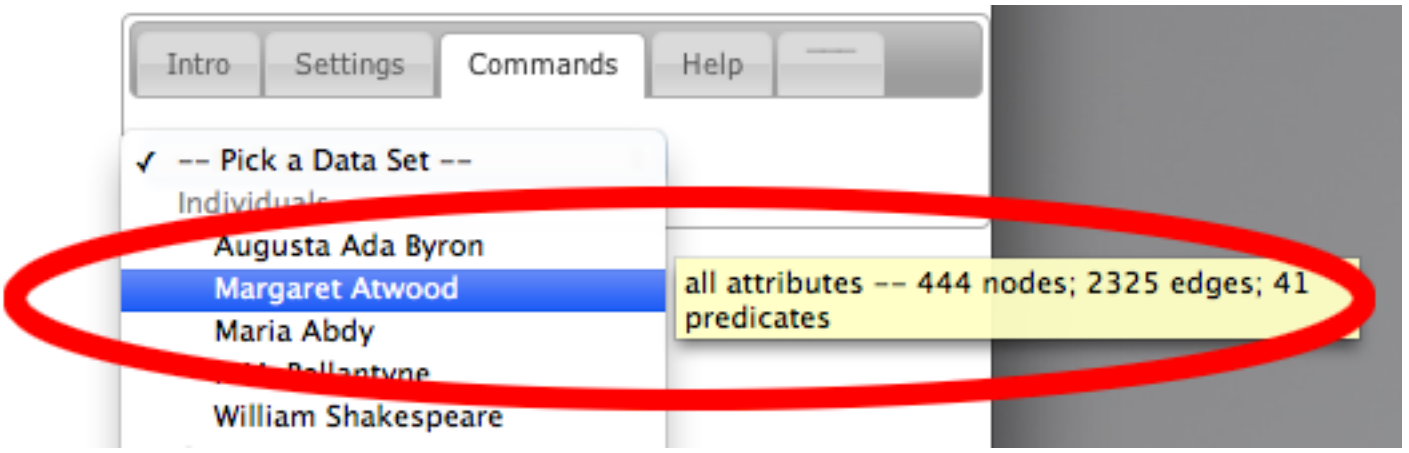
To begin, choose a dataset.

In the HuViz prototype, the pre-loaded datasets are generated from the Orlando textbase and organized by theme.

1. Click the Commands tab to open the main control panel.
2. At the top of the panel, click the drop down menu labelled "Pick a Dataset."

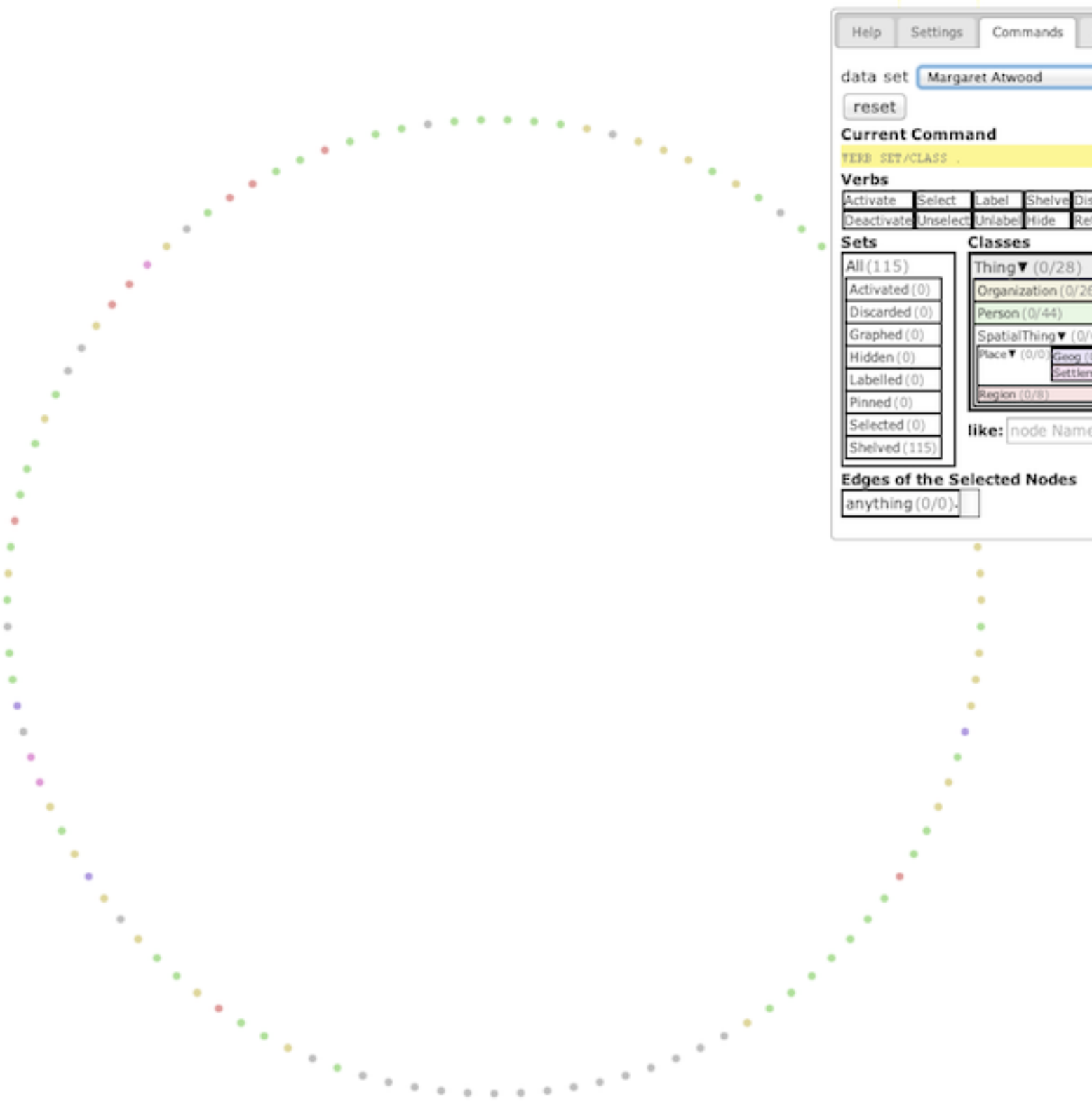


3. Hover over specific datasets to view a list of attributes.
   The number of nodes, edges and predicates are a general indication of the size and complexity of the network.



4. Click on the dataset to load.
   The size of a dataset (i.e. number of nodes and predicates it contains) will effect the loading time.

Once the data has finished parsing, the process is complete. The dataset has sucessfully loaded and nodes are in orbit, ready for action.


Help
Settings
Commands
data set
Margaret Atwood
reset
Current Command
Verbs
Activate
Select
Label
Deactivate
Unselect
Unlabel
Hide
Sets
All (115)
Activated (0)
Discarded (0)
Graphed (0)
Hidden (0)
Labelled (0)
Pinned (0)
Selected (0)
Shelved (115)
Classes
Thing (0/28)
Organization (0/26)
Person (0/44)
Region (0/8)
like:
Edges of the Selected Nodes
anything (0/0)

Select a Node

Select

Before a command can be performed, the user must first Select the desired nodes. Use the Select function to choose which nodes to execute a command on.

There are **three** ways of Selecting nodes:

Table 1: Methods of Selecting Nodes

Workspace	Method
Graph	• Manually, using the "drag and drop" technique
Commands Tab	• By Set or Class type • Using the Like (search) function

Once nodes have been selected, future actions will be performed only on those nodes and can be executed by clicking a Verb or sequence of Verbs.

It is easy to differentiate between Selected and Unselected nodes:

Table 2: Identifying Selected Nodes:

Location	Characteristic
Set/Class Bins	• Selected Set or Class types will have a darker shade.
Current Command Line	• If nodes were selected by type, the name of the Set or Class type will be listed. • If nodes were selected in the Graph (by manually clicking the nodes), an abreviated version of the node names will be listed.
Graph	• Selected nodes will be bolded.

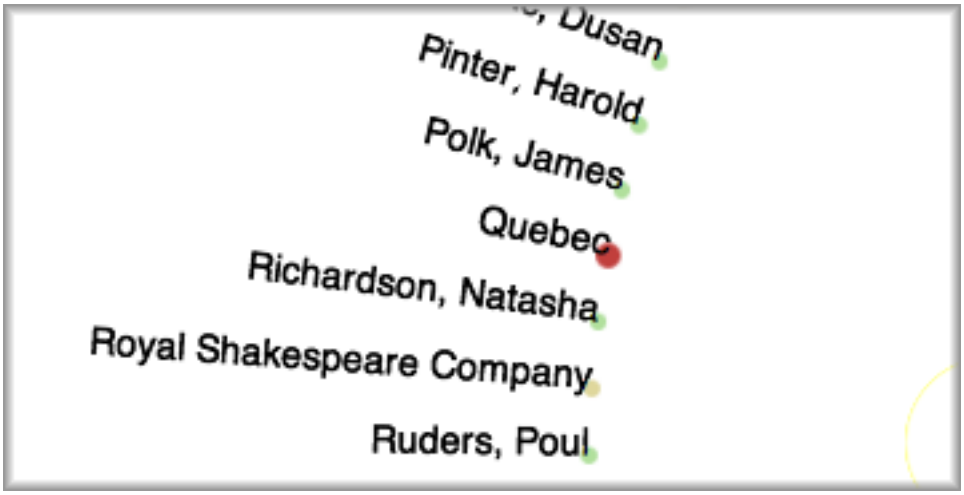
Select Manually

Select nodes by hand with the following steps.

Note: All visible nodes, regardless of location (Shelf, Graph and Discard Bin), can be Selected manually.

1. Hover over desired Node.

2. Click node once to Select.
   The node will turn Bold, indicated that it has been Selected.



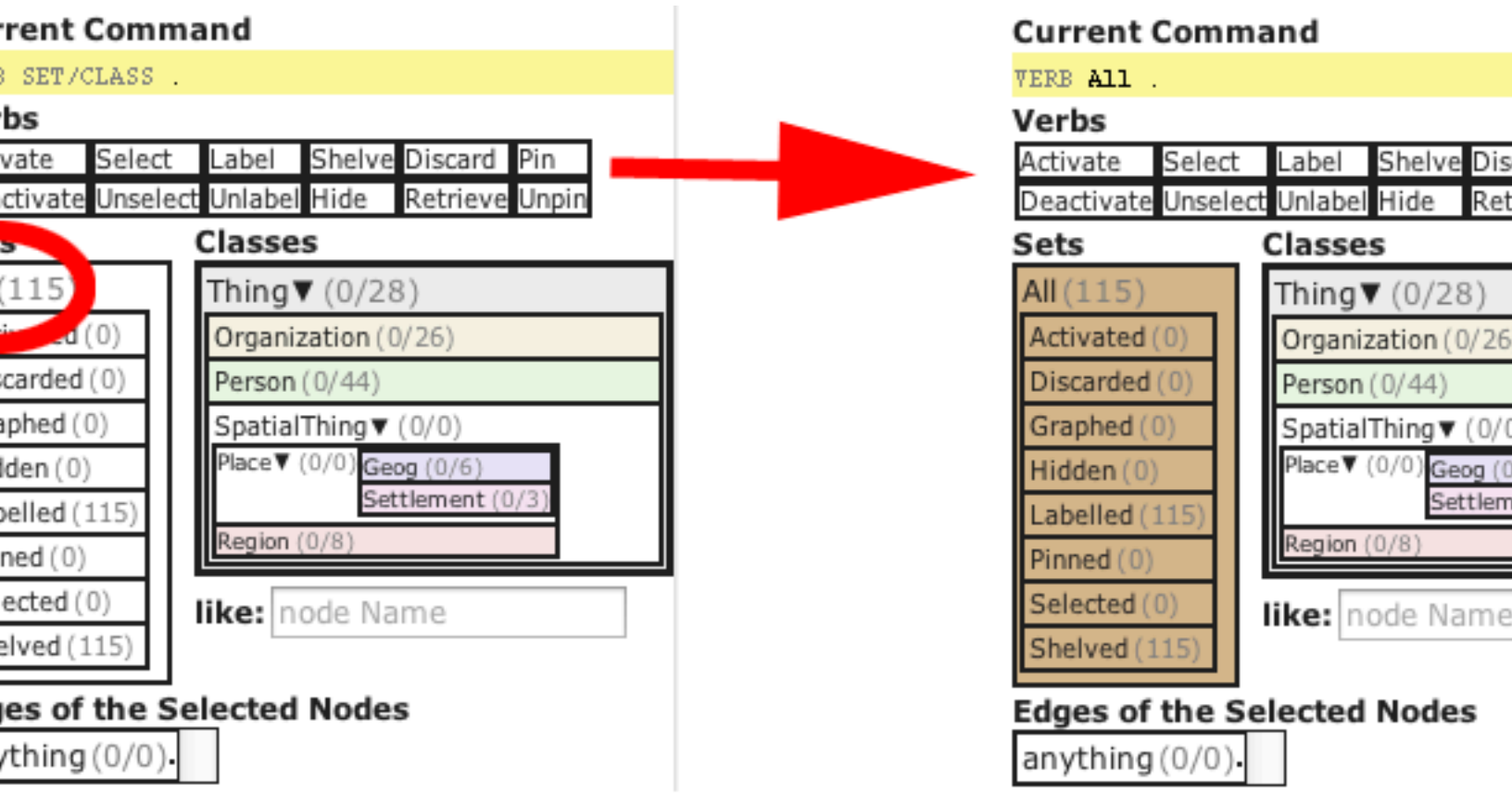
- Click node a second time to Unselect. The node's appearance will change back to normal, indicating that is in a Unselected state.

Select All

The All function is used to perform actions on all nodes at the same time.

When using the select All function, executing a Verb will effect *all nodes in the orginal dataset.* This includes nodes that are Hidden or Discarded. As such, the All function can be used to recall nodes that have been rendered temporarily invisible and cannot be dragged by into the graph manually.

- Click All, located at the top of the Sets bar.



The Sets bar will highlight in full, indicating that all nodes will be affected. Under Current Command, the "Sets/Classes" element will change to "All."

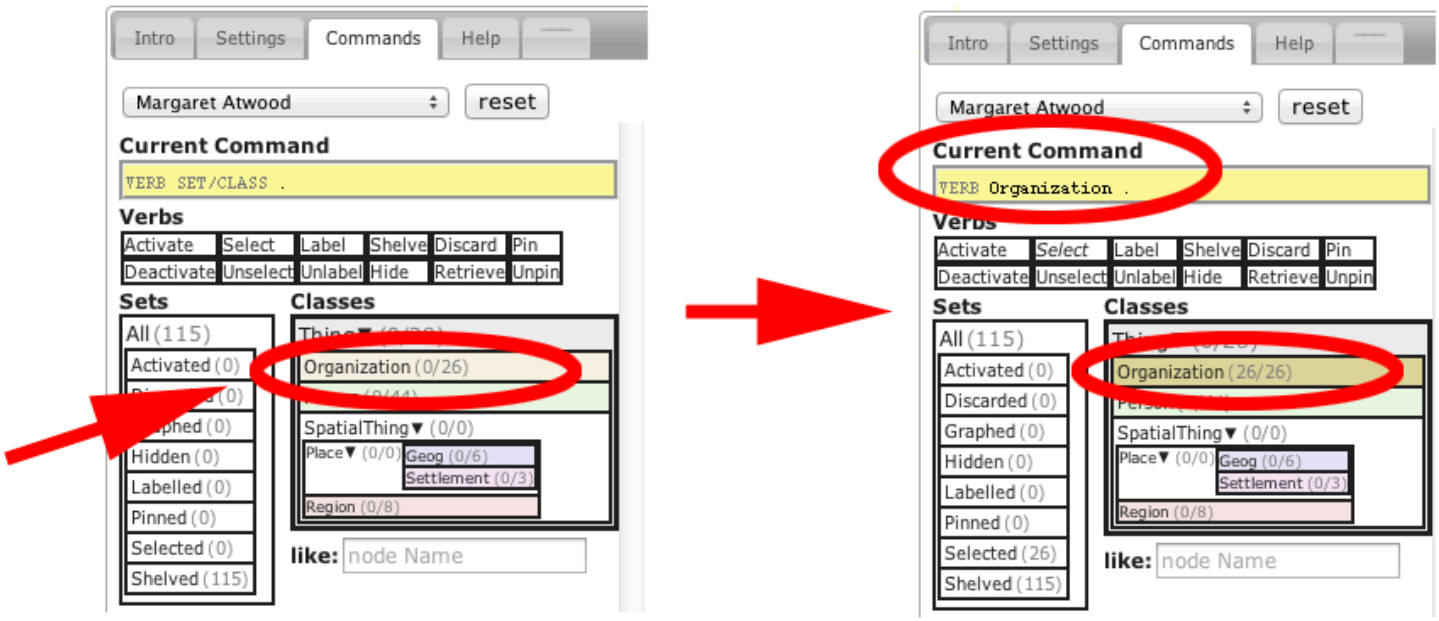
- Click on the desired Verb to execute the action.

Select by Set or Class

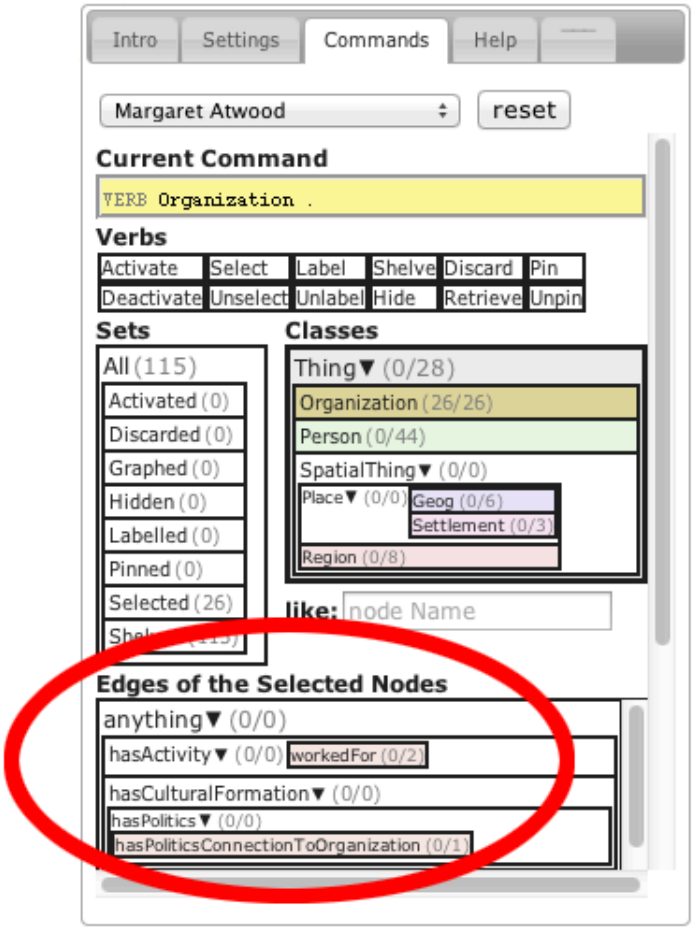
Select nodes by Set or Class using the Commands Tab.

1. Click on the individual drawer of the desired Set or Class type to select contents.
2. Click on a Verb to execute action.
    - Actions can be performed on multiple Set or Class types. Select as many drawers as needed before executing the action by clicking a Verb.

The drawer will turn a darker shade and the name of the Set or Class type will appear under the Current Command.



- If a Class type was selected, the Edge types associated with that Class will appear as drawers in the Edges of Selected Nodes bin.



Set or Class types in a Selected state will remain so until either:

- The drawer of the Set or Class type is clicked a second time to Deselect it.
- The nodes are Discarded.

Select by Search

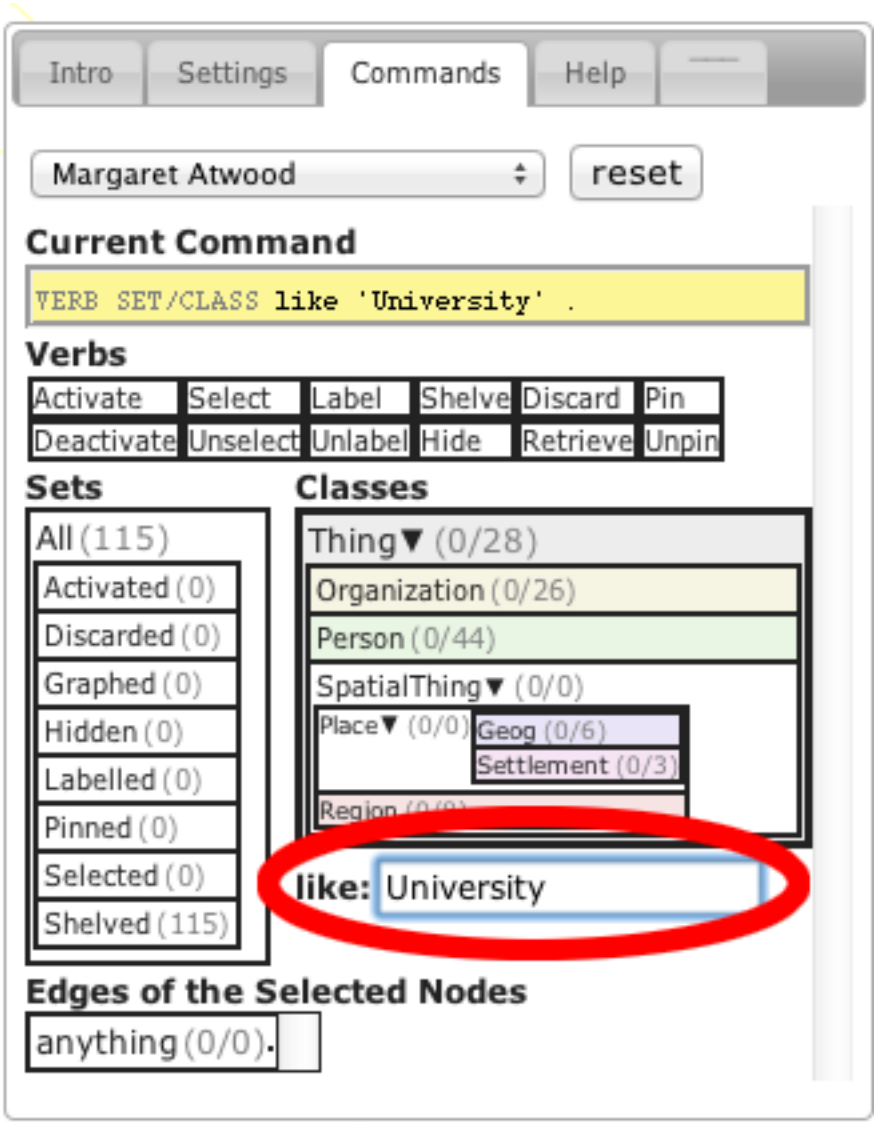
Select nodes using the Like bar to perform a text search.

The Like function searches the node names in the Dataset for textual matches. Matching nodes are then selected to execute a Command.

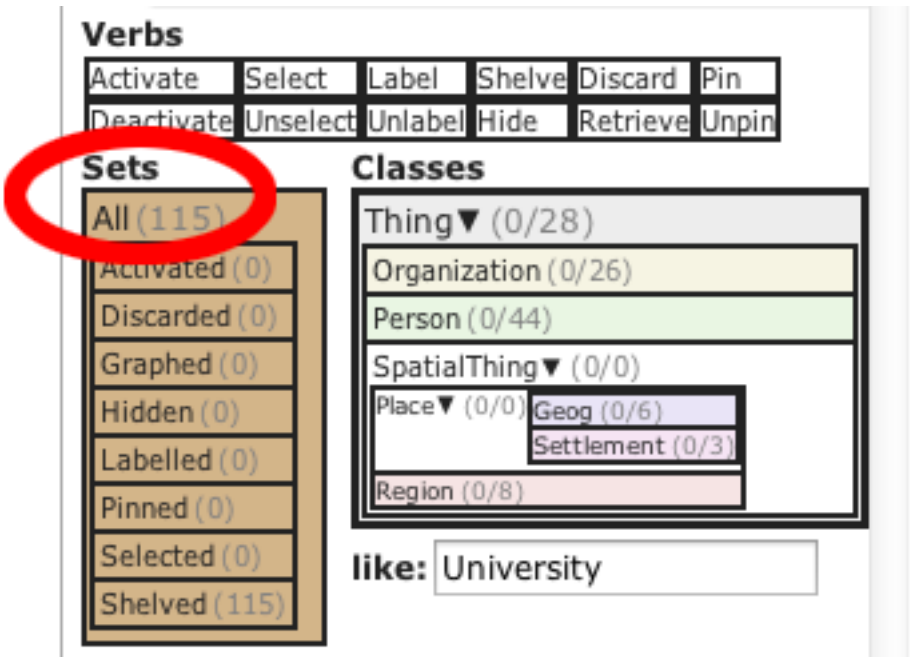
Note: The Like bar offers full Regex power. For example, searching "19\d\d" will return matches for numbers in the range 1900-1999.

Note: ONLY the *node names* are searched. The Like function does NOT perform searches on other features like Set/Class types or Snippet text.

1. Type a search term into the Like bar.

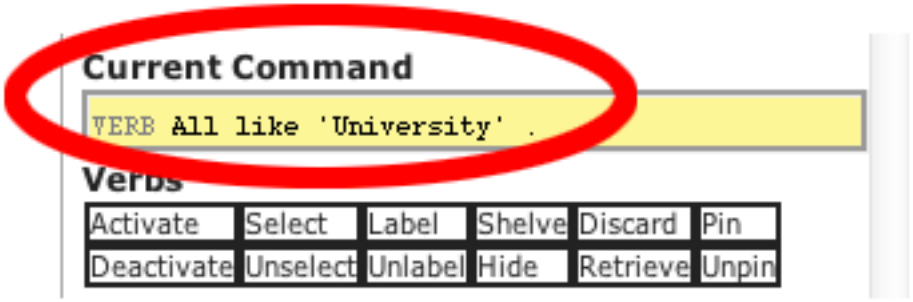


2. Click a Set or Class type to choose a category of nodes to perform the search on.

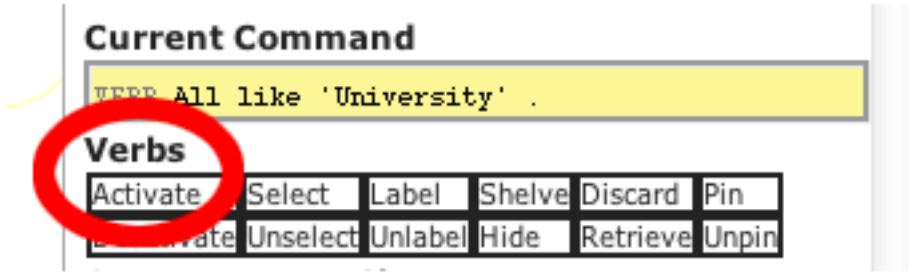


To search *all* nodes for matches, click All under Sets.

Notice that the Current Command will update to reflect the Search term and selected Set/Class type.



3. Click on the desired Verb to choose an action.



In this example, the user searched for ALL nodes LIKE "University" and then executed the VERB Activate. As a result, nodes with names containing "University" were pulled into the graph.

Activate a Node

Activate

The Activate function drags nodes into the graph.

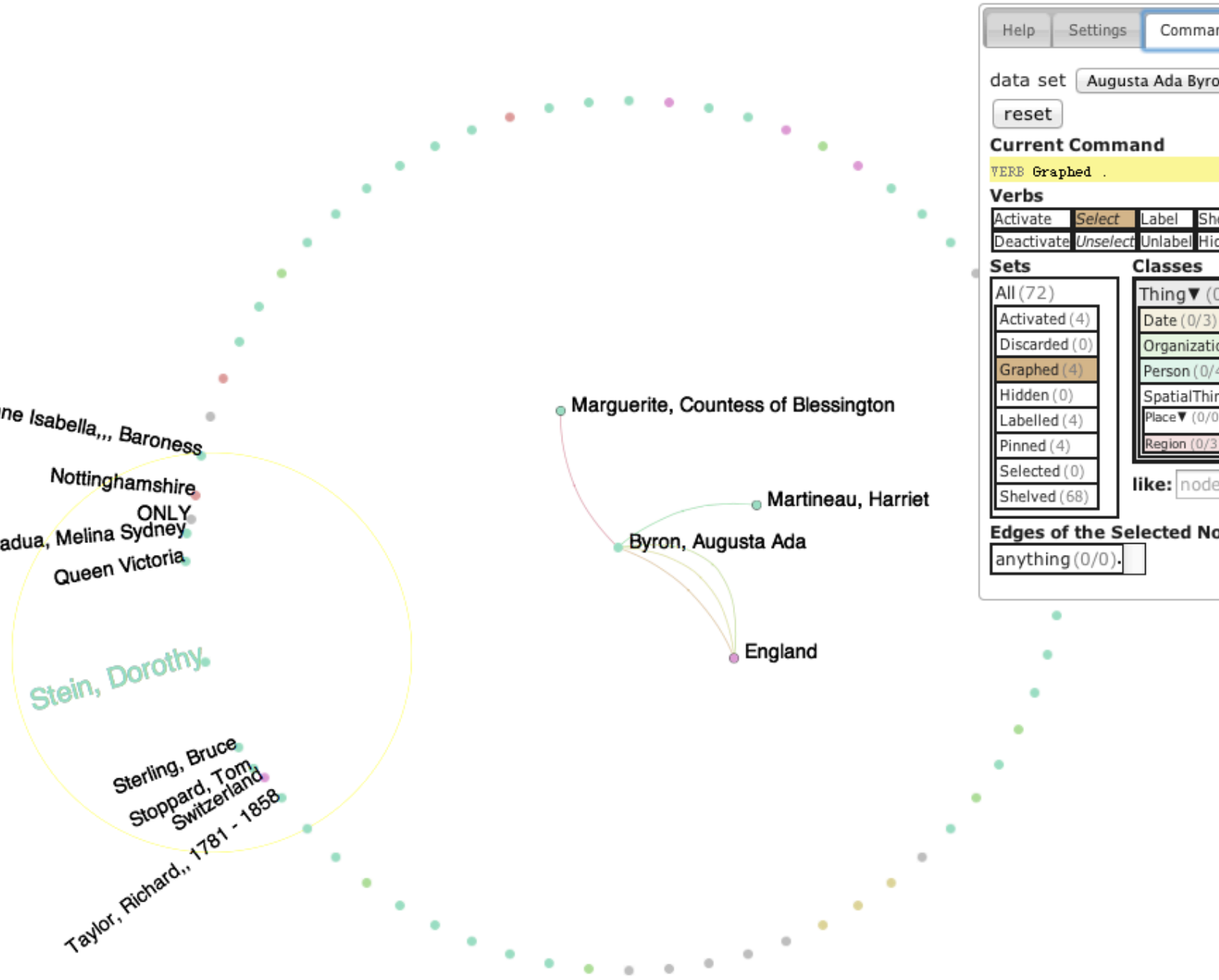
Once Activated, nodes will automatically attach to Hub nodes by way of shared links.

Nodes can be Activated either manually or using the Command Tab.

Activate Manually

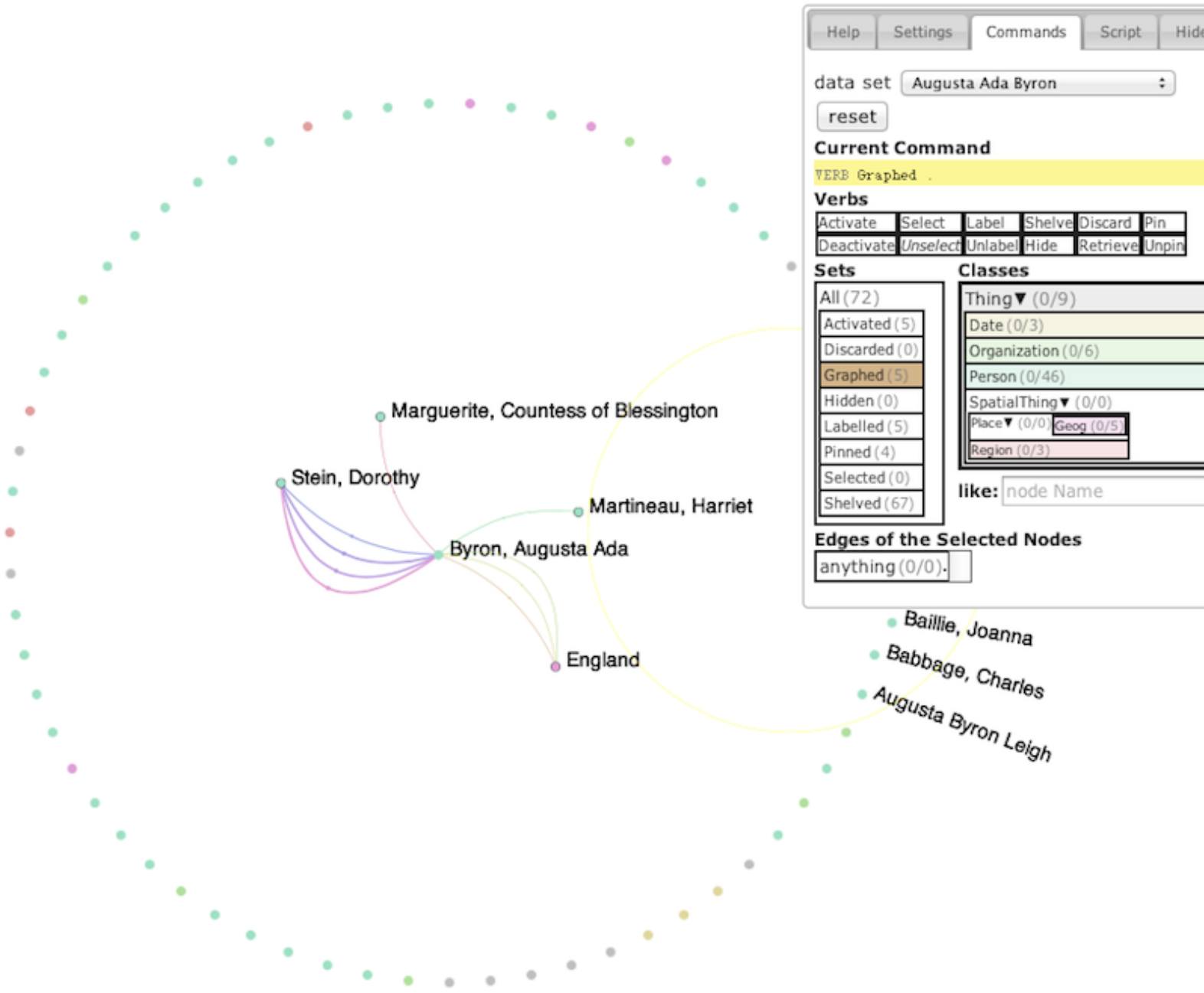
Graph nodes using the "drag and drop" method with the following steps.

1. Click and hold the node, illuminating the circular green shelf.



2. Drag and drop the node inside the circle.

Node has linked with a Hub and is now in an Active state.



Shelve a Node

Shelve

The Shelve function returns nodes to the the outer ring that orbits the central graph.

Shelving a node will place a nodes back on the Shelf, regardless of whether it is in a Graphed, Hidden or Discarded State.

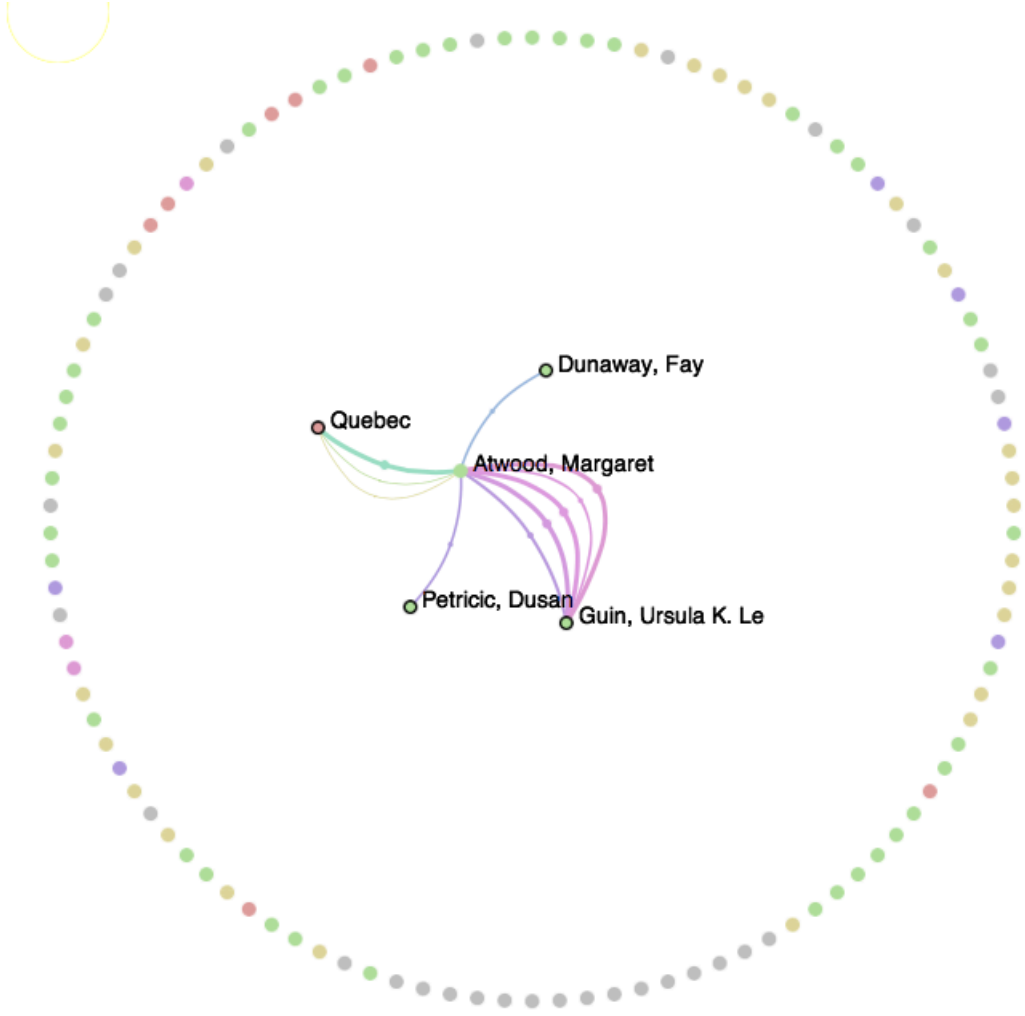
Nodes can be shelved both manually and in the Commands Tab.

Note: To shelve ONLY Discarded nodes, use the Retrieve function.

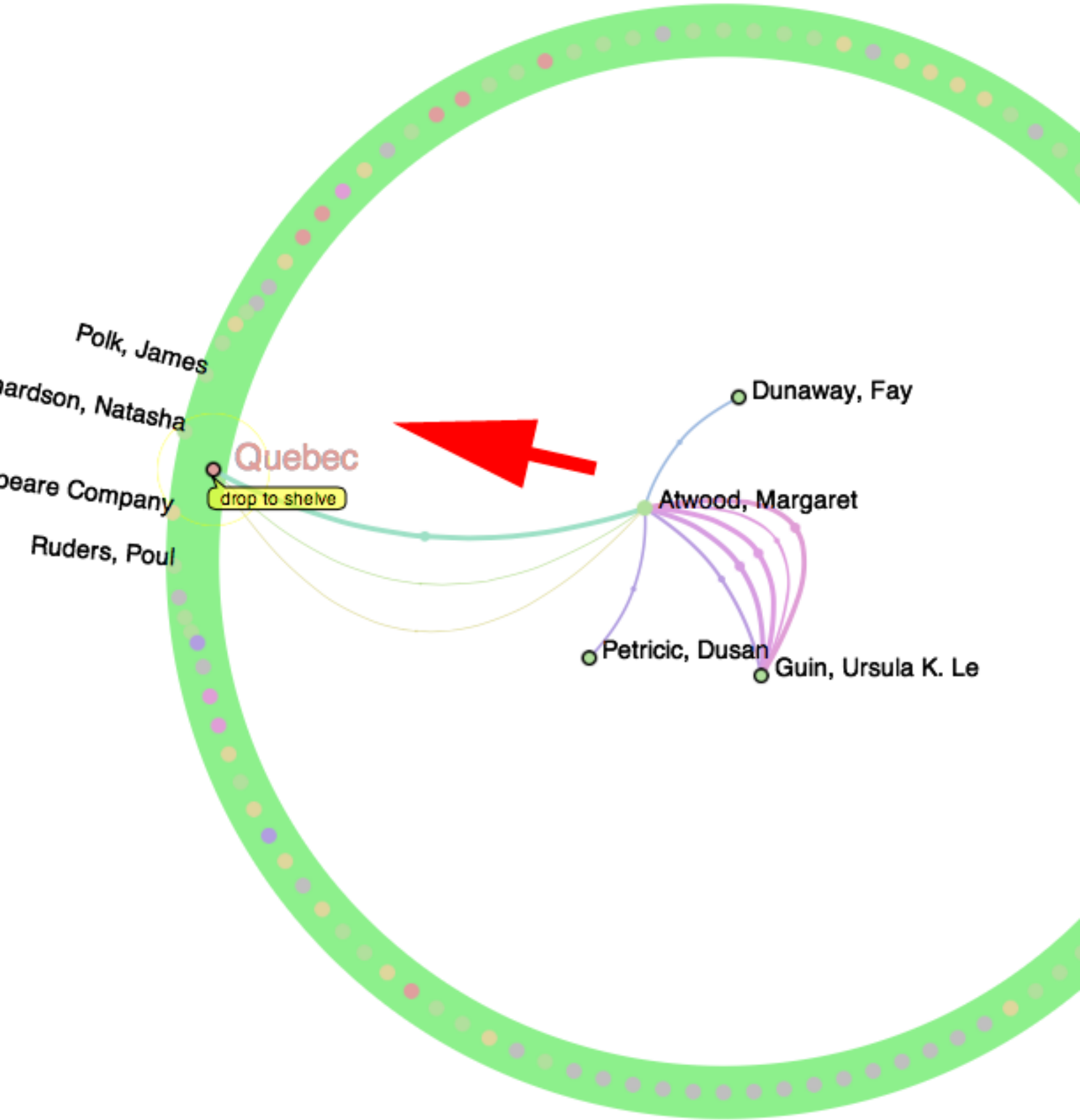
Shelve Manually

Shelve nodes using the "drag and drop" method with the following steps.

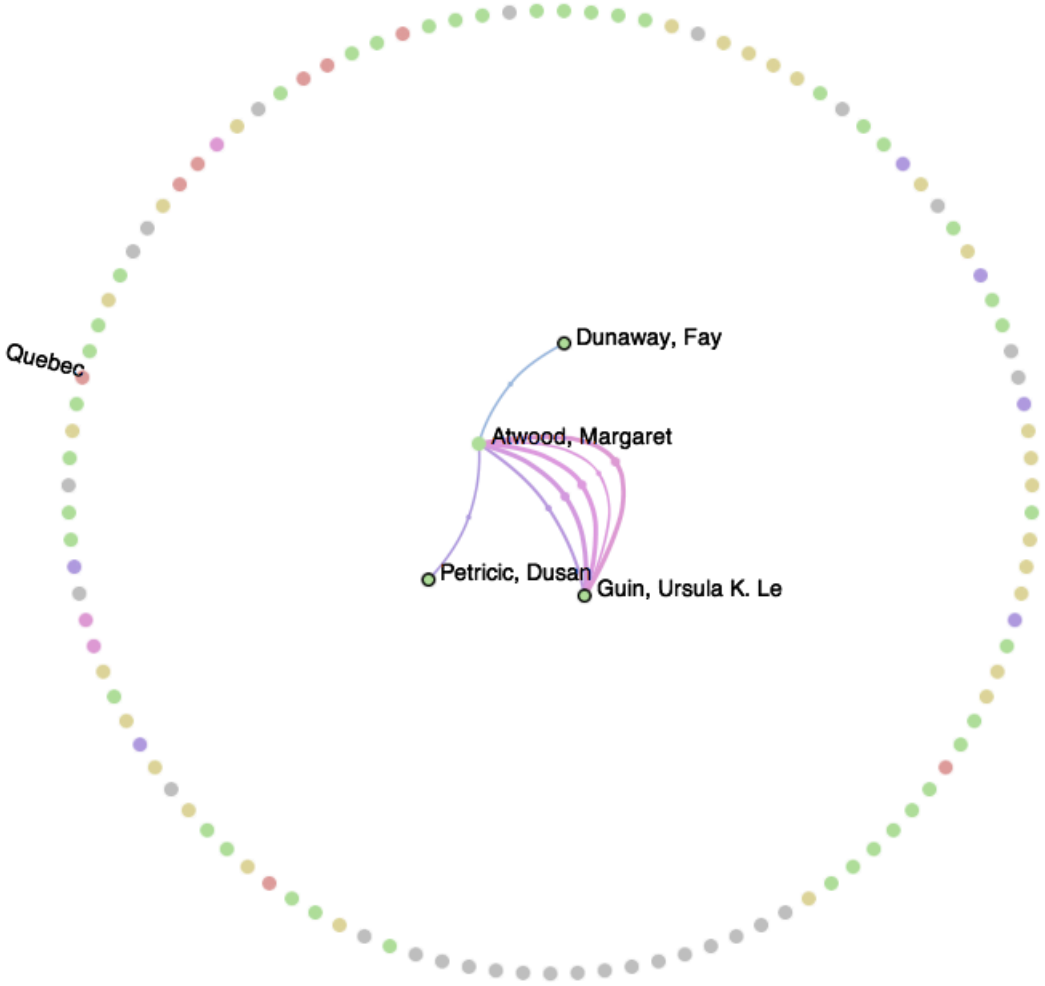
1. Click and hold the node, illuminating the green Shelf.



2. Drag the node to the Shelf.


Polk, James
ardson, Natasha
Quebec
drop to shelve
peare Company
Ruders, Poul
Dunaway, Fay
Atwood, Margaret
Petricic, Dusan
Guin, Ursula K. Le

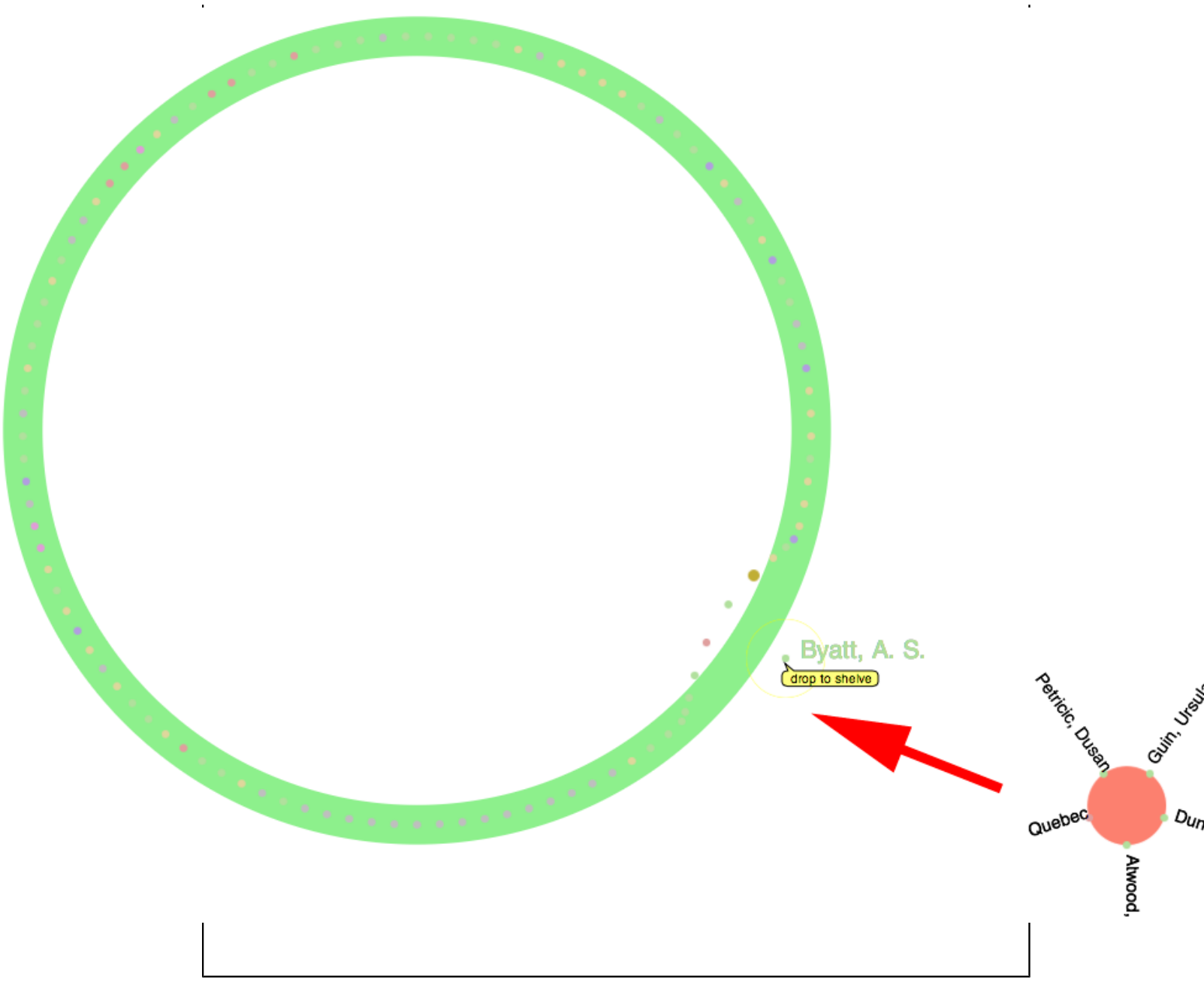
3. Release the clicker to drop the node.



The node "Quebec" has been returned to the Shelf and is no longer in the central Graph.

Note:

In the previous example, the node was dragged to the Shelf from the central Graph. However, nodes can also be shelved from the Discard bin.



Discard and Retrieve a Node

Discard

The Discard function removes nodes from the central Graph or Shelf and sends them to the Discard bin.

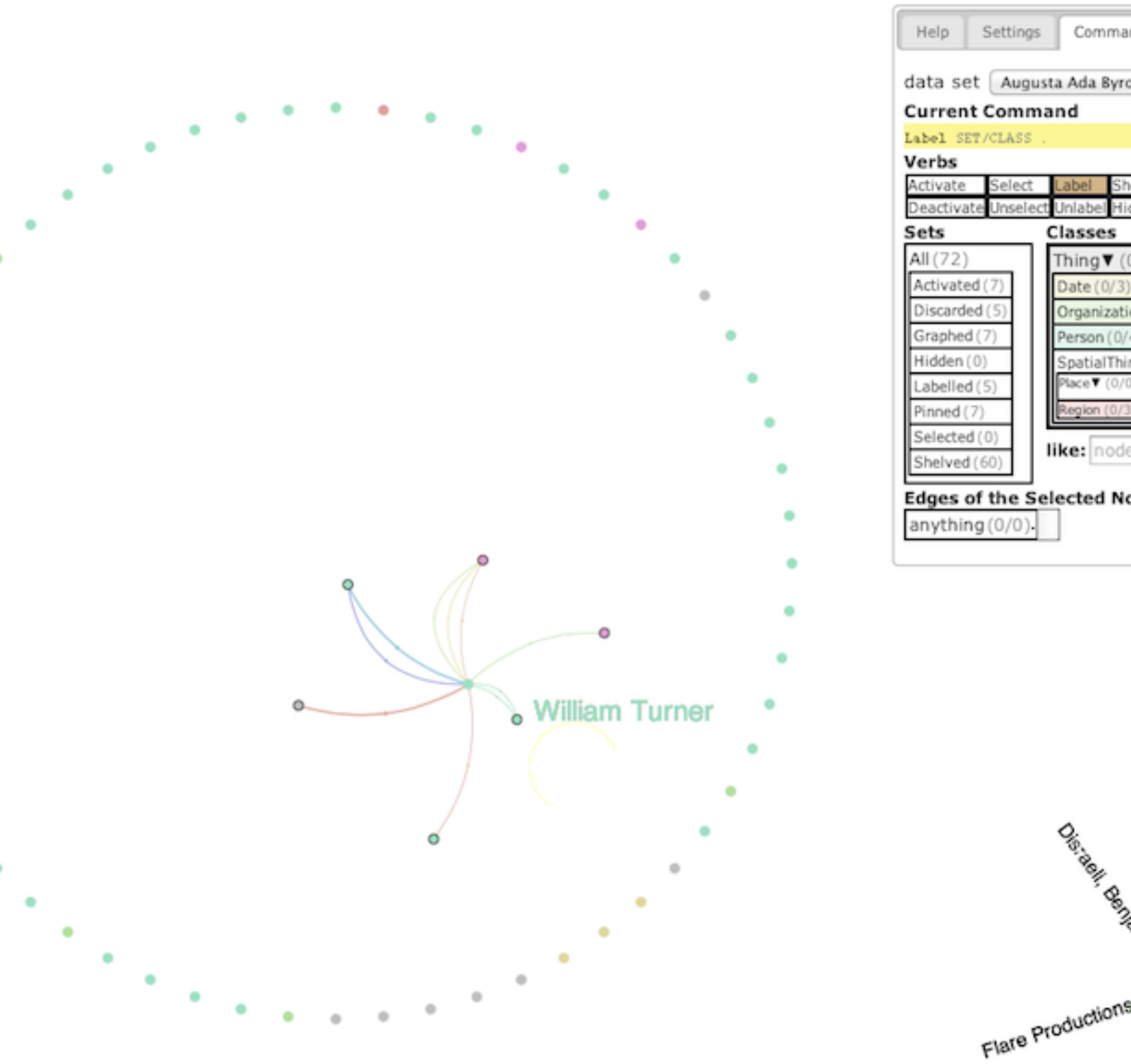
Nodes can be discarded either manually or using the Commands Tab.

Return discarded notes to the Shelf using the Retrieve function.

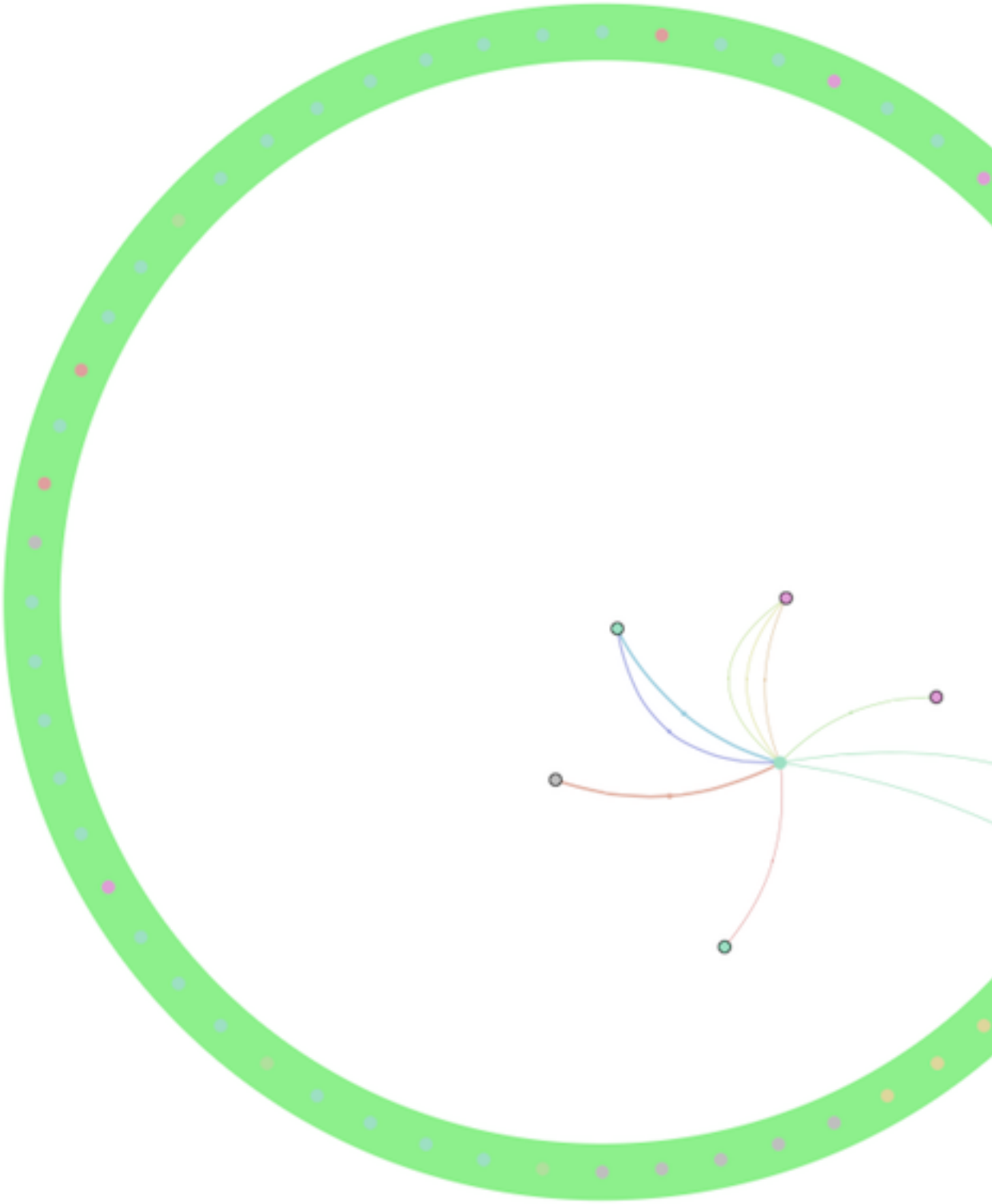
Discard Manually

Discard nodes using the "drag and drop" method with the following steps.

1. Click and hold the node, illuminating the red Discard Bin to the bottom right of the Stage.


Help
Settings
data set
Augusta Ada Byro
Current Command
Label SET/CLASS .
Verbs
Activate
Select
Label
Deactivate
Unselect
Unlabel
Sets
All (72)
Activated (7)
Discarded (5)
Graphed (7)
Hidden (0)
Labelled (5)
Pinned (7)
Selected (0)
Shelved (60)
Classes
Thing
Date (0/3)
Person (0/
Place (0/0
Region (0/3
like:
Edges of the Selected No
anything (0/0).
William Turner
Flare Productions

2. Without releasing the clicker, drag the node to the Discard



Bin.

3. Release the clicker to drop the node into the Bin and execute the action.

Discarded nodes will orbit the Bin.

Retrieve

Use the Retrieve function to return *only Discarded nodes* to the Shelf.

The Retrieve function *only* effects Discarded nodes, leaving Graphed and Hidden nodes untouched. Retrieve is best used in combination with a Class type to target specific nodes in the Discard bin.

Note: Discarded nodes can be retrieved either manually or using the Commands Tab.

Retrieve in Commands Tab

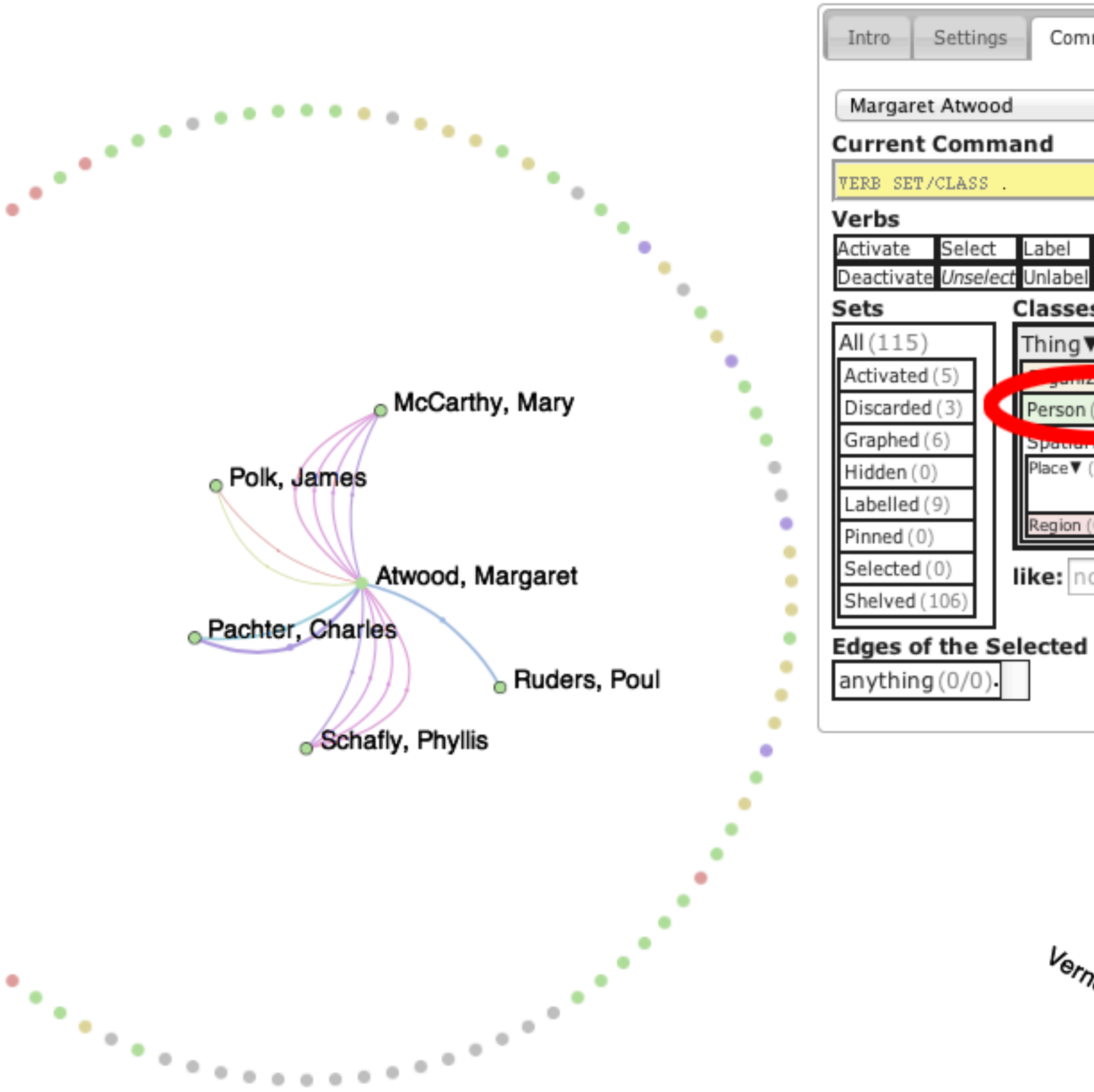
Return Discarded nodes to the Shelf using the Commands Tab.

To Retrieve *all* Discarded nodes at once use the following steps:

- Click on the Discarded drawer in the Sets bin.
- Click Retrieve

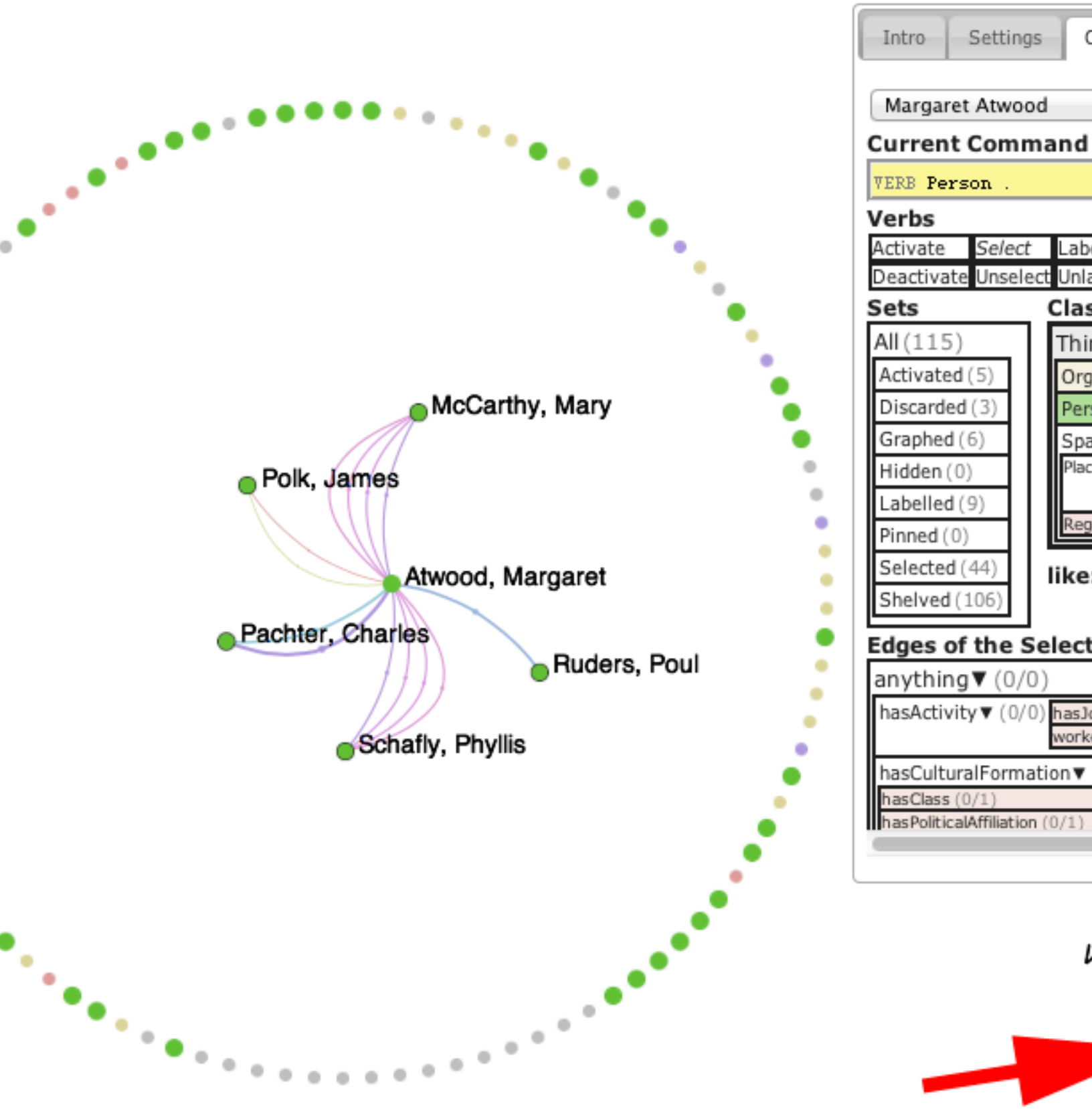
To Retrieve a specific Class of nodes from the Discard bin use the following steps:

1. Click on the desired Class type in the Classes bin.

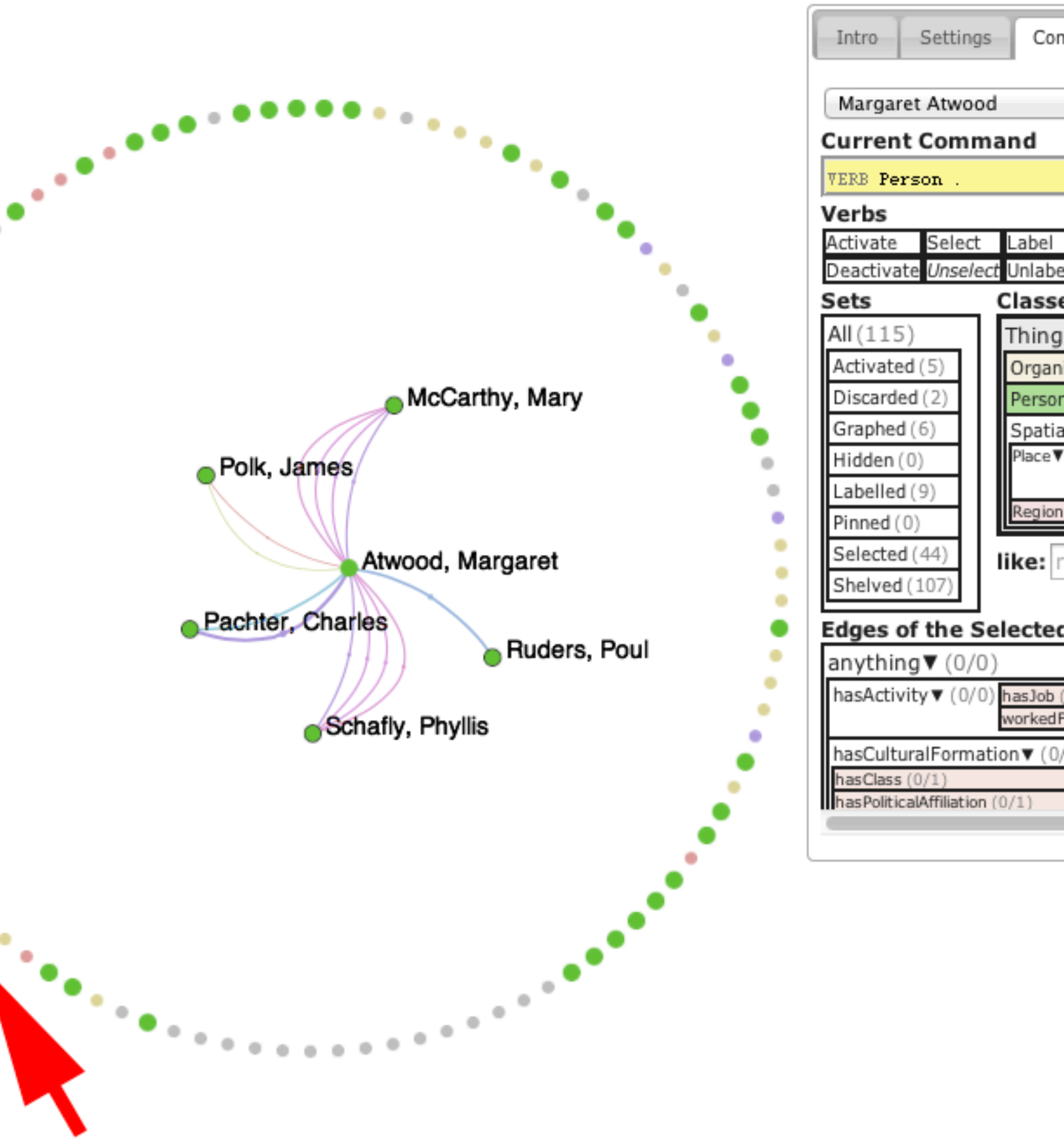

Intro
Settings
Margaret Atwood
Current Command
VERB SET/CLASS .
Verbs
Activate
Select
Label
Deactivate
Unselect
Unlabel
Sets
All (115)
Activated (5)
Discarded (3)
Graphed (6)
Hidden (0)
Labelled (9)
Pinned (0)
Selected (0)
Shelved (106)
Classes
Thing
Person
Place
Region
like:
Edges of the Selected
anything (0/0).
McCarthy, Mary
Polk, James
Atwood, Margaret
Pachter, Charles
Ruders, Poul
Schafly, Phyllis

Note that clicking on a Class type automatically Selects those nodes for future actions, as indicated by their *bold* appearance.

2. Under Verbs, click Retrieve.


McCarthy, Mary
Polk, James
Atwood, Margaret
Pachter, Charles
Ruders, Poul
Schafly, Phyllis
Intro
Settings
Margaret Atwood
Current Command
VERB Person .
Verbs
Activate
Select
Deactivate
Unselect
Sets
All (115)
Activated (5)
Discarded (3)
Graphed (6)
Hidden (0)
Labelled (9)
Pinned (0)
Selected (44)
Shelved (106)
Edges of the Select
anything▼ (0/0)
hasActivity▼ (0/0)
hasCulturalFormation▼
hasClass (0/1)
hasPoliticalAffiliation (0/1)

In this example, the function Retrieve was executed on the Class Type "Person." As a result, the Person node in the Discard Bin, labelled "Jules Verne," was returned to the Shelf. However, the Person nodes in the central Graph remained untouched.


McCarthy, Mary
Polk, James
Atwood, Margaret
Pachter, Charles
Ruders, Poul
Schafly, Phyllis
Intro
Settings
Margaret Atwood
Current Command
VERB Person .
Verbs
Activate
Select
Label
Deactivate
Unselect
Sets
All (115)
Activated (5)
Discarded (2)
Graphed (6)
Hidden (0)
Labelled (9)
Pinned (0)
Selected (44)
Shelved (107)
like:
Edges of the Selected
anything▼ (0/0)
hasActivity▼ (0/0)
hasCulturalFormation▼
hasClass (0/1)
hasPoliticalAffiliation (0/1)

Hide

The Hide function removes nodes from the visualization.

Once removed, Hidden nodes will be no longer appear in either the central Graph, Shelf or Discard bin.

Note: However, Hidden nodes are not permanently deleted from the dataset and can be retrieved using the Commands Tab.

Note: Unlike most other Verbs, this function cannot be executed directly in the Graph. To Hide nodes, the user must execute the Verb in the Commands Tab.

Pin a Node

Pin

The Pin function fixes or "pins" Graphed nodes in place.

By default, networks of graphed nodes float freely within the central stage. However, there are times when working with a static graph is preferable.

Using the Pin function, the branches of a node network can be stretched out and fixed in place.

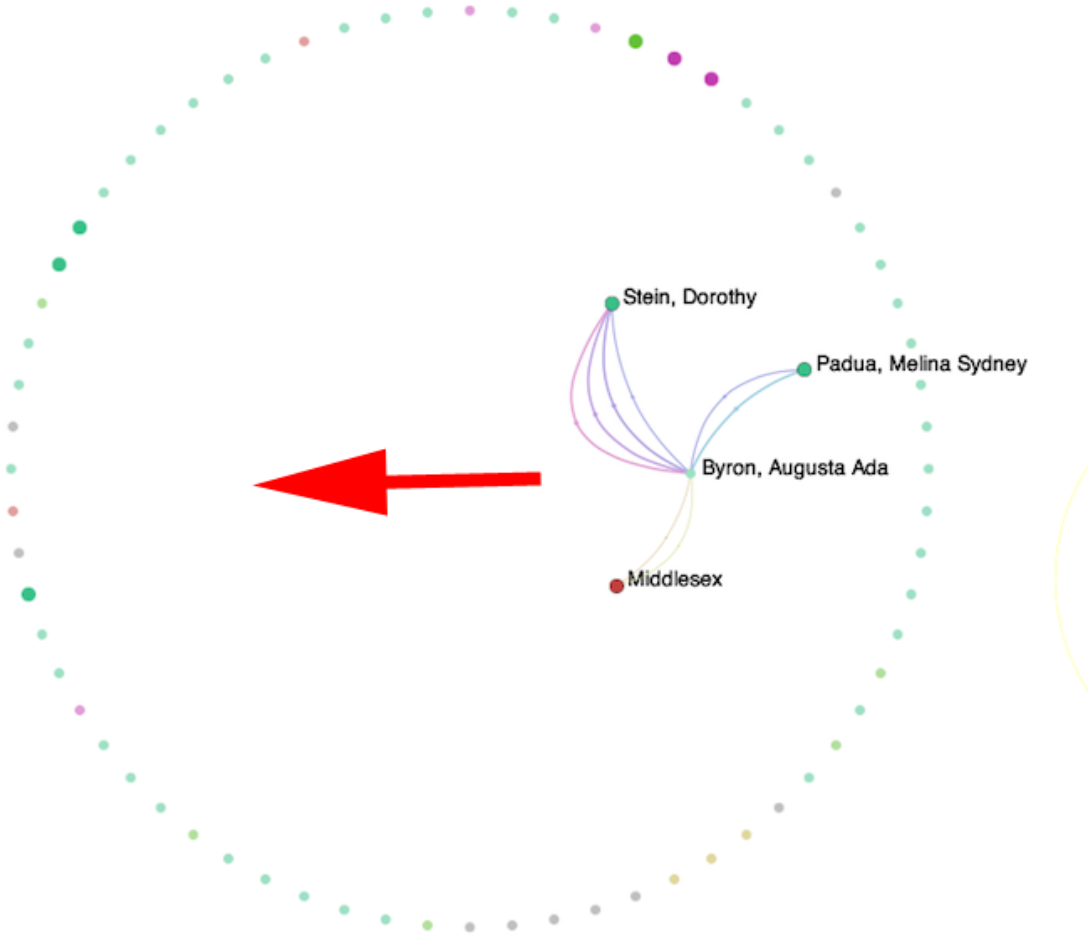
Note: Only graphed nodes can be pinned. The Pin function cannot be executed on nodes that are in a shelved or discarded state.

Note: Graphed nodes can be Pinned in any area that is not designated as part of the Shelf or Discard Bin. This includes the area both inside and outside the central ring.

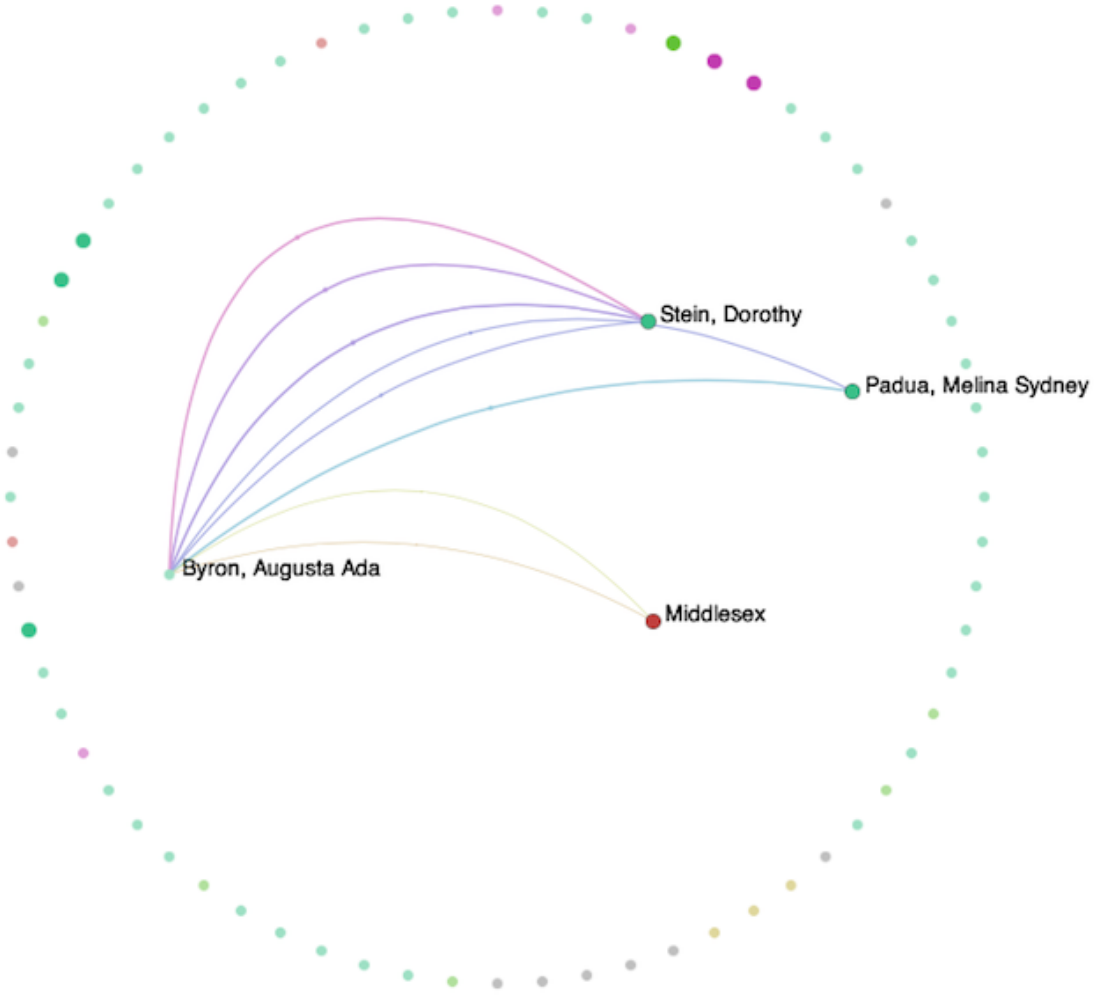
Pin Manually

Pin nodes using the "drag and drop" method with the following steps.

1. "Click and hold" to grab a graphed node.
2. Without releasing the mouse, drag the node to an unmarked area.



3. Release the mouse to "drop" the node and fix in place.



Click and drag the node a second time to Unpin (release) the node.

Label a Node

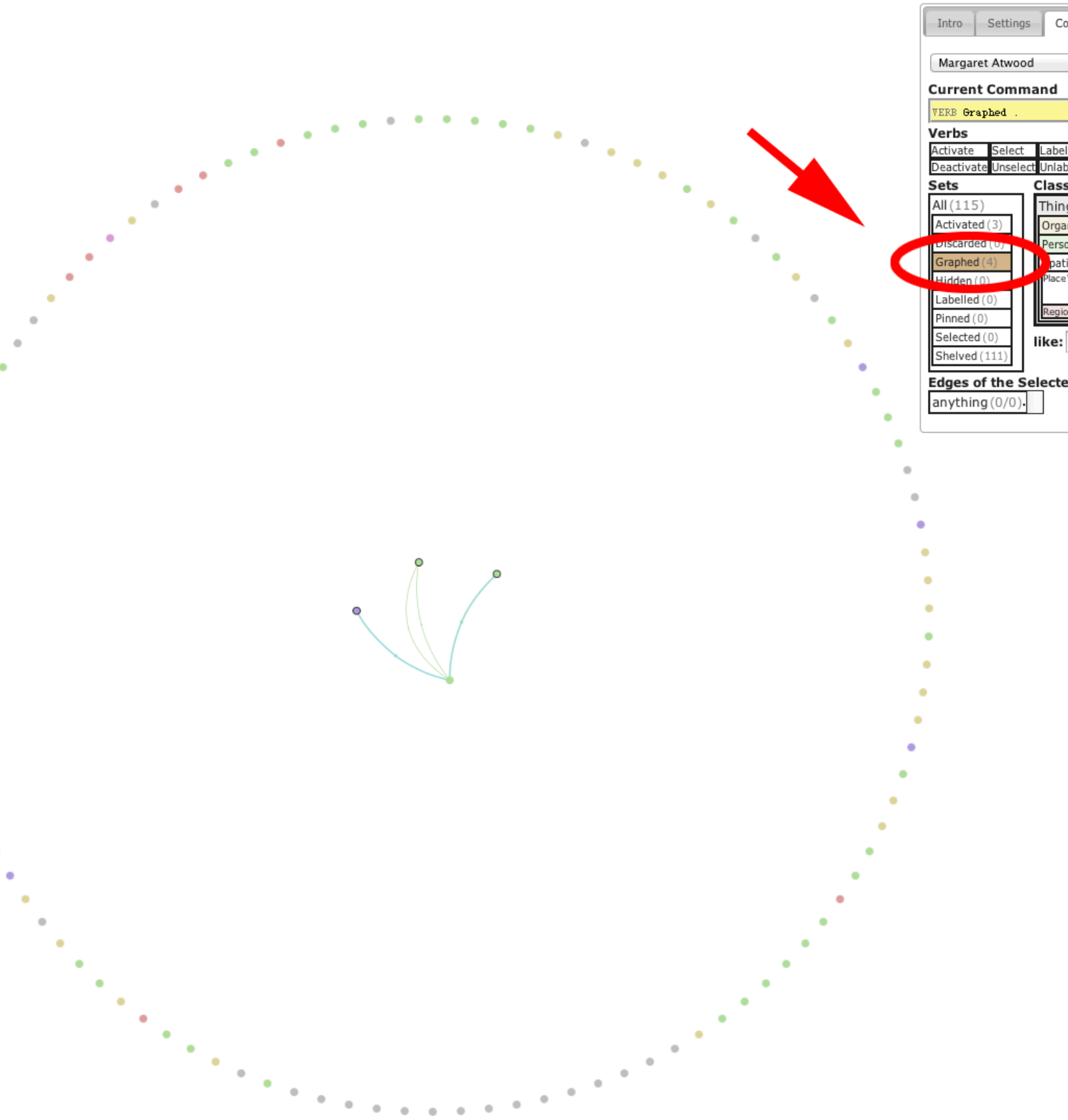
The Label function displays the node name.

When the cursor hovers over a node, the node name will automatically appear above. To keep the labels visible at all times, execute the Verb Label in the Commands Tab.

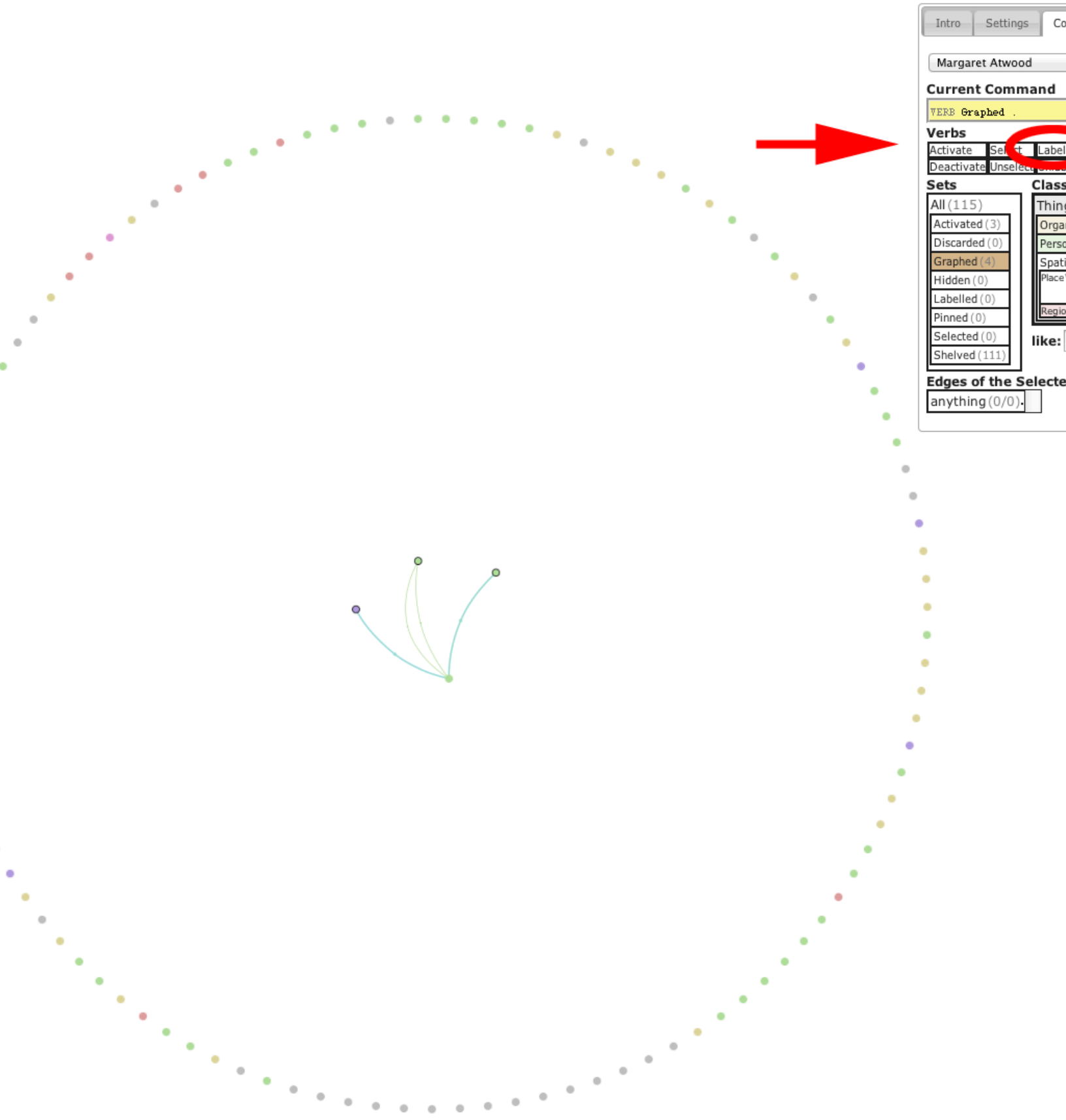
Execute Verbs in Commands Tab

In the Commands Tab, actions are automatically executed when a selected Set or Class type is combined with a Verb.

1. Select nodes, either manually or by clicking on a Set or Class type.

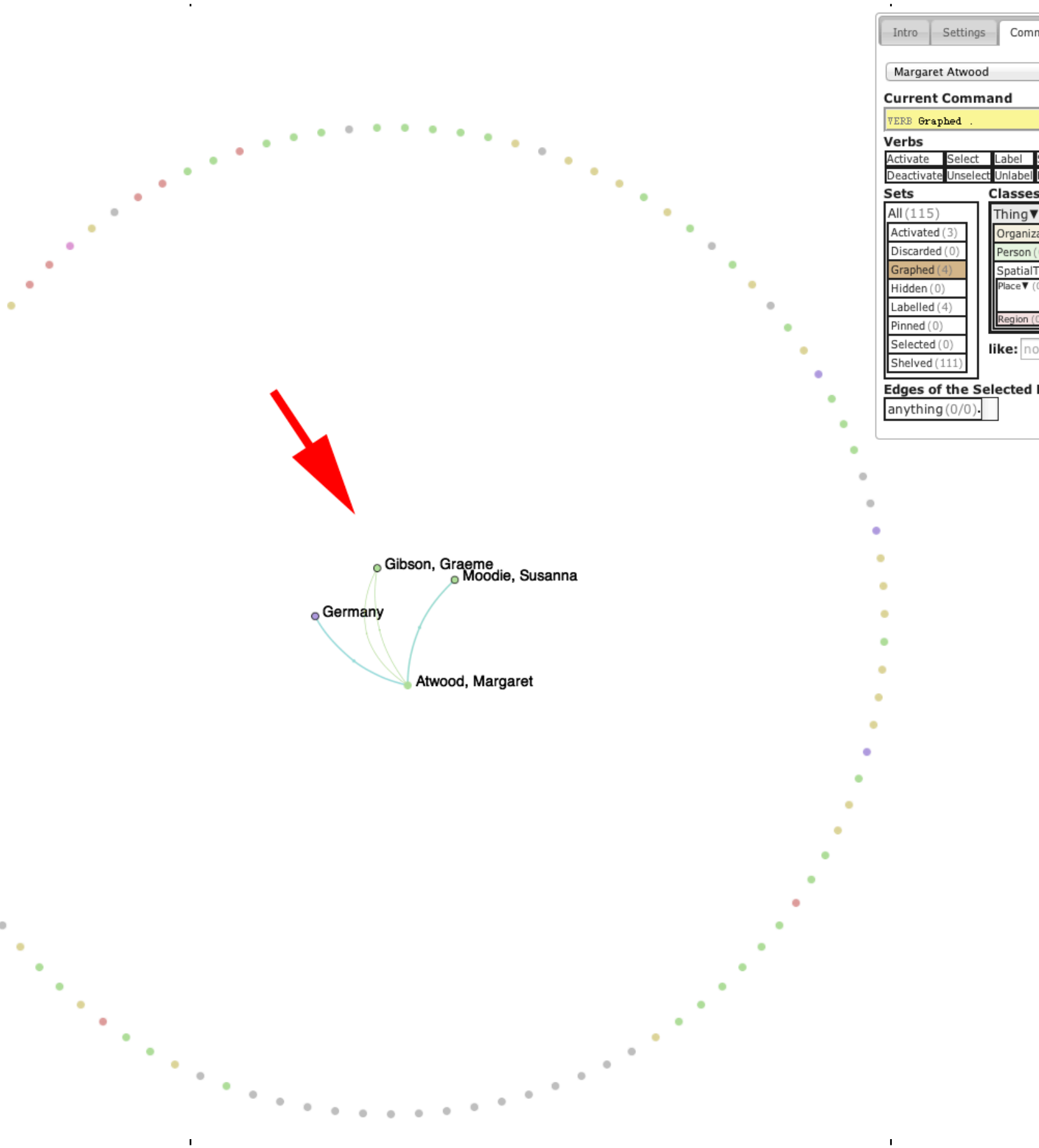


2. Click on a Verb to complete the formula and execute the action.


Intro
Settings
Margaret Atwood
Current Command
VERB Graphed .
Verbs
Activate
Deactivate
Sets
All (115)
Activated (3)
Discarded (0)
Graphed (4)
Hidden (0)
Labelled (0)
Pinned (0)
Selected (0)
Shelved (111)
like:
Edges of the Selecte
anything (0/0).

Continue clicking on Verbs to execute a sequence of actions.

In this case, choosing the Set "Graphed" and then clicking the Verb "Label" resulted in the graphed nodes being labelled.


Intro
Settings
Margaret Atwood
Current Command
VERB Graphed .
Verbs
Activate
Select
Label
Deactivate
Unselect
Unlabel
Sets
All (115)
Activated (3)
Discarded (0)
Graphed (4)
Hidden (0)
Labelled (4)
Pinned (0)
Selected (0)
Shelved (111)
Classes
Thing
Person
Place
Region
like:
Edges of the Selected
anything (0/0).
Gibson, Graeme
Moodie, Susanna
Germany
Atwood, Margaret

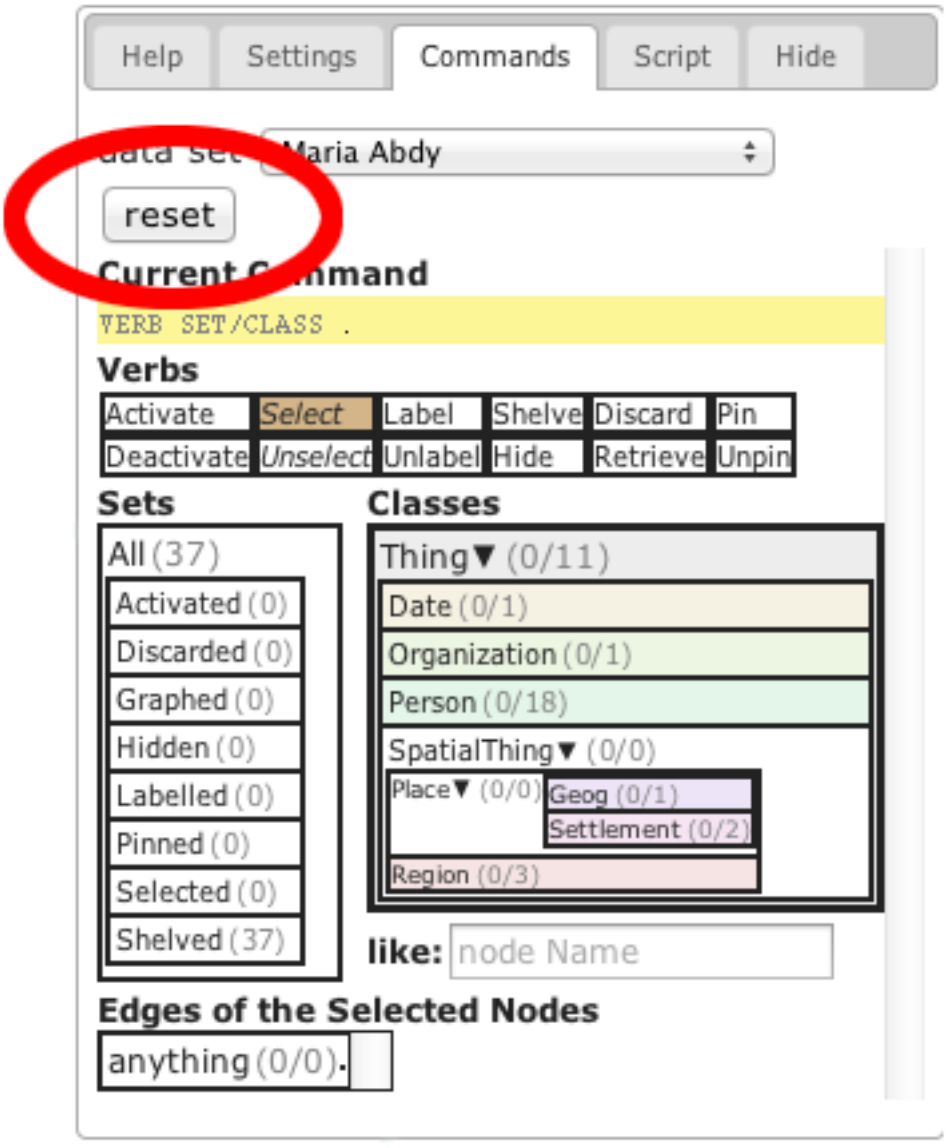
Note that the Verb in the Commands Tab is still blank. This is because, once a Set or Class type has been chosen, the user can continue to execute a series of Verbs.

Reset to Default

Use Reset to restore the dataset to default mode.

Note: The Reset function only applies to changes made in the Commands Tab. It does not effect changes to appearance made in the Settings Tab.

- To erase changes, click the Reset button at the top of the Commands Tab.



Explore Connections

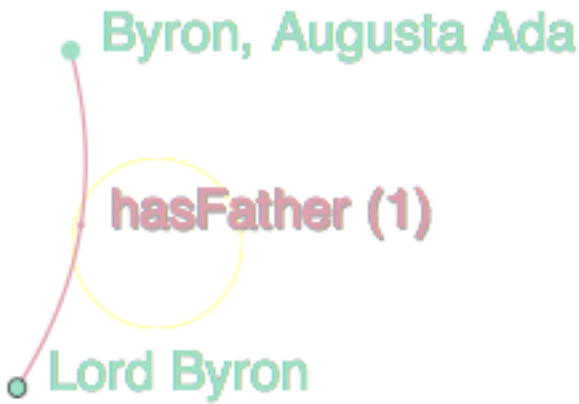
Edges

When two nodes in the central Graph are linked together by a line this indicates that they share a relationship. The nature of this relationship is represented as an Edge.

RDF-syntax distinguishes between the *visual representation* of a relationship in a graph and the *textual representation* as it is encoded in XML. The term "Edge" refers exclusively to graphs, while the term "Predicate" refers to a relationship as it is expressed through a Subject-Predicate-Object RDF triple-statement.

In this case, Augusta Ada Byron is connected to Lord Byron by the Edge hasFather.

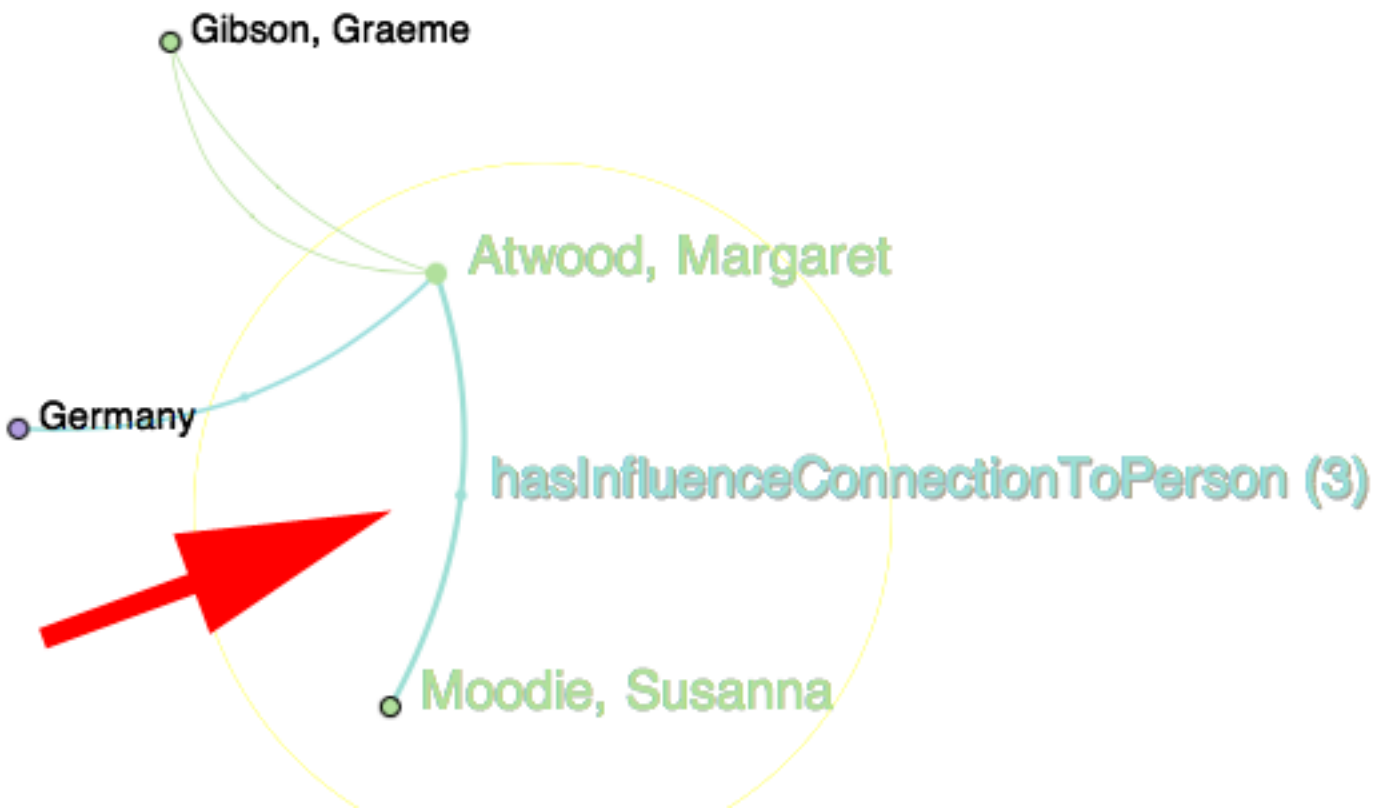
This is a visual representation of the RDF triple statement: <Byron, Augusta Ada> <hasFather> <LordByron>.



View Edges

Edges are displayed both in the Graph and in the Commands Tab.

When a user hovers overtop of a connective line, a label appears indicating the nature of the relationship and the number of connections in this category.



Edge can also be viewed in the Commands Tab. The Edges of Selected Nodes bin contains the names of Edges (or relationship types) associated with any nodes in a Selected state.

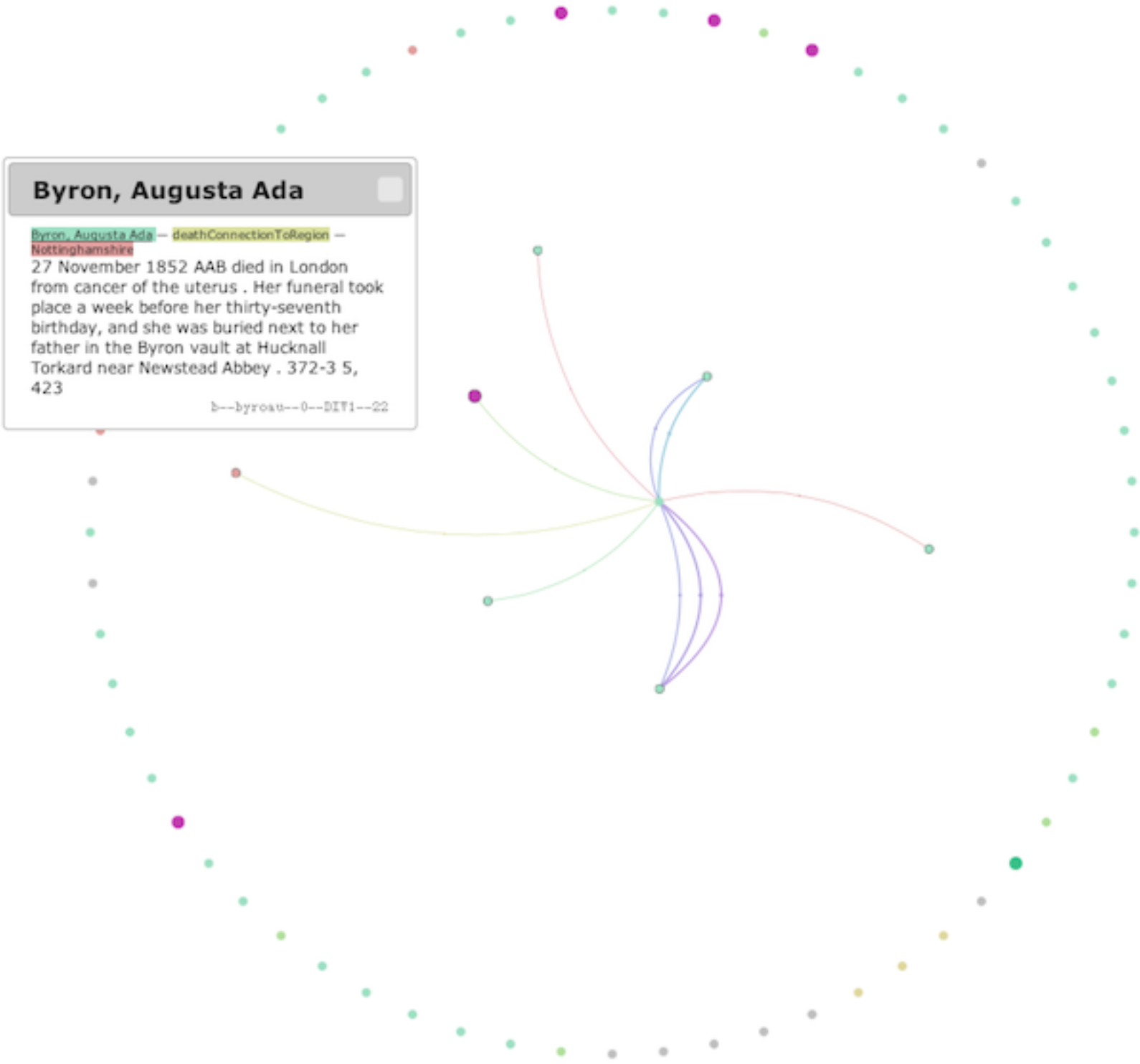
View Snippet Window

Snippet windows allow users to explore the relationships between nodes in more detail. In the HuViz prototype, the "snippet" of text is extracted from the source entry on the Orlando Project.

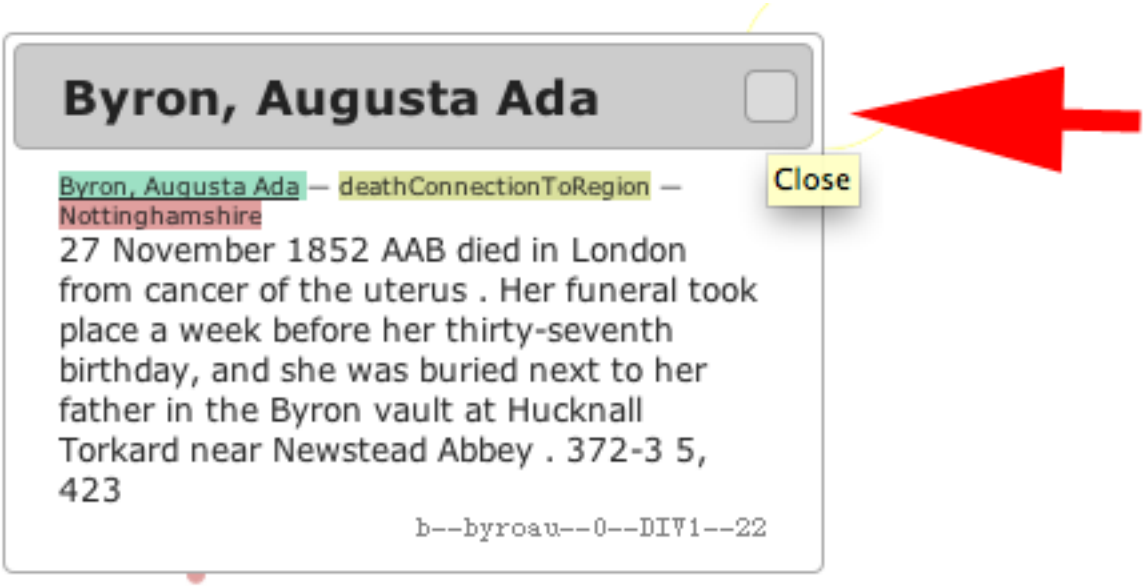
1. Hover over the *Edge* linking two nodes together.

A label will appear that categories the type of object and type of relationship. For example, **"deathConnectiontoRegion"** indicates that Ada Byron is connected to the **region** of Nottinghamshire by **death**.

2. Click on the Edge to open the Snippet window.



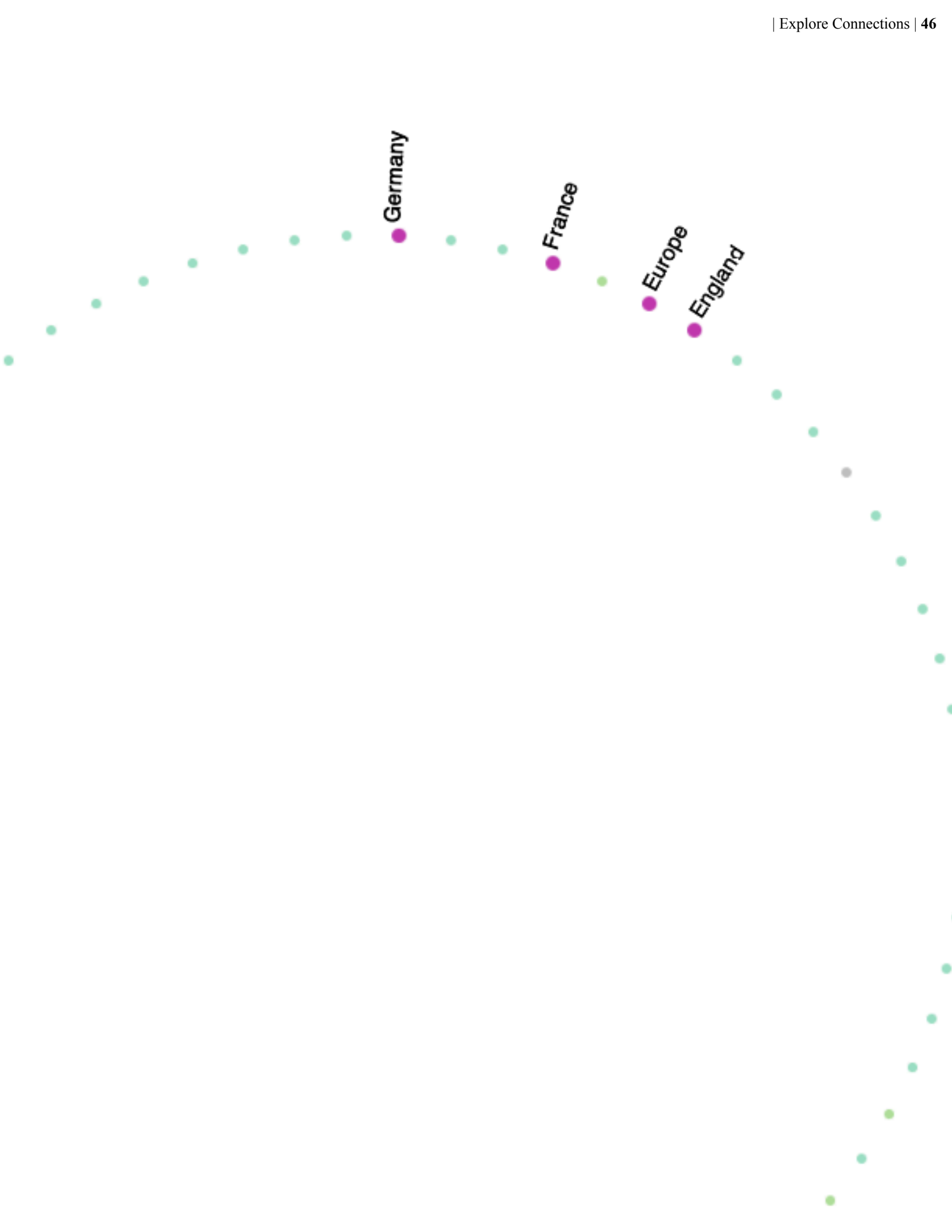
To close window, click the button at the top right.



Graph by Edge Type

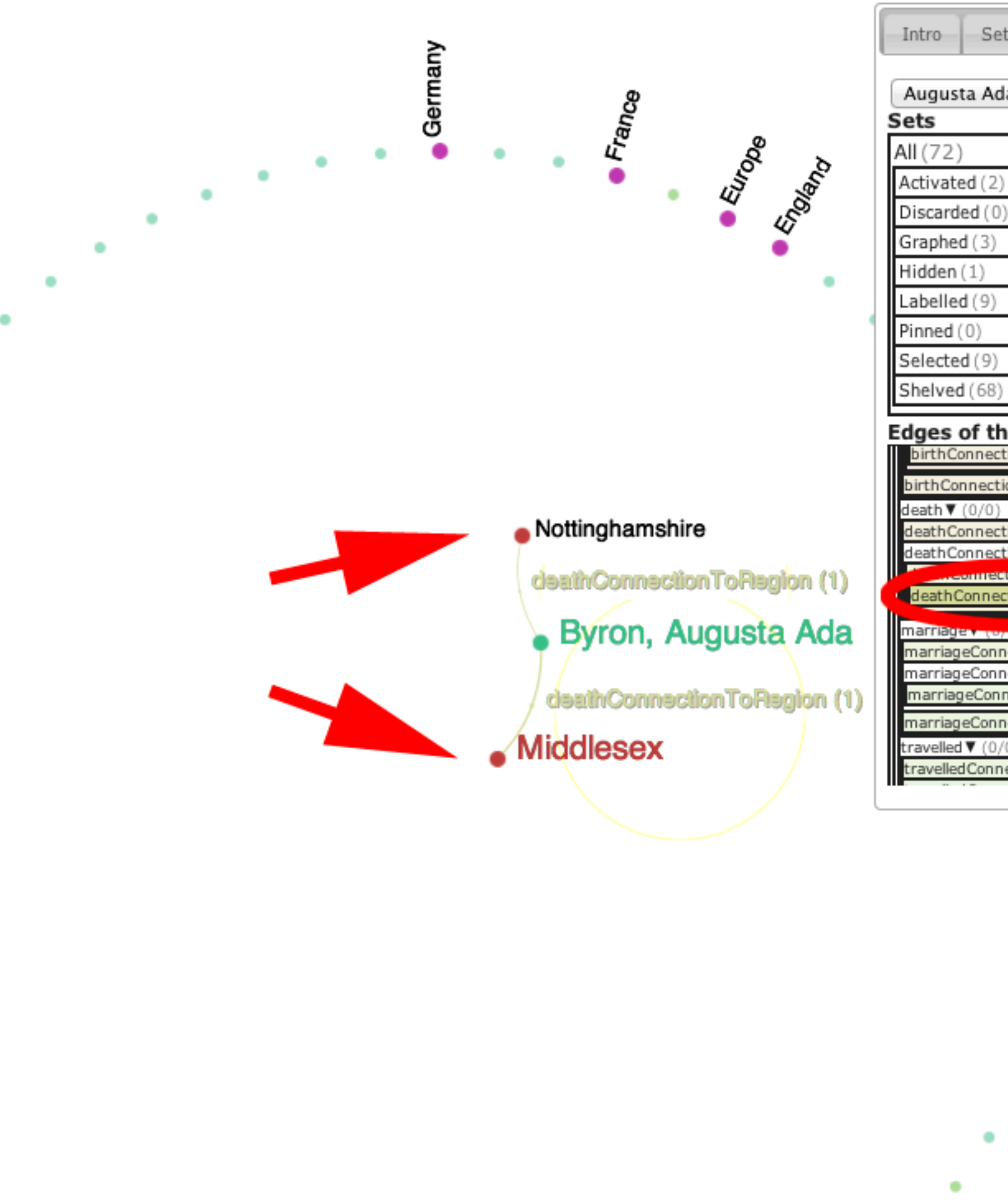
Graph nodes according to the type of connections (aka Edges) they share using the Edges of Selected Nodes bin.

1. Select a Class type by clicking on a drawer in the Classes bin.


Germany
France
Europe
England

After Selecting nodes, the Edges of Selected nodes bin will fill up with associated Edges. When no nodes are Selected, the Edges of Selected Nodes bin will appear empty.

2. Select a type of connection by clicking on an Edge in the Edges of Selected nodes bin.


Germany
France
Europe
England
Intro
Augusta Ada
Sets
All (72)
Activated (2)
Discarded (0)
Graphed (3)
Hidden (1)
Labelled (9)
Pinned (0)
Selected (9)
Shelved (68)
Edges of th
birthConnect
birthConnecti
death (0/0)
deathConnect
deathConnect
deathConnec
marriage
marriageConn
marriageConn
marriageConn
marriageConn
travelled (0/
travelledConn
Nottinghamshire
deathConnectionToRegion (1)
Byron, Augusta Ada
deathConnectionToRegion (1)
Middlesex

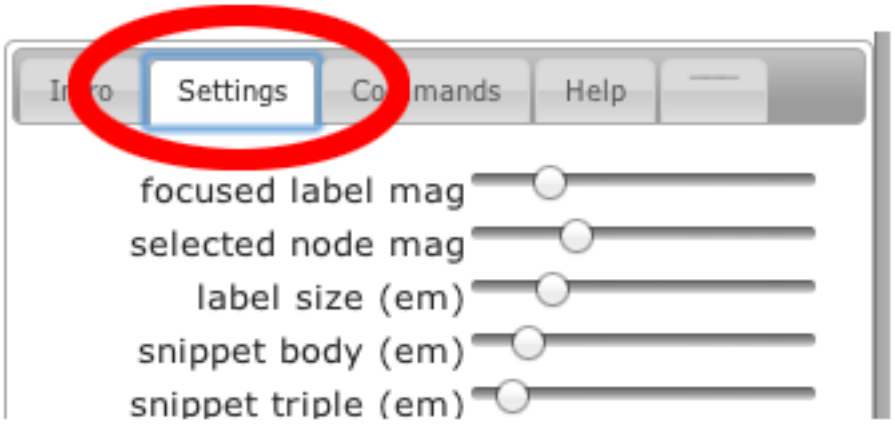
Nodes that share this Edge type will be dragged into the central Graph.

> In the Ada Byron dataset, selecting the "SpatialThing" Class type revealed that Ada Byron was connected to two Regions by death. Clicking on that drawer dragged those regions (Nottinghamshire and Middlesex) into the central Graph.

Customize Appearance

Settings Tab

Adjusting the appearance using the Settings Tab.



Note: When dealing with large datasets, adjust the **Shelf Radius**, **Fisheye Zoom** and **Fisheye Radius** to separate the distance between nodes and "zoom in" on individual nodes.

Table 3: SETTINGS REFENCE GUIDE

ELEMENT	DESCRIPTION
Focused Label Mag	Adjust *font size* of *Node labels* in *hover* mode.
Selected Node Mag	Adjust *size* of *Selected Nodes;* helps user see which Nodes will be effected by actions in the CommandsTab.
Node Radius	Adjust *size* of *All Nodes* for easier viewing.
Label Size (EM)	Adjust *font size* of *All Node labels*.
Snippet Body (EM)	Adjust *font size* of *text body* in Snippet Window.
Snippet Triple (EM)	Adjust *font size* of *Triple* (statement describing the subject, object and predicate); the Triple appears as a title above the text body in Snippet Window.
Charge (-)	Adjust the *attraction and repulsion between graphed nodes*, similar to a magnetic charge.
Gravity	Controls whether graphed nodes are *fixed* in the centre OR *float free*.
Shelf Radius	Adjust *Shelf circumference*; controls the size of the orbit containing ungraphed Nodes.
Fisheye Zoon	Control *magnification strength* of cursor.
Fisheye Radius	Control *magnification scope* of cursor; increased scope provides immersive 3D view of graph.

ELEMENT	DESCRIPTION
Link Distance	Adjust *length of links* between graphed Nodes.
Link Thickness	Adjust *thickness of links* between graphed Nodes
Line Edge Weight	Increases the *variation in link thickness* according to the *number of shared connections*, with thicker lines havin a higher Edge count.
Sway Fraction	Adjust the *curvature of links* to seperate or collapse multiple Edges.
Snippet Count on Edge Labels (on/off)	Display the *number of connections* in the Edge label.